The Effect of IMF Programs on Populism

Carlo Knapp

Abstract

While the economic consequences of IMF programs have been extensively studied, the political consequences are less well understood. Using a recompiled data set on populism and IMF programs for 60 economies since the start of the IMF's first programs, I provide new empirical evidence on how the assumption of governmental responsibility by populists spikes after IMF programs. After an IMF program the probability of the next government to be populist-led increases significantly by a factor greater than 2.4.

As this thesis shows, the positive effect of IMF programs on populism is rather stable over historical eras and persistent for about 6 to 15 years. At the country level, the effect sizes are heterogeneous. Western countries appear more resilient while Latin American and Asian countries are more prone to populism in the aftermath of IMF programs. I find that the amount of credit actually drawn is an important mediator of the impact of IMF programs on populism. A higher amount of undrawn credit significantly weakens the increase, whereas a higher total amount of agreed credit strengthens the post IMF program rise in populism. Empirically, this seems to be a signal that the austerity inducing IMF conditions are driving the increase in populism since the amount actually distributed depends mainly on the implementation of IMF policies, which are largely focused on austerity measures.

The Effect of IMF Programs on Populism

Bachelor's Thesis

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1 Introduction

1.1 The age of populism

Populism is spreading globally, reaching countries previously thought of as immune to populists. In 2016, populism reached critical dimensions and caused turning points in international politics: Brexit in Europe and the election of Donald Trump as President of the United States. Populism at the country level is at an all time high. More than 25% of governments are currently led by populists (Funke, Schularick and Trebesch 2021a). Populism turned into a pandemic that is not expected to disappear.

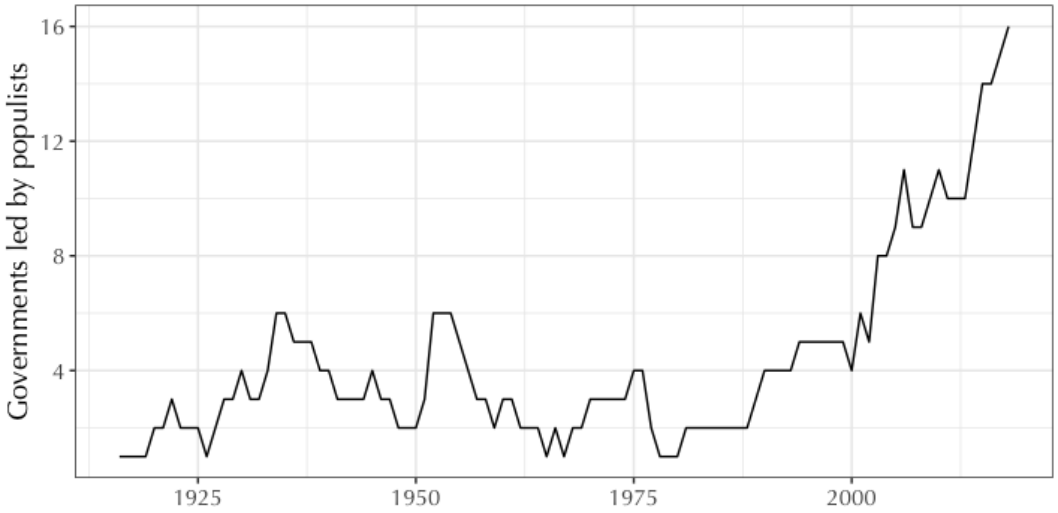

Figure 1: Rise of populism
Trends in the number of countries with a populist-led government since 1900 based on populism data from Funke, Schularick and Trebesch (2021a) for a global sample of 60 countries.

Before 2016, few academics were concerned about populism (Baccini and Sattler 2021), but this changed radically. Leading political scientists have begun to name our current time "the age of populism" (Krastev 2011, Katz and Nowak 2018, Frieden 2021). Today's academic consensus defines populism as a strategy aimed at pitting "us, the people" against "them, the elites" (Mudde 2004). While much of the literature on populism focuses on macroeconomic crises or the impact of globalization or cultural challenges, I want to examine the effect of international organizations on populism. The economic conditions that international organizations enforce are crucial for global political trends. The pressure exerted by international organizations on national governments is rarely as inescapable as in the case of International Monetary Fund programs. In this thesis, I therefore focus on the role of the International Monetary Fund as the "most powerful international institution in history" (Stone 2012) and raise the question: What is the effect of IMF programs on populism? To find an empirical answer, I examine the political consequences of IMF programs in 60 economies since the IMF launched its first programs in 1952.

My key finding is that populism increases significantly after IMF program participation. After an IMF program the probability of the next government to be led by populists increases by a factor greater than 2.4, by more than 240%. While the general effect of an increase in populism post IMF programs is rather stable over historical eras and persistent, it is not geographically equally pronounced. Western countries appear more resilient while Asian and Latin American countries are more prone to populism in the aftermath of IMF programs. Further, I find that the amount of credit actually drawn is an important mediator of the impact of IMF programs on populism.

1.2 Placement within the literature

This thesis aims to interweave strands of the current literature on populism and global governance. My results suggest that IMF programs lead to a rise in populism mediated by IMF conditions that impose austerity policies. This analysis adds new empirical findings to research on economic drivers of populism and unintended effects of international organizations.

On our current understanding of the drivers of populism, Berman (2021), Baccini and Sattler (2021) and Guriev and Papaioannou (2022) offer a comprehensive review. They illustrate demand- and supply-side explanations for populism and distinguish between sociocultural challenges like fear of immigration overload and economic grievances like macroeconomic crises or austerity. While an efficient welfare state can compensate the losers of structural change, large welfare cuts could be destabilising (Antràs, Gortari and Itskhoki 2017). The economic vulnerability of voters strongly influences their susceptibility to populism (Guiso, Herrera, Morelli and Sonno 2019). Therefore, the impact of austerity on populism is increasingly coming into focus. Fetzer (2019) is one of the first to provide empirical evidence on how austerity-driven reforms in the United Kingdom have led to vote gains for the UK Independent Party and for ‚Leave' in the EU referendum. He concludes "the EU referendum could have resulted in a ‚Remain' victory had it not been for austerity." Similarly, Galofré-Vilà, Meissner, McKee and Stuckler (2021) suggest that austerity influenced landmark decisions. They examine the relationship between austerity and Nazi electoral success in elections between 1930 and 1933 and find that areas more affected by austerity experienced higher support for the NSDAP. For 25 European countries, Ponticelli and Voth (2020) show that spending cuts carry a significant risk of increasing social unrest and attempts to overthrow the established democratic order. In addition, Gabriel, Klein and Pessoa (2023) use numerous elections in Europe and demonstrate that budget consolidation leads to a higher share of extreme votes. While these paper tend to examine specific elections in individual countries or focus on election results in Europe, I want to offer a global, long-term perspective on the link between austerity and actual assumption of governmental responsibility by populists.

Furthermore, this analysis of the effect of IMF programs on populism contributes to the literature on international governance. Barnett and Finnemore (1999) provide a good starting point for research on unintended effects of international organisations. Empirical findings suggest that multilateral institutions can undermine national democracies (Knack 2001, Knack 2004, Gartzke and Naoi 2011). In specific reference to IMF programs, however, the effect on democracy is less clear. Barro and Lee (2005) and Hartzell, Hoddie and Bauer (2010) show a negative effect of IMF programs on democracy. Nelson and Wallace (2017), on the other hand, find a positive effect and Brown (2009) describes that only IMF loans with extensive conditions affect democracy negatively. As the IMF has expanded its mandate through broader reform conditionality (Kentikelenis, Stubbs and King 2016, Reinhart and Trebesch 2016, Barnett and Finnemore 2019), it is important to question this development. While the contradictory findings on the effect of IMF programs on democracy are mainly oriented towards democracy indices and the rejection of democracy, I examine the effect on populism as an internal threat to democratic systems.

The remainder of my thesis is structured as follows. To conclude my introduction, I provide a brief overview of the IMF as an institution and an anecdotal example of the link between IMF programs and populism. In the second section I describe the used data. Then I explain the statistical design in the third section and present the empirical results in the fourth section. I demonstrate that IMF programs lead to a persistent increase in populism, conduct several robustness tests, address country specific differences and elaborate how conditions of IMF programs amplify their impact. The final section concludes my main results, identifies current limitations and provides an outlook for possible future research.

1.3 The IMF and its programs

The International Monetary Fund was officially funded in 1945 at the Bretton Woods Conference to reconstruct the international monetary system. According to the first Article of Agreement, the purpose of the IMF is to promote international monetary cooperation, to facilitate world trade, to stabilize exchange rates and to support the creation of a multilateral payment system. The IMF should enable its member states to correct maladjustment in their balance of payments by temporarily providing international reserves under adequate safeguards. After the collapse of the adjustable exchange rate peg system in 1973, the IMF was no longer responsible for ensuring fixed exchange rates. A structural reform of the IMF became necessary and the IMF assumed responsibility as global crisis manager and financier of temporary current account deficits (Krueger 1997, Bordo and James 2000). In the late 1980s, due to the dissolution of the former socialist bloc, the IMF again underwent a structural change and expanded its sphere of influence. Starting with 44 initial member states,

the IMF has grown to 190 member states. The IMF has been involved in 130 of these states and for most of them the reforms imposed have been the most fundamental economic reforms in recent history (Reinsberg, Kentikelenis, Stubbs and King 2019).

The IMF is controlled by a Board of Governors representing the governments of its member states. Day-to-day operations are managed by the Executive Board, which is elected by the Board of Governors. Each country owns voting rights according to its quota, its share in the IMF. Member states' quotas are initially calculated according to their economic size. Every five years, the quotas are adjusted to the IMF's financing needs.[1] No attempt is made to give all countries an equal vote. While most countries are grouped to elect one of the 24 executive directors, larger shareholders like the US, Japan, China, Germany, France, the UK and Saudi Arabia each appoint their own executive director. The IMF is dominated by western industrialised countries.

Comparable to a credit union, the IMF uses the quotas to finance loans to member states in difficulties. The interest rates are mainly determined by current market rates and the IMF's operating costs. Every member state has unconditional access to up to 25% of its quota. To access credit beyond those 25% an arrangement with the IMF is necessary. Participation in an IMF program is always an unanimous decision between the IMF and a member state. However, Gehring and Lang (2020) point out that countries typically sign IMF agreements while their creditworthiness is already in severe decline. Under an arrangement, the amount of credit agreed upon is payed out quarterly depending on the fulfillment of IMF conditions. As Bordo and James (2000) explain, the IMF uses credit conditions to influence policies in the belief that bad policies have adverse effects beyond national borders and that larger loans in relation to the quota require tougher conditions as an enforcement mechanism for repayment. Through these conditions, the IMF often imposes banking liberalisation, reduction of trade restrictions, privatisation of national resources, anti-inflation measures, exchange rate adjustment and, most importantly, austerity measures such as reduction of budget deficits through spending cuts, elimination of public services and tax increases (Przeworski and Vreeland 2000). As this interference in national politics is often perceived as encroaching, the IMF is also seen as a last resort.

[1] In an innovative approach, Lang (2021) uses the resulting cyclically fluctuating IMF liquidity, which leads to a heterogeneous distribution of IMF programs, as an instrument to analyze the effects of IMF programs on inequality. This creative procedure could be used in future research to test the theses put forward here for further robustness.

1.4 Anecdotal evidence from Argentina

For Argentina, the IMF has been the last resort for a long time. There is ample anecdotal evidence connecting IMF programs to a persistent rise in populism, but the case of Argentina is particularly noteworthy. Argentina participated in one of the longest IMF programs and experienced a dramatic increase in populism. After the reforms demanded by the IMF were implemented, the country was governed almost exclusively by populists for nearly three decades, whereas populism had previously been relatively moderate. Argentina experienced severe economic crises and mass protests, for which many blamed the IMF reforms (Lang 2021). In 2004, the President of Argentina, Néstor Kirchner stated in the United Nations General Assembly that the reforms imposed by the IMF led Argentina "to the worst of all worlds" (United Nations 2004). When the IMF program ended in 2006, populism in Argentina remained at a high level. A non-populist government was not elected until 2016.

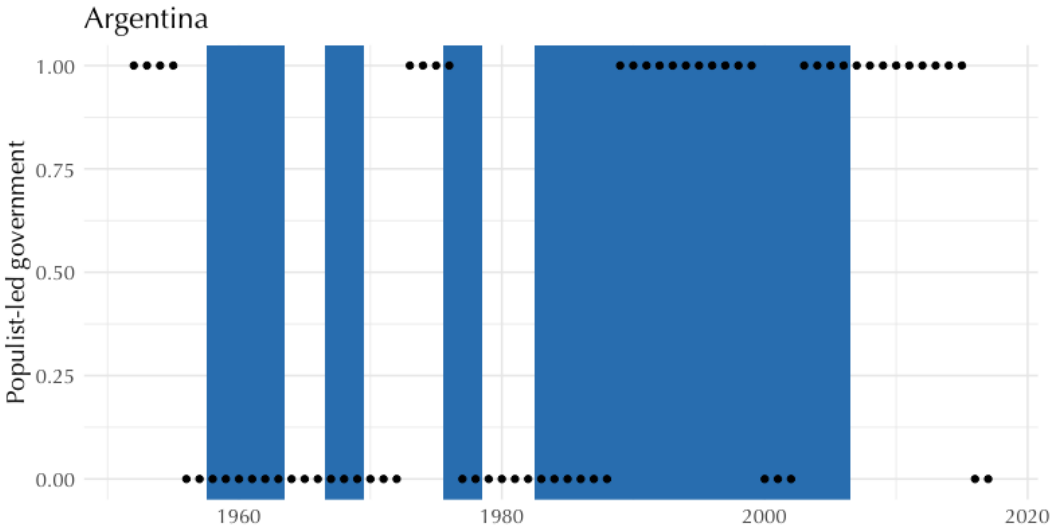

Figure 2: IMF programs and populism in Argentina
In periods highlighted in blue, Argentina participated in an IMF program. The dots indicate whether the government in Argentina was populist-led (1) or not (0) in the corresponding year.

While it is likely that IMF programs contributed to the rise of populism in Argentina, there could be other explanations: economic crises, high inflation, rampant corruption, looming national bankruptcy. Crisis dynamics that usually accompany an IMF program, or make it at least more likely, simultaneously influence populism as the variable of interest. The case of Argentina thus highlights core challenges for analysing the effect of IMF programs on populism. Selection for IMF programs is not random and crucial factors such as political will to participate in an IMF program are often difficult to measure.

2 Data

In this thesis, I combine a broad set of historical data. This section describes its main variables, sources and underlying assumptions. The compiled data set covers various variables at annual frequency from 1952 until 2017 for the following 60 countries:

Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Mexico, Netherlands, New Zealand, Norway, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, the United Kingdom, the United States of America, Uruguay and Venezuela.

Countries from all continents are represented, although Africa and the Greater Middle East are underrepresented due to a lack of data. As countries for which data are available differ systematically from countries for which data are not available, data availability is another source of non-random selection. Taking into account an economic weighting and drawing comparisons with other papers, this sample can nevertheless be described as highly informative for global developments. The sample covers about 40% of all countries that have participated in an IMF program and accounts for 95% of global economic growth in both 1952 and 2017.

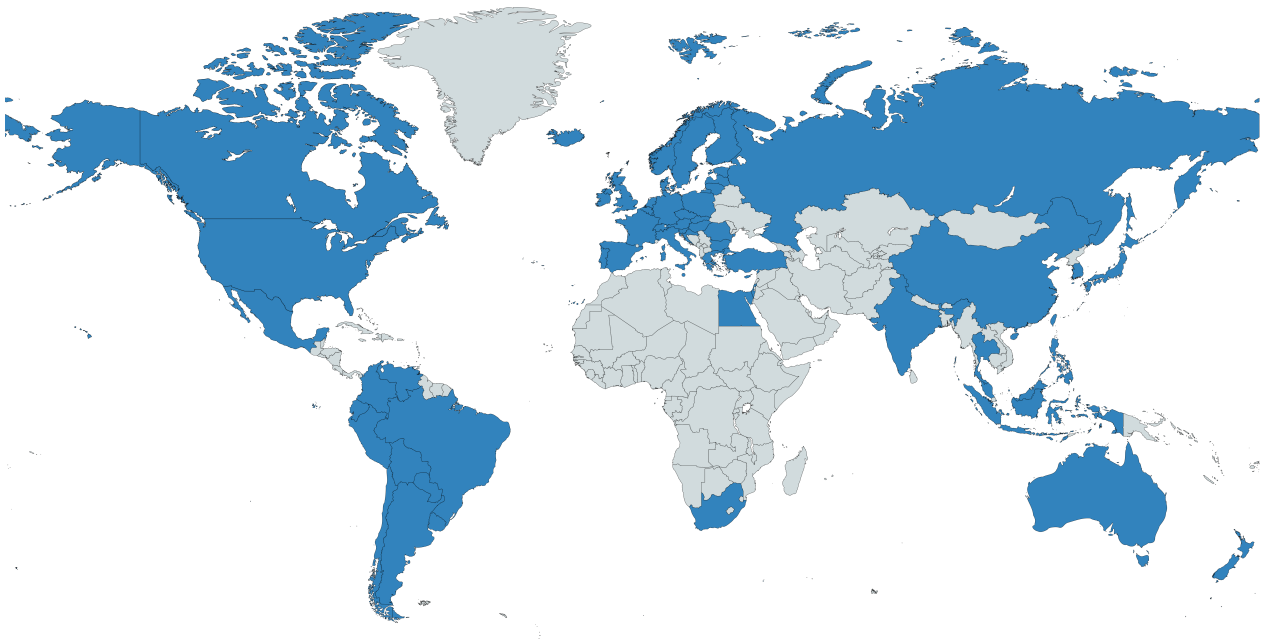

Figure 3: A global sample
Countries highlighted in blue are included in the sample.

2.1 Source

The core of the data set relies on populism data of Funke, Schularick and Trebesch (2021a) and IMF arrangement data of Vreeland (2007). All countries with available populism and IMF data are included. Further, I use the Penn World Tables (Feenstra, Inklaar and Timmer 2015), International Monetary Fund (2016) data on debt and data from the International Monetary Fund (2022) on reserves and balance of payments for control purposes.[2] Moreover, I combine World Bank (2022) data, data of Reinhart, Reinhart, Rogoff and Trebesch (2022) and data of Metrick and Schmelzing (2021) to create a banking crisis dummy.

2.2 Populism data

The populism data of Funke, Schularick and Trebesch (2015) offer a populism dummy ($pop_{i,t}$) that takes the value of one if in the corresponding year the country's government was populist-led. In line with the political science workhorse definition, Funke, Schularick and Trebesch (2021b) code a government leader as populist if his or her political strategy is focused on a conflict between "the people" and "the elites" (Mudde 2004). They set a high bar for the labelling of a government as populist-led in order to include only the most evident cases.

To distinguish between right wing ($rpop_{i,t}$) and left wing populists ($lpop_{i,t}$), Funke, Schularick and Trebesch (2015) rely on classifications by De Bromhead, Eichengreen and O'Rourke (2012). Accordingly, populist parties are classified as right wing populist if they propagate a nationalist anti-regime stance and as left wing populist if they advocate traditional communist positions or at least reject the current economic order.[3]

Across all countries and years in the sample, about 8% of governments are led by populists, with a clear and continuous upward trend, as Figure 1 illustrates. Left and right wing populists govern with roughly equal frequency. Of the populist-led governments, 48% are attributable to right wing populists and 52% to left wing populists. In 26 out of 60 countries, there has been at least one populist-led government. Latin America and Europe seem to be especially affected by populism. Populists have come to power with particular frequency in Argentina, Bolivia, Ecuador, Greece, India, Indonesia, Italy, Peru, Slovakia, Turkey and Venezuela.

[2] The extent of data provided by the IMF on balance of payments (bop) and debt is limited. Unfortunately, more bop and debt data is not even available from the Federal Reserve Economic Data (FRED).

[3] A very detailed classification of each government as non-populist, left wing or right wing populist, can be found in the appendix of the paper of Funke, Schularick and Trebesch (2021a).

2.3 IMF program data

The IMF program data from Vreeland (2007) include an IMF program dummy ($under_{i,t}$) that takes the value of one if the country was under an IMF program in the corresponding year. In addition, the data provide the $type_{i,t}$ of IMF program, the agreed amount of IMF credit ($totalamountagreed_{i,t}$) and the amount of undrawn credit ($undrawnbalance_{i,t}$).

The two most common programs are Stand-By Arrangements (SBA) and the Extended Fund Facility (EFF). SBA provide short-term financial support and are repayable within three to five years of disbursement. The EFF supports structural reforms to address long-term balance of payments difficulties. Drawings under the EFF are repaid between four and ten years after payout. As SBA and EFF programs are not suitable for low-income countries, the IMF developed lending programs at subsidised interest rates such as the Poverty Reduction and Growth Facility (PRGF) with a maturity of five to ten years. These seem to be linked to development aid (Barro and Lee 2005), although there is considerable debate about whether these programs fulfil their claim.

Since 79% of the IMF programs in my sample are Stand-By Arrangements, the general purpose of the program types does not differ and differences in duration can be neglected due to the common practice of signing many consecutive agreements (Przeworski and Vreeland 2000), I do not differentiate between program types and consider only whether or not a country was under an IMF program in a given year.[4] Instead of program types, I differentiate programs regarding the agreed amount of credit and the undrawn balance. As the disbursement of the next tranche is conditional, the actual amount disbursed is a good measure of IMF program participation and compliance with IMF conditionality.

On average, in any given year about 20% of all countries are in an IMF program.[5] In 49 of 60 considered countries, the IMF has been involved and the average IMF program carries an annual lending volume of 271 million Special Drawing Rights (SDRs). However, about 107 million SDRs of the annual credit volume are on average not disbursed. SDRs are international reserve assets issued by the IMF but not claims on international reserves held by the IMF. Although countries earn or pay interest on SDRs and exchange SDRs freely for foreign reserves, SDRs are not currency either. SDRs cannot be used to buy real commodities, they are accounting units and supplements to reserves. The price of SDRs is derived from a basket of currencies including the US dollar, the Euro, the Chinese Yuan, the Japanese Yen and the British Pound. Trading in SDRs is largely based on voluntary trading agreements.

[4] Figure 7 in the appendix depicts the shares of the different IMF program types in the sample.
[5] Figure 8 in the appendix shows trends of participation in IMF programs.

2.4 Control data

Considering that the selection of countries into populist governments and into IMF programs is not random and that economic dynamics simultaneously influence the probability of an IMF program and political sentiment (Guriev 2018), I control for a broad set of economic factors and policy indicators. In particular, I include the growth rate of GDP per capita ($g\_gdp_{i,t}$), the CPI inflation rate ($inf_{i,t}$), the rate of unemployment ($r\_unemp_{i,t}$) and domestic investment relative to GDP ($invest_{i,t}$). By taking policy indicators into account that push governments to sign an IMF agreement, I try to get around the challenge that political will is not directly measurable. According to Barro and Lee (2005), an agreement between the IMF and a country's government is more likely when foreign $reserves_{i,t}$ are low, when other countries around the world are currently under an IMF program as well ($n\_under_{i,t}$), when domestic investment relative to GDP ($invest_{i,t}$) is low, when the exchange rate is overvalued ($g\_xr_{i,t}$), when the balance of payments ($bop_{i,t}$) deficit is large and when the level of $debt_{i,t}$ is high.[6]

On top of that, I consider a banking crisis dummy ($post\_b\_crisis_{i,t}$) that takes the value of one if in the previous five years a banking crisis occurred, because Funke, Schularick and Trebesch (2015) show that populism increases disproportionately after financial crises. They define financial crises as "events during which a country's banking sector experiences bank runs, sharp increases in default rates accompanied by large losses of capital that result in public interventions, bankruptcy, or forced merger of financial institutions." Unfortunately, to the best of my knowledge, their financial crisis dummy is only available for 20 of the 60 countries in my sample. To cover all 60 countries, I derive a banking crisis dummy by using a banking crisis dummy of the World Bank (2022) and a banking crisis dummy of Reinhart, Reinhart, Rogoff and Trebesch (2022). The definitions of these banking crisis dummies are similar to the definition of financial crises by Funke, Schularick and Trebesch (2015).

> [The World Bank (2022) banking crisis dummy takes the value of one] if two conditions are met: a. Significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations) and b. Significant banking policy intervention measures in response to significant losses in the banking system.
>
> [Reinhart, Reinhart, Rogoff and Trebesch (2022)] mark a banking crisis by two types of events: (1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions [...] and (2) if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions.

[6] Table 2 in the appendix lists definitions and sources for all variables.

I rely primarily on the banking crisis dummy taken form the World Bank (2022). If this dummy is not available, which is mainly the case for the years 1952 to 1960, I use the banking crisis dummy provided by Reinhart, Reinhart, Rogoff and Trebesch (2022). If both dummies are not given, I consider the Metrick and Schmelzing (2021) data on financial interventions. This is the case for Bulgaria, Ireland, Israel, Luxembourg and Switzerland between 1952 and 1959. When referring to the data on financial interventions, I assume that there was no banking crisis, as there were no financial interventions or official declarations in these countries in these years.

3 Statistical design

As a first step, I take a thorough look at the data, calculate summary statistics and create visuals on the rise of populism, the evolution of IMF programs and changes in populism for each country.[7] I compare the normalised trend of populism and IMF programs and estimate how IMF programs affect populism over time with an unconditional impulse response function following the approach of Jordà (2005). Then, I analyse the extent of populism ($pop_{i,t}$) before and after participation in the IMF program using an OLS panel regression with country fixed effects ($country_i$) to absorb invariant country-specific heterogeneity. Thereby $pop_{i,t}$ takes the value of one if the government of the country was populist in the corresponding year. To cover at least one election in each country before and after the IMF program, I consider the full five years before an IMF treatment as *pre_under* and the full five years after as *post_under*. *pre_under* takes the value of one if an IMF program follows in any of the next five years and the value of zero otherwise. Similarly, *post_under* takes the value of one if an IMF program ended in any of the previous five years and the value of zero otherwise. Since numerous countries go through several consecutive IMF programs, I regard them as one IMF treatment if the pre and post periods would overlap. I use *pre_under* to compare countries that will start an IMF program within the next five years with countries that will not. This allows me to check whether countries tend to be more populist even before the IMF treatment. Applying the same differences-in-differences logic, I use *post_under* to determine how the level of populism in countries that have just completed an IMF program deviates from the level of populism in countries without a prior IMF intervention.

$$pop_{i,t} = country_i + \alpha_1 \cdot pre\_under_{i,t} + \alpha_2 \cdot post\_under_{i,t} + \epsilon_{i,t} \tag{1}$$

In a second step, I construct a preliminary model by adding year fixed effects ($year_t$) and controls to adjust for obvious sources of endogeneity. Together, the country fixed effects and

[7] Figures 10, 11 and 12 in the appendix illustrate the change in populism for all countries with at least one populist-led government.

the year fixed effects allow for country- and time-specific trends to be taken into account in order to remove unobservable country- and time-specific heterogeneity. I control for banking crises ($post\_b\_crisis_{i,t}$) and the lags one to five of the following variables: growth rate of real GDP per capita ($g\_gdp_{i,t}$), CPI inflation ($inf_{i,t}$), rate of unemployment ($r\_unemp_{i,t}$), growth rate of the exchange rate between national currency and USD ($g\_xr_{i,t}$), the number of countries under an IMF program ($n\_under_{i,t}$), real domestic investment relative to GDP ($invest_{i,t}$) and international reserves ($reserves_{i,t}$).[8] I recognize a not negligible auto correlation between the lags of the rate of unemployment, lags of the number of countries under an IMF program in each year, lags of domestic investment relative to GDP and lags of reserves. As a result one lag of these controls appears to be sufficient.

$$\begin{aligned} pop_{i,t} = {} & country_i + year_t + \beta_1 \cdot pre\_under_{i,t} + \beta_2 \cdot post\_under_{i,t} + \gamma_1 \cdot post\_b\_crisis_{i,t} \\ & + \sum_{j=1}^{5} \gamma_{2,j} \cdot g\_gdp_{i,t-j} + \sum_{j=1}^{5} \gamma_{3,j} \cdot inf_{i,t-j} + \sum_{j=1}^{5} \gamma_{4,j} \cdot g\_xr_{i,t-j} \\ & + \gamma_5 \cdot r\_unemp_{i,t-1} + \gamma_6 \cdot invest_{i,t-1} + \gamma_7 \cdot reserves_{i,t-1} + \gamma_8 \cdot n\_under_{i,t-1} + \epsilon_{i,t} \end{aligned} \tag{2}$$

In a third step, I use this preliminary model to develop my baseline model by addressing possible issues of multicollinearity between different controls. To check which regressors are particularly relevant, I consider the Variance Inflation Factor (VIF) of the preliminary model as well as a ridge and lasso regression. After removing $n\_under_{i,t}$ due to collinearity with year fixed effects ($year_t$), VIF indicates no longer possible problems of multicollinearity. The ridge regression and the lasso regression signal that some controls are not particularly relevant, mainly the second to the fifth lag of $g\_gdp_{i,t}$, $inf_{i,t}$ and $g\_xr_{i,t}$. I remove these lags and my resulting baseline model is the following:

$$\begin{aligned} pop_{i,t} = {} & country_i + year_t + \beta_1 \cdot pre\_under_{i,t} + \beta_2 \cdot post\_under_{i,t} + \gamma_1 \cdot post\_b\_crisis_{i,t} \\ & + \gamma_2 \cdot g\_gdp_{i,t-1} + \gamma_3 \cdot inf_{i,t-1} + \gamma_4 \cdot g\_xr_{i,t-1} \\ & + \gamma_5 \cdot r\_unemp_{i,t-1} + \gamma_6 \cdot invest_{i,t-1} + \gamma_7 \cdot reserves_{i,t-1} + \epsilon_{i,t} \end{aligned} \tag{3}$$

I apply the baseline model to both a logit and an OLS regression and conduct several robustness tests. Conceptually, the logit model is the better choice because the dependent variable is binary. The logit estimators allow an assessment of the effect size, whereas the OLS estimators do not, as fitted values below zero and above one do not have a meaningful

[8] If I control additionally for the balance of payments ($bop_{i,t}$) and $debt_{i,t}$, I lose 1927 of 3960 observations, more than 50% of the sample. Henceforth, I do not consider $bop_{i,t}$ and $debt_{i,t}$ here, but later in a robustness tests in Section 4.2.2.

interpretation. Nevertheless, the simplicity of the OLS model makes it a convincing comparative measure of the qualitative effect of IMF programs on populism. Furthermore, the OLS model complements a weakness of the logit model. While the fixed effect dummies in an OLS model are dropped by mean absorption, the fixed effect dummies in a non-linear model cannot be dropped. This creates an incidental parameter problem. The number of regressors increases with the number of observations preventing the model estimator from converging to its true value. Although this potential bias can be taken into account and can be avoided in the empirical evaluation, one still runs into the econometric challenge of not being able to examine, for example, the interaction term of $post\_under_{i,t}$ and $asian_{i,t}$ when using country fixed effects in the logit model and correcting for the incidental parameter problem.[9] Therefore, I use the OLS model to examine interaction effects with covariates that are particularly related to the country or year fixed effects.

4 Results

Figure 4 shows normalised global trends for populist-led governments and international participation in IMF programs. Populism has been on an accelerating rise. Participation in IMF programs, on the other hand, has been volatile and subject to crisis dynamics.

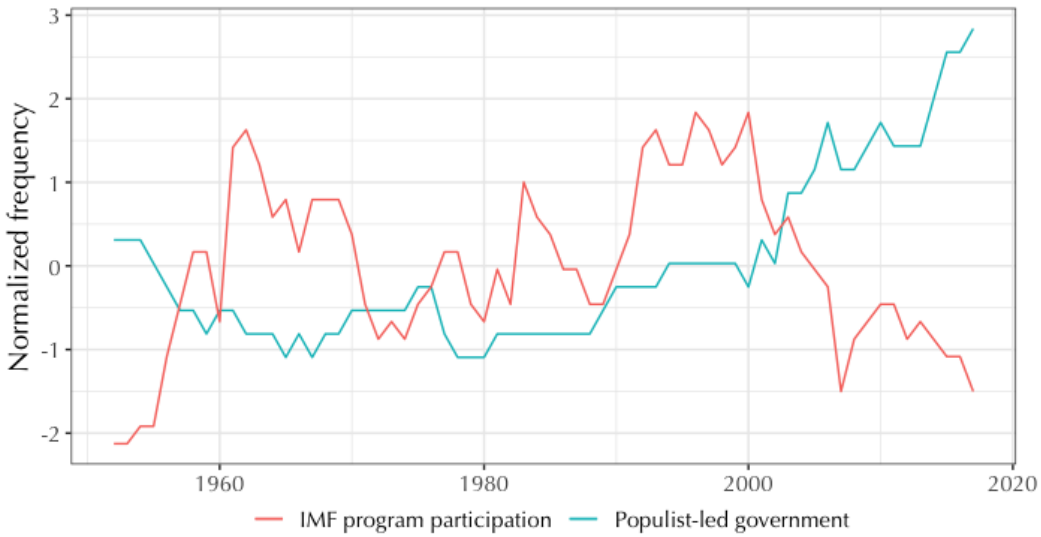

Figure 4: Normalized trends
Normalized trends in IMF program participation (red) and populist governments (blue).

By looking closely at periods with high IMF involvement, populism appears to have risen particularly strongly towards the end of periods with many IMF programs. This impression is confirmed by the introductory OLS panel regression with country fixed effects (1). The results presented in Table 4 suggest that countries do not experience a higher propensity to populism

[9] I avoid the incidental parameter problem by not using fixed effect dummies, but rather the "feglm" function in R which corrects for potential biases caused by the incidental parameter problem.

prior to an IMF agreement. While the difference in the level of populism between countries that sign an IMF program in the next few years and countries that do not is insignificant, the level of populism is significantly higher in countries that have participated in an IMF program than in countries that have not. This is particularly evident in the unconditional impulse response function in Figure 5. An IMF impulse, in form of an agreement between the IMF and the national government, is in most cases associated with a delayed, but highly significant, rise in populism.[10]

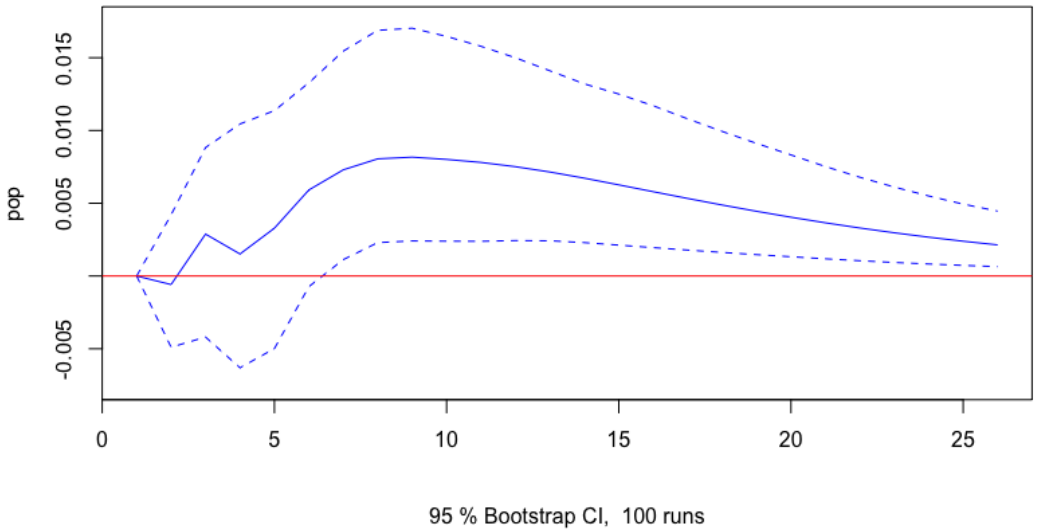

Figure 5: Response of populism to an IMF program impulse
Unconditional local projection of the path of populism after an IMF impulse, following the approach of Jordà (2005). The IMF impulse is the beginning of an IMF program. The blue line refers to the average path of populism and the dashed lines indicate the 95% confidence interval based on 100 estimations. The local projections are based on lags of 5 periods and provide an estimation for the trajectory over 25 years.

The fact that the impact of IMF programs on populism is measured with a slight delay is not surprising. Since IMF loans and their quarterly disbursements are usually linked to the fulfilment of staggered reform conditions, it is likely that governments will first reap low hanging fruits from IMF programs before they implement painful austerity measures that reach the electorate immediately. Additionally, from a probabilistic point of view, most elections do not take place immediately after an IMF program, but on average about 2 to 2.5 years later.

4.1 Baseline model

The baseline model (3) is the core of my econometric analysis. It includes country and year fixed effects, allowing for country and time specific trends, and almost all the prominent variables discussed in the current literature that are thought of to be a main driver of populism,

[10]Figure 9 in the appendix illustrates similar unconditional impulse response functions but shows the response of left and right wing populism to an IMF impulse separately.

a major determinant of participation in an IMF program or both (Barro and Lee 2005). In this way, I aim to control for the most obvious sources of endogeneity. I try to rule out as much as possible that the rise in populism could be due to factors other than the IMF program and the results of the baseline model shown in Table 1 remain clear. Populism increases significantly after IMF programs. Based on the logit estimator for the coefficient of *post_under*, I conclude that after an IMF program the probability of the next government to be led by populists increases by a factor greater than 2.4. This corresponds to an increase of more than 240%.[11]

Table 1: Baseline model

	logit(pop)	pop
post_under	0.888**	0.073***
	(0.423)	(0.020)
pre_under	0.625	0.024
	(0.447)	(0.020)
post_b_crisis	0.114	−0.009
	(0.463)	(0.018)
lag(g_gdp, 1)	−1.752	−0.104
	(2.072)	(0.118)
lag(inf, 1)	−0.055	0.050
	(0.624)	(0.059)
lag(r_unemp, 1)	6.606	0.239
	(6.254)	(0.157)
lag(invest, 1)	−1.732	0.047
	(3.762)	(0.091)
lag(g_xr, 1)	0.032	0.004
	(0.039)	(0.005)
lag(reserves, 1)	−0.002	−0.000**
	(0.002)	(0.000)
Num. obs.	1477	3260
Num. groups: country	25	60
Num. groups: year	66	66
Deviance	1152.264	
Log Likelihood	−576.132	
Pseudo R^2	0.099	
R^2		0.326
Adj. R^2		0.297

Note: Logit and OLS panel regression with country and year fixed effects. The standard errors of the logit regression are two-way clustered at the country and year level. The standard errors of the OLS regression are robust and clustered at the country level. The number of observations in the logit model is smaller because it considers only countries that change in the dimension (IMF program, populism) over the time series. Significance levels: *p<0.1; **p<0.05; ***p<0.01

[11] An explanation of the interpretation of logit coefficients can be found in Appendix B.

4.2 Robustness

In order to evaluate the plausibility and resilience of the baseline model, I apply numerous robustness tests. I include additional explanatory variables like balance of payments ($bop_{i,t}$) and $debt_{i,t}$, carry out an event study and analyse the sample separately along historical, political and geographical dimensions.

4.2.1 No IMF, no populism?

Since better data are available for countries with developed economies and stable political systems, these represent a disproportionate share of the sample. To show that the measured effect of IMF programs is not amplified by a large number of countries without IMF program participation and without a populist-led government, I remove all countries that never had an IMF program and never had a populist government in a robustness test for the OLS model. This eliminates any potential "no IMF program, no populism" mechanism that could be driving the effect. As the results of the OLS regression without these countries in Table 5 are almost identical to the results of the OLS regression with these countries in Table 1, I consider a bias of the effect of IMF programs on populism by many countries with stable economic and political conditions as very unlikely.[12]

4.2.2 Balance of payments and debt

Previous research suggests that the likelihood of IMF programs and populism could be strongly influenced by balance of payments and debt (Knight and Santaella 1997, Conway 1994, Przeworski and Vreeland 2000). I add the variables $bop_{i,t-1}$ and $debt_{i,t-1}$ to my baseline model to avoid a potential omitted variable bias.[13] Due to high auto correlation, a single lag is sufficient for each of these two variables. The results presented in Table 6 demonstrate that the positive effect of IMF programs on populism remains robust when *bop* and *debt* dynamics are taken into account. The increase in populism after an IMF program can be measured even more strongly. Taking *bop* into account, the probability of the next government becoming populist increases by a factor of 2.6 after an IMF program, and taking *debt* into account, this probability even triples after an IMF program. IMF programs appear to have a stronger impact on populism than debt reduction measures alone. The rise in populism after IMF programs exceeds the rise in populism triggered by debt reduction.

[12] This robustness test is not necessary for the logit model, because the logit model considers only countries that change over time in the examined dimensions (IMF program participation, populist-led government).

[13] I did not include *bop* and *debt* right from the start in my baseline model, because data on these variables is limited and otherwise I would have dropped half of my sample immediately.

4.2.3 Event study

The structural break and the persistence of the impact of IMF programs can be examined particularly well using an event study. I focus on the 10 years before ($lag10$, ..., $lag1$) and the 15 years after an IMF program ($lead1$, ..., $lead15$).[14] To avoid overlapping pre- and post-periods for countries that have repeatedly participated in IMF programs, I consider two IMF programs as one if otherwise the pre- and post-periods would overlap.

$$
\begin{aligned}
pop_{i,t} = {} & country_i + year_t + \sum_{j=1}^{10} \beta_{1,j} \cdot lag(j)_{i,t} + \sum_{k=1}^{15} \beta_{2,k} \cdot lead(k)_{i,t} \\
& + \gamma_1 \cdot post\_b\_crisis_{i,t} + \gamma_2 \cdot g\_gdp_{i,t-1} + \gamma_3 \cdot inf_{i,t-1} + \gamma_4 \cdot g\_xr_{i,t-1} \\
& + \gamma_5 \cdot r\_unemp_{i,t-1} + \gamma_6 \cdot invest_{i,t-1} + \gamma_7 \cdot reserves_{i,t-1} \\
& + \gamma_8 \cdot bop_{i,t-1} + \gamma_9 \cdot debt_{i,t-1} + \epsilon_{i,t}
\end{aligned} \tag{4}
$$

Figure 6 illustrates the results of the event study. A strong and rather persistent increase in populism after an IMF program is obvious. Populism seems to peak about three years after the IMF program, and begins to decline noticeably 6 to 10 years after the end of the IMF program. The pre IMF level of populism is then reached again 10 to 15 years after the end of the IMF program.[15]

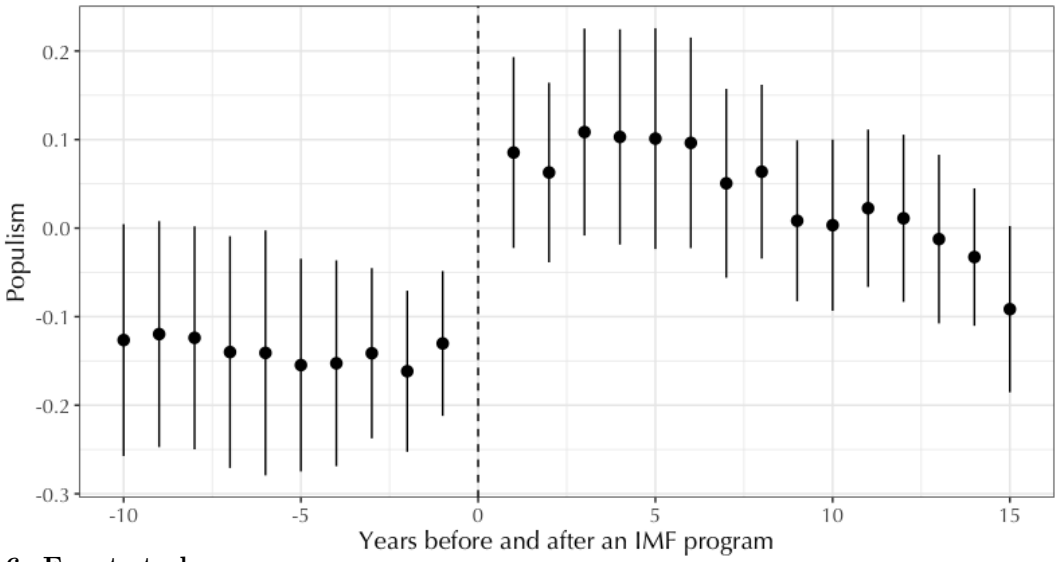

Figure 6: Event study
The event study covers the 10 years before and the 15 years after an IMF program. The dots mark the estimated OLS coefficients for the lags and leads. I control for country and year fixed effects, economic growth, inflation, unemployment, domestic investment, exchange rates, reserves, balance of payments, debt and banking crises. The vertical lines mark 95% confidence intervals based on robust standard errors clustered at the country level. All results of the event study regression are given in Table 7.

[14] The dummy $lag(j)$ takes the value of one if j years later an IMF program is signed and zero otherwise. The dummy $lead(k)$ takes the value of one if an IMF program ended k years before and zero otherwise.

[15] An OLS panel regression examining the persistence of the effect of IMF programs on populism by 5-year periods with similar results is presented in the appendix in Table 8.

4.2.4 Historical eras

As to provide evidence that this effect is stable over many decades, I divide the sample into historical eras by referring to different development stages of the IMF. The first era, from 1952 to 1971, covers the post-war period and the Bretton Woods system. With the collapse of the adjustable peg system in 1972, the IMF entered its second era characterised by far-reaching structural changes. I consider the years from 1990 to 2017 to be the most contemporary era. Table 9 shows that the positive effect of IMF programs on populism is relatively stable. Only during the period of structural change at the IMF is the effect of IMF programs on populism insignificant. In the period from 1952 to 1972 and especially since 1990, the effect of IMF programs on populism is highly significant.

4.2.5 Left vs. right wing populism

Funke, Schularick and Trebesch (2015) recognize that in particular right wing populists rise disproportionately in popularity after financial crises. It is conceivable that after IMF programs, voters could be similarly inclined towards a certain political extreme. Perhaps the social dislocation and growing inequality caused by the IMF's market liberal reforms are empowering left wing populists (Lang 2021), or the encroachment on national sovereignty by supranational organisations and foreign countries is leading to a strengthening of nationalist views. In order to examine whether the rise in populism is one-sided, I compare the effect of IMF programs on left wing populism (*lpop*) and on right wing populism (*rpop*) separately. My results in Table 10 suggest that IMF programs have roughly the same positive effect on left and right wing populism. This is consistent with the research of Gabriel, Klein and Pessoa (2023), who find no significant difference between the rise of right wing and left wing populism in Europe after austerity measures. At the global level, the situation seems to be similar in the aftermath of IMF programs.

4.2.6 Geographical regions

Since the country fixed effects show significant differences in the level of populism across countries, I wonder whether the same is true for the effect of IMF programs on populism. With the aim of finding an empirical answer, I test the robustness of the baseline model once more and consider interaction terms of geographical dummies with *pre_under* and *post_under*. The results in Table 11 suggest that the effect of IMF programs on populism is not geographically equally pronounced. While the effect is significant in Latin America and especially in Asia, the effect of IMF programs on populism seems to be less pronounced in Western countries or countries of the former socialist bloc.

4.3 Country heterogeneity

While the geographical robustness test demonstrates that populism increases in most countries after IMF programs, it also suggests that there is considerable variation in the strength of the effect of IMF programs on populism. This raises the question of what might be causing IMF programs to affect populism more in some geographical regions than in others.

The most obvious explanation for heterogeneity may be the extent of IMF conditions, but there are as well other approaches to explaining the country heterogeneity. A possible hypotheses could be that societies in former colonies react differently to imposed conditions by the IMF than societies that never experienced colonialism. This hypothesis borrows from the idea of Guriev and Papaioannou (2022) that economic crises can reawaken deep-rooted cultural conflicts. In the extreme, the IMF's imposition of reforms could be experienced as a form of colonialist-style domination. Another hypothesis is that the level of economic development influences the strength of the effect of IMF programs on populism. More developed economies have a stronger position in the IMF due to higher quotas and may receive preferential credit conditions. In general, loans tend to be larger and more frequent when a country has a larger quota, when it has more professional staff at the IMF, and when a country is more connected to the United States or major European countries (Barro and Lee 2005). In addition, the size of the welfare state prior to the IMF program could play an important role. It seems plausible that austerity measures lead to greater disruptions in less developed countries with weaker welfare systems than in more developed countries where diverse social safety nets remain in place even after welfare cuts.

4.3.1 IMF conditions

The IMF conditions themselves can be clearly identified as a mediator of the effect of IMF programs on populism when I add interaction terms for $5y\_amount$ and $5y\_undrawn$ with $post\_under_{i,t}$ to the baseline model. $5y\_amount$ and $5y\_undrawn$ are rolling five year averages of the total annual credit amount agreed in the IMF negotiations and the undrawn balance at the end of each year, counted in millions of IMF Special Drawing Rights. Table 14 demonstrates that a higher total amount agreed seems to strengthen the post IMF increase in populism significantly while a higher undrawn balance seems to weaken the post IMF increase in populism significantly. As the disbursement of the next tranche is conditional, the actual amount disbursed is a good proxy of IMF program participation and compliance with IMF conditionality. Consequently, it can be assumed that countries that obey to the strict conditions of IMF programs, experience more populism while countries that deviate from IMF conditions are able to limit the increase in populism.

4.3.2 Former colonies

To provide some empirical guidance on alternative hypotheses, I compare the effect of IMF programs on former colonies with that on non-former colonies by adding the dummy variable $colony_i$ and its interaction term with $pre\_under_{i,t}$ and $post\_under_{i,t}$ to my baseline model. When I control for former colonies, the general effect of IMF programs on populism is still present, further supporting its robustness. The results in Table 12 show higher overall levels of populism in former colonies, but no significant difference in the increase in populism after IMF programs between former and non-former colonies. It may still be the case that economic shocks activate pre-existing cultural divides, polarisation and identity politics, but this thesis cannot support these hypotheses with empirical research. What is striking, however, is that the level of populism is significantly lower in former colonies prior to IMF programs. A slightly negative pre-trend in former colonies prior to IMF programs is recognizable. This pre-trend disappears when the debt ratio is controlled for, which seems to have a negative effect on populism. This observation may indicate that former colonies try to counter populism by increasing debt in the run-up to IMF programs. I do not want to judge to what extent national debt could have politically stabilising effects. But the question seems justified, at least with regard to a possible trade-off between debt and populism.

4.3.3 Economic development

The hypothesis that the level of economic development plays a role in the strength of the impact of IMF programs seems to be confirmed by my empirical results. If I add an interaction term for the level of economic development with $pre\_under_{i,t}$ and $post\_under_{i,t}$ to the baseline model, the regression results (Table 13) show that populism increases particularly strongly in developing countries after IMF programs while developed countries appear rather resilient. To what extent the size of welfare systems might be a predictor of the strength of the rise of populism after an IMF program, I cannot say with the data at hand. Nonetheless, the results for the influence of the level of economic development suggest that this could be a promising avenue for further research.

5 Conclusion

While the economic consequences of IMF programs have been extensively studied, the political consequences are less well understood. Using a recompiled data set on populism and IMF programs for 60 economies since the start of the IMF's first programs, I provide new empirical evidence on how the assumption of governmental responsibility by populists spikes after IMF programs. After an IMF program the probability of the next government to be populist-led increases significantly by a factor greater than 2.4, by more than 240%.

As this thesis has shown, the positive effect of IMF programs on populism is rather stable over historical eras and persistent for about 6 to 15 years. At the country level, the effect sizes are heterogeneous. Western countries appear more resilient while Latin American and Asian countries are more prone to populism in the aftermath of IMF programs. I find that the amount of credit actually drawn is an important mediator of the impact of IMF programs on populism. A higher amount of undrawn credit significantly weakens the increase, whereas a higher total amount of agreed credit strengthens the post IMF program rise in populism. Empirically, this seems to be a signal that the austerity inducing IMF conditions are driving the increase in populism since the amount actually distributed depends mainly on the implementation of IMF policies, which are largely focused on austerity measures.

On the basis of these findings, I do not intend to comment on the net benefits of IMF programs or to make any policy recommendations. There are many obstacles to the successful pursuit of reforms that provide solutions to the country's underlying economic problems. If one intends to make a policy recommendation, a promising step would be to use this analysis of the effect of IMF programs on populism as a basis to examine next whether populism is inevitable after IMF programs, or whether there are conditions that might not lead to such a pronounced rise in populism.

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Appendix

Appendix A - Details on the data set

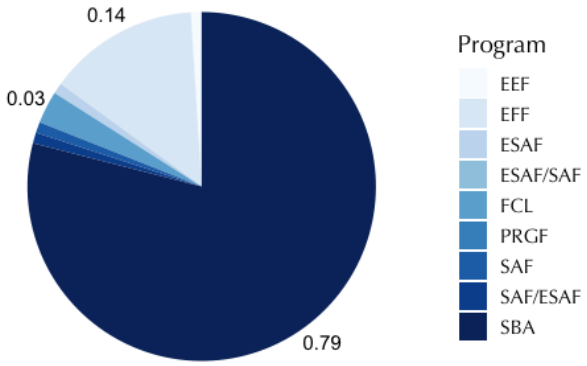

Figure 7: IMF program types
Shares of different IMF program types in the sample based on IMF data from Vreeland (2007) for a global sample of 60 countries for the years from 1952 to 2017.

Information about IMF arrangements are taken from IMF Annual Reports of the Executive Board, 1952-2017. Information about IMF program types are taken from IMF Glossary of Selected Financial Terms and IMF Factsheets of each individual program type.[16]

SBA: Stand-By Arrangement

The Stand-By Arrangement (SBA) is the most common type of credit arrangement designed to provide short-term financial assistance. Purchases under Stand-By Arrangements are repayable in 8 quarterly installments 3 - 5 years after disbursement.

EFF: Extended Fund Facility

The Extended Fund Facility (EFF) provides long-term assistance to support members' structural reforms to address balance of payments difficulties of a long-term character. Drawings under extended arrangements are repayable in 12 semiannual installments 4 - 10 years after disbursement.

PRGF: Poverty Reduction and Growth Facility

The Poverty Reduction Growth Trust (PRGT) Arrangements represent lending programs providing concessional financing support to low-income countries. The PRGT provides financial assistance under three facilities: the Extended Credit Facility (ECF) to address pro-

[16]The Glossary and the Factsheets can be downloaded from the following websites:
Glossary: www.imf.org/external/np/fin/tad/docs/glossary.pdf
Factsheets: www.imf.org/en/About/Factsheets/Sheets/2023/Stand-By-Arrangement-SBA

tracted balance of payments (BOP) needs, the Standby Credit Facility (SCF) to address short-term and precautionary BOP needs, and the Rapid Credit Facility (RCF) to provide rapid low access with limited conditionality to meet urgent BOP needs.

FCL: Flexible Credit Line

The Flexible Credit Line (FCL) has been established to allow members with very strong track records to access IMF resources based on pre-set qualification criteria to deal with all types of balance of payments problems. The FCL could be used both on a precautionary (crisis prevention) and non precautionary (crisis resolution) basis. Members may request either a one-year arrangement with no interim reviews, or a two-year arrangement with an interim review of qualification required after twelve months. Purchases under FCL arrangements are repayable in 8 quarterly installments 31/4 - 5 years after disbursement.

Combinations of SAF and ESAF: Please note that SAF was replaced by ESAF in 1986 and that ESAF in turn was substituted by PRGF in 1999.

EEF: This is no official code for any type of IMF program. I assume that Vreeland (2007) refers with EEF to a subsequently agreed extension of an EFF program.

Figure 8: Evolution of IMF program participation
Trends in the numbers of countries participating in an IMF program since the IMF launched its first programs in 1952 based on IMF data from Vreeland (2007) for a global sample of 60 countries.

Table 2: Definitions and sources of variables

Variable	Definition	Source
country	name of the country	(1)
year	time variable for the years 1952 to 2017	(1)
country_syear	start year of state	(2)
pop	1 if populist government, 0 if otherwise	(1)
lpop	1 if left-wing populist government, 0 if otherwise	(1)
rpop	1 if right-wing populist government, 0 if otherwise	(1)
under	1 if under an IMF program, 0 if otherwise	(2)
totalamountagreed	total amount agreed in an IMF arrangement, in thousands of SDRs	(2)
av5y_amount	average totalamountagreed of 5 previous years, in billions of SDRs	(5)
undrawnbalance	amount of credit available not yet drawn, in thousands of SDRs	(2)
av5y_undrawn	average undrawnbalance of 5 previous years, in billions of SDRs	(5)
type	type of IMF program	(2)
pre_under	1 if an IMF program follows in one of the five following years, 0 if there was a program in the 5 years before, 0 otherwise	(5)
post_under	1 if an IMF program ended in one of the five previous years, 0 if a program started in the 5 following years, 0 otherwise	(5)
g_gdp	growth rate of real GDP per capita	(6)
inf	CPI inflation rate	(6)
post_b_crisis	1 if a banking crisis occurred in one of the five previous years, 0 if otherwise	(7)
r_unemp	rate of unemployment	(6)
g_xr	growth rate of the exchange rate, national currency/USD	(6)
invest	real domestic investment / GDP	(6)
reserves	international reserves and liquidity, in billions of SDRs	(3)
debt	debt to GDP ratio [GGXWDG_GDP]	(4)
n_under	number of countries under an IMF program in each year	(5)
bop	balance of payments, in billions of USD [BPM6]	(3)
era1952_1971	1 if year $\in$ [1952, 1972], 0 if otherwise	
era1972_1989	1 if year $\in$ [1972, 1989], 0 if otherwise	
era1990_2017	1 if year $\in$ [1990, 2017], 0 if otherwise	
asian	1 if Asian country, 0 if otherwise	
sc_am	1 if South or Central American country, 0 if otherwise	
eastern	1 if Eastern country, 0 if otherwise	
western	1 if Western country, 0 if otherwise	
colony	1 if a former colony, 0 if otherwise	
developing	1 if developing country, 0 if otherwise	
transition	1 if country is in transition, 0 if otherwise	
developed	1 if developed country, 0 if otherwise	

(1) Populism data (Funke, Schularick and Trebesch 2021a)

(2) IMF data (Vreeland 2007)

(3) IMF reserves and bop data (International Monetary Fund 2022)

(4) IMF debt data International Monetary Fund 2016

(5) Created based on IMF data (Vreeland 2007)

(6) Created based on Penn World Tables (Feenstra, Inklaar and Timmer 2015)

(7) Created based on existing crisis dummies (World Bank (2022), Reinhart, Reinhart, Rogoff and Trebesch (2022), Metrick and Schmelzing (2021))

Table 3: Country classification

developed	transition	developing	colony	western	asian	sc_am	eastern
Australia	Bulgaria	Argentina	Argentina	Australia	China	Argentina	Bulgaria
Austria	Croatia	Bolivia	Bolivia	Austria	India	Bolivia	Croatia
Belgium	Cyprus	Brazil	Brazil	Belgium	Indonesia	Brazil	Czech Rep.
Canada	Czech Republic	Chile	Chile	Canada	Japan	Chile	Estonia
Denmark	Estonia	China		Denmark	Malaysia	Ecuador	Hungary
Finland	Hungary	Colombia	Colombia	Finland	Philippines	Mexico	Latvia
France	Latvia	Ecuador	Ecuador	France	South Korea	Paraguay	Lithuania
Germany	Lithuania	Egypt	Egypt	Germany	Taiwan	Peru	Poland
Greece	Malta	India	India	Greece	Thailand	Uruguay	Romania
Iceland	Poland	Indonesia	Indonesia	Iceland		Venezuela	Russia
Ireland	Romania	Israel		Ireland			Slovakia
Italy	Slovakia	Malaysia		Italy			Slovenia
Japan	Slovenia	Mexico	Mexico	Luxembourg			
Luxembourg	Russia	Paraguay	Paraguay	Malta			
Netherlands		Peru	Peru	Netherlands			
New Zealand		Philippines	Philippines	New Zealand			
Norway		South Africa	South Africa	Norway			
Portugal		South Korea		Portugal			
Spain		Taiwan		Spain			
Sweden		Thailand	Thailand	Sweden			
Switzerland		Turkey		Switzerland			
UK		Uruguay	Uruguay	UK			
USA		Venezuela	Venezuela	US			

Other: Cyprus, Egypt, Israel, South Africa and Turkey.

Appendix B - Details on the results

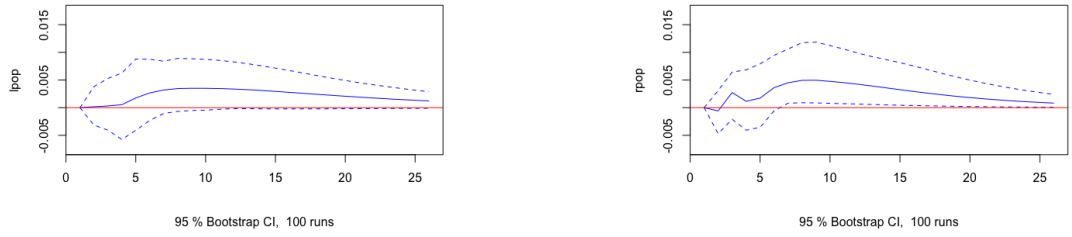

Figure 9: Response of left and right wing populism to an IMF impulse
Unconditional local projections of the path of populism after an IMF impulse, following the approach of Jordà (2005). The IMF impulse is the beginning of an IMF program. The blue line refers to the average path of populism and the dashed lines indicate the 95% confidence interval based on 100 estimations. The left plot depicts the response of left wing populism and the right plot depicts the response of right wing populism. The local projections are based on lags of 5 periods and provide an estimation for the trajectory over 25 years.

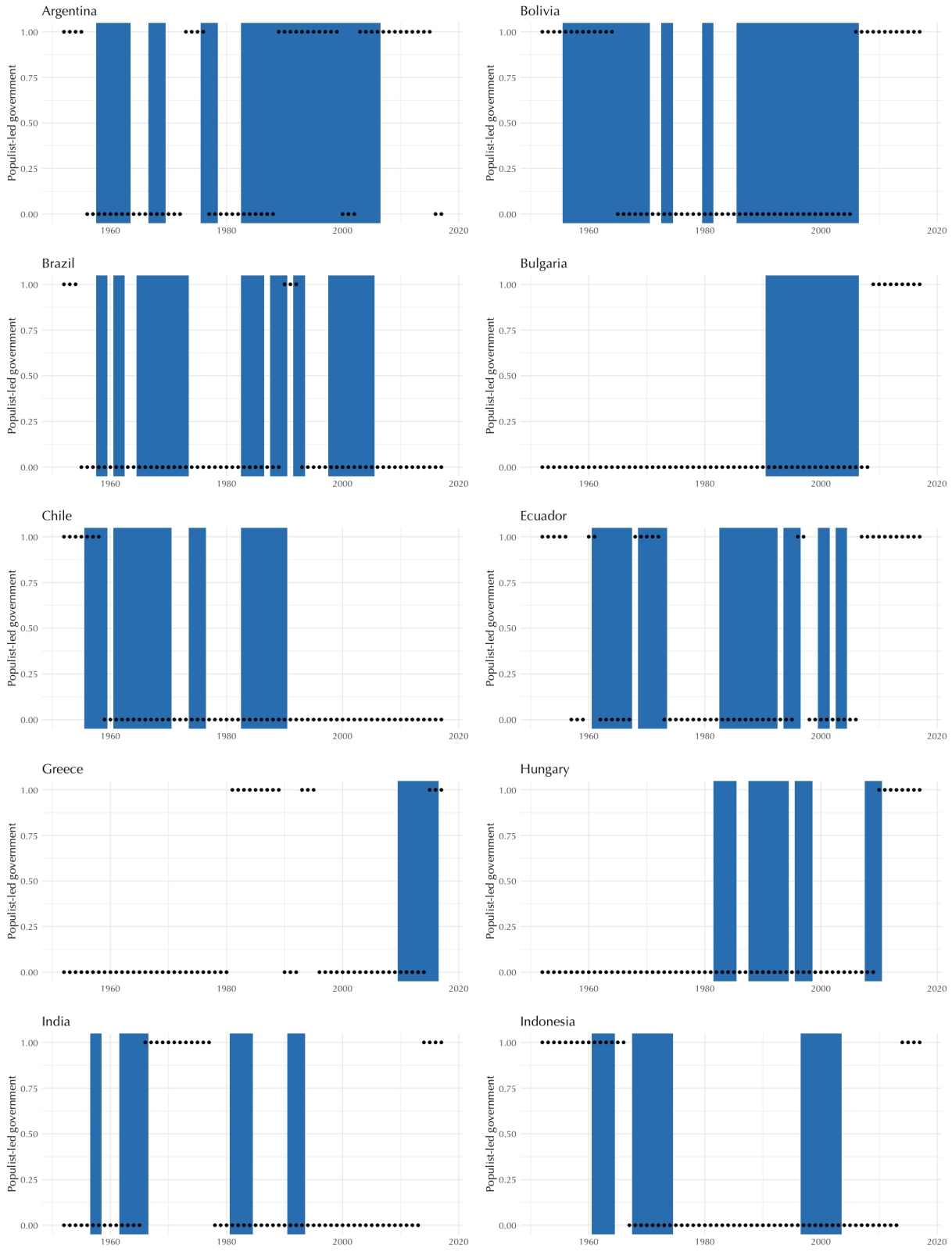

Figure 10: Change in populism I
In periods highlighted in blue, the country participated in an IMF program. The dots indicate whether the government was populist-led (1) or not (0).

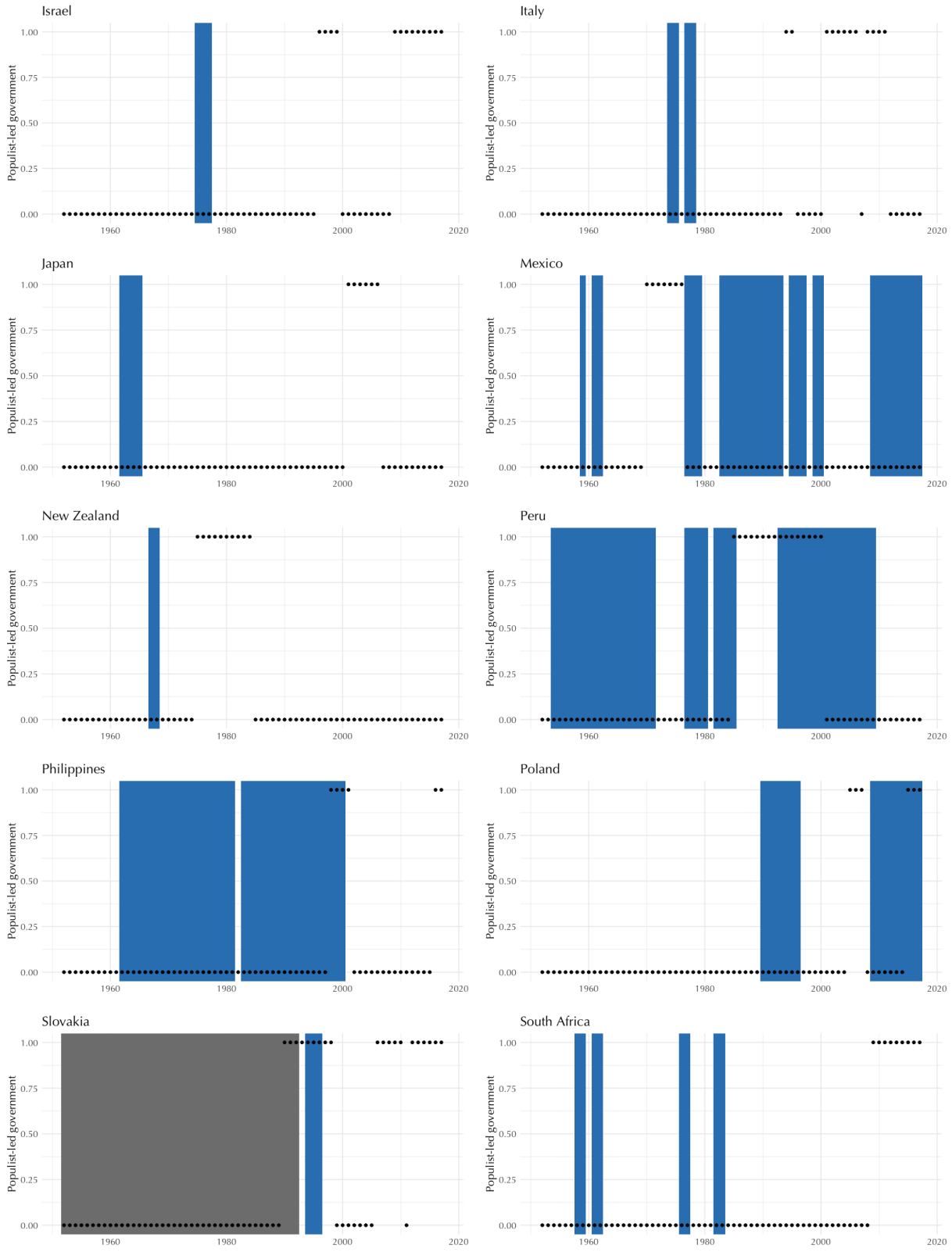

Figure 11: Change in populism II
In periods highlighted in blue, the country participated in an IMF program. The dots indicate whether the government was populist-led (1) or not (0). Slovakia was not officially founded until 1993 as indicated by the grey background.

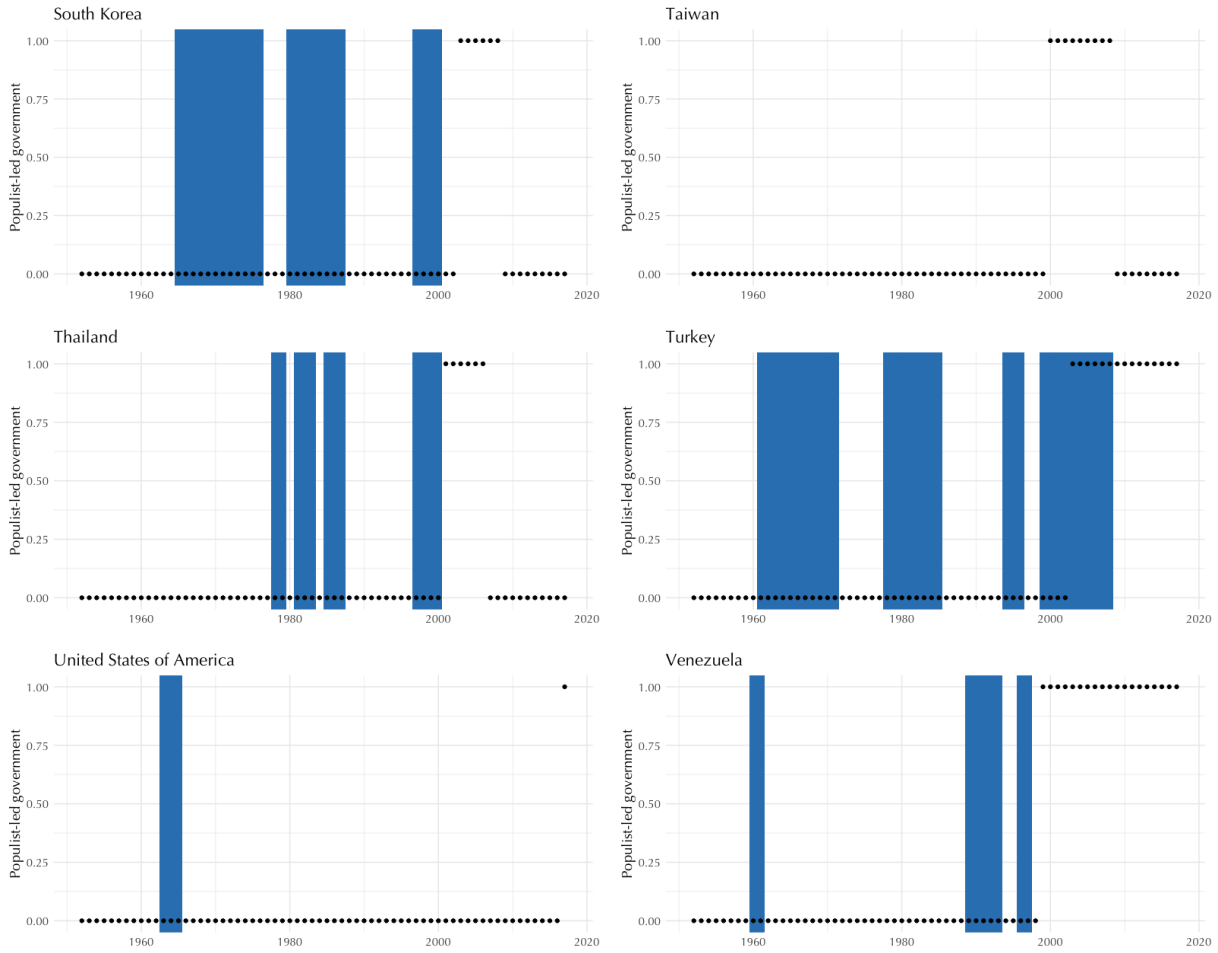

Figure 12: Change in populism III
In periods highlighted in blue, the country participated in an IMF program. The dots indicate whether the government was populist-led (1) or not (0).

Interpretation of logit coefficients

$$
\begin{aligned}
P(Y=1|X_1, X_2, ...) &= \frac{1}{1+e^{-(\beta_0+\beta_1 \cdot X_1+\beta_2 \cdot X_2+...)}} \\
logit(Y=1) &= \beta_0 + \beta_1 \cdot X_1 + \beta_2 \cdot X_2 + ... \\
log(\frac{p}{1-p}) &= \beta_0 + \beta_1 \cdot X_1 + \beta_2 \cdot X_2 + ...
\end{aligned}
$$

If $log(\frac{p}{1-p})$ increases by β_1 for an additional unit in X_1, then the odds ratio $\frac{p}{1-p}$ increases by $exp(\beta_1)$. For example: If $\beta_1 = 0.89$, then $exp(0.89) = 2.4$ and with an additional unit of X_1 the probability $P(Y = 1)$ increases by a factor of 2.4 or 240% (not percentage points) for all other variables $X_2, ...$ fixed.

Table 4: Pre and post IMF programs

	Dependent variable:
	pop
post_under	0.074***
	(0.021)
pre_under	0.023
	(0.019)
Observations	3,615
R^2	0.277
Adjusted R^2	0.264
Residual Std. Error	0.255 (df = 3553)
F Statistic	21.936*** (df = 62; 3553)

Note: OLS panel regression (1) with country fixed effects. Robust standard errors clustered at the country level, in parentheses. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 5: No IMF, no populism?

	Dependent variable:
	pop
post_under	0.072***
	(0.020)
pre_under	0.026
	(0.020)
post_b_crisis	−0.003
	(0.021)
lag(g_gdp, 1)	−0.132
	(0.134)
lag(inf, 1)	0.044
	(0.061)
lag(r_unemp, 1)	0.267
	(0.181)
lag(invest, 1)	0.010
	(0.109)
lag(g_xr, 1)	0.004
	(0.005)
lag(reserves, 1)	−0.0001**
	(0.00003)
Observations	2,676
R^2	0.335
Adjusted R^2	0.303
Residual Std. Error	0.279 (df = 2553)
F Statistic	10.471*** (df = 123 ; 2553)

Note: Baseline OLS panel regression with country and year fixed effects. To test my findings for robustness, I excluded countries without IMF participation and without any populist government: Austria, Canada, Denmark, Germany, Luxembourg, Malaysia, Malta, Norway, Slovenia, Sweden and Switzerland. Robust standard errors clustered at the country level. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 6: Bop and debt

	logit(pop)	logit(pop)	pop	pop	pop
post_under	0.971**	1.100**	0.076***	0.080***	0.076***
	(0.479)	(0.475)	(0.025)	(0.022)	(0.026)
pre_under	0.021	0.860	−0.021	0.009	−0.051
	(1.562)	(0.529)	(0.030)	(0.021)	(0.033)
post_b_crisis	0.191	0.288	0.001	0.003	0.021
	(0.417)	(0.464)	(0.018)	(0.018)	(0.018)
lag(g_r_rgdpo_pc, 1)	0.916	−1.295	0.021	−0.022	−0.027
	(2.384)	(2.304)	(0.126)	(0.120)	(0.125)
lag(g_r_pl_c, 1)	0.718	−0.233	0.076	0.027	0.022
	(0.892)	(0.732)	(0.067)	(0.062)	(0.070)
lag(r_unemp, 1)	10.138	12.301	0.254	0.452***	0.537**
	(16.383)	(10.649)	(0.211)	(0.171)	(0.243)
lag(invest, 1)	5.551	−1.599	0.464***	0.035	0.173
	(5.595)	(4.391)	(0.128)	(0.095)	(0.136)
lag(g_r_xr, 1)	0.031	0.046**	0.004	0.004	0.005
	(0.027)	(0.020)	(0.004)	(0.004)	(0.003)
lag(reserves, 1)	−0.006**	0.002	−0.000***	−0.000	−0.000***
	(0.003)	(0.003)	(0.000)	(0.000)	(0.000)
lag(bop, 1)	0.000		0.000		0.000***
	(0.006)		(0.000)		(0.000)
lag(debt, 1)		−0.018		−0.001***	−0.002***
		(0.014)		(0.000)	(0.000)
Num. obs.	809	1060	2239	2838	2043
Num. FE : country	22	23	22	23	22
Num. FE : year	40	56	40	56	40
Deviance	676.877	869.731			
Log Likelihood	−338.438	−434.865			
Pseudo R^2	0.149	0.085			
R^2			0.402	0.347	0.431
Adj. R^2			0.364	0.315	0.392

Note: Baseline logit and OLS panel regressions with country and year fixed effects. To test my findings for robustness, I add $bop_{i,t-1}$ and $debt_{i,t-1}$ as control factors. The standard errors of the logit regressions are two-way clustered at the country and year level. The standard errors of the OLS regressions are robust and clustered at the country level. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 7: Event study

	pop	
	normal s.e.	robust s.e.
lag10	−0.123 (0.090)	−0.123 (0.067)*
lag9	−0.117 (0.090)	−0.117 (0.065)*
lag8	−0.121 (0.090)	−0.121 (0.064)*
lag7	−0.140 (0.090)	−0.140 (0.066)**
lag6	−0.142 (0.090)	−0.142 (0.070)**
lag5	−0.156 (0.087)*	−0.156 (0.061)**
lag4	−0.154 (0.083)*	−0.154 (0.059)***
lag3	−0.142 (0.073)*	−0.142 (0.049)***
lag2	−0.160 (0.070)**	−0.160 (0.046)***
lag1	−0.128 (0.066)*	−0.128 (0.042)***
lead1	0.083 (0.042)*	0.083 (0.055)
lead2	0.058 (0.043)	0.058 (0.052)
lead3	0.104 (0.043)**	0.104 (0.059)*
lead4	0.101 (0.044)**	0.101 (0.062)
lead5	0.099 (0.045)**	0.099 (0.063)
lead6	0.096 (0.044)**	0.096 (0.061)
lead7	0.052 (0.044)	0.052 (0.055)
lead8	0.066 (0.044)	0.066 (0.050)
lead9	0.009 (0.047)	0.009 (0.047)
lead10	0.003 (0.047)	0.003 (0.049)
lead11	0.021 (0.048)	0.021 (0.045)
lead12	0.011 (0.049)	0.011 (0.048)
lead13	−0.012 (0.052)	−0.012 (0.048)
lead14	−0.033 (0.054)	−0.033 (0.040)
lead15	−0.090 (0.055)*	−0.090 (0.048)*
post_b_crisis	0.021 (0.017)	0.021 (0.018)
lag(g_r_rgdpo_pc, 1)	−0.064 (0.114)	−0.064 (0.123)
lag(g_r_pl_c, 1)	0.016 (0.059)	0.016 (0.069)
lag(r_unemp, 1)	0.500 (0.218)**	0.500 (0.238)**
lag(invest, 1)	0.213 (0.136)	0.213 (0.135)
lag(g_r_xr, 1)	0.005 (0.002)***	0.005 (0.004)
lag(reserves, 1)	−0.000 (0.000)	−0.000 (0.000)***
lag(bop, 1)	0.000 (0.000)	0.000 (0.000)
lag(debt, 1)	−0.002 (0.000)***	−0.002 (0.000)***
R^2	0.441	0.441
Adj. R^2	0.396	0.396
Num. obs.	2063	2063

Note: OLS panel regressions with country and year fixed effects. The standard errors on the left are normal standard errors. The standard erros on the right are robust and clustered at the country level. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 8: Persistence

	logit(pop)	pop
post_under5y	1.136**	0.093***
	(0.471)	(0.020)
pre_under5y	0.700	0.036*
	(0.444)	(0.020)
post_10y	0.977*	0.099***
	(0.561)	(0.023)
post_15y	0.413	0.052**
	(0.779)	(0.022)
post_b_crisis	0.129	−0.007
	(0.476)	(0.018)
lag(g_gdp, 1)	−2.303	−0.140
	(2.036)	(0.117)
lag(inf, 1)	0.006	0.046
	(0.640)	(0.059)
lag(r_unemp, 1)	8.008	0.290*
	(6.012)	(0.154)
lag(invest, 1)	−1.979	−0.007
	(3.817)	(0.091)
lag(g_xr, 1)	0.033	0.004
	(0.039)	(0.005)
lag(reserves, 1)	−0.001	−0.000
	(0.002)	(0.000)
Num. obs.	1477	3260
Num. groups: country	25	60
Num. groups: year	66	66
Deviance	1139.234	
Log Likelihood	−569.617	
Pseudo R^2	0.105	
R^2		0.333
Adj. R^2		0.304

Note: Logit and OLS panel regression with country and year fixed effects. The standard errors of the logit regression are two-way clustered at the country and year level. The standard errors of the OLS regression are robust and clustered at the country level. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 9: Historical eras

	Dependent variable:
	pop
post_b_crisis	−0.014
	(0.018)
lag(g_rgdp, 1)	−0.120
	(0.118)
lag(inf, 1)	0.053
	(0.059)
lag(r_unemp, 1)	0.247
	(0.157)
lag(invest, 1)	0.035
	(0.091)
lag(g_xr, 1)	0.004
	(0.005)
lag(reserves, 1)	−0.00004*
	(0.00002)
pre_under:era1952_1971	0.030
	(0.027)
pre_under:era1972_1989	0.062
	(0.045)
pre_under:era1990_2017	−0.036
	(0.033)
era1952_1971:post_under	0.065**
	(0.032)
era1972_1989:post_under	−0.019
	(0.016)
era1990_2017:post_under	0.115***
	(0.033)
Observations	3,260
R^2	0.329
Adjusted R^2	0.300
Residual Std. Error	0.254 (df = 3122)
F Statistic	11.106*** (df = 138; 3122)

Note: Baseline OLS panel regression with country and year fixed effects. The standard errors are robust and clustered at the country level. To test for robustness, I differentiate between different eras of the sample. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 10: Left vs. right wing populism

	Dependent variable:	
	lpop	rpop
post_under	0.034**	0.038**
	(0.015)	(0.015)
pre_under	0.026	−0.003
	(0.017)	(0.010)
post_b_crisis	−0.006	−0.004
	(0.013)	(0.014)
lag(g_gdp, 1)	−0.156	0.052
	(0.103)	(0.069)
lag(inf, 1)	0.070	−0.020
	(0.053)	(0.036)
lag(r_unemp, 1)	−0.194	0.433***
	(0.130)	(0.105)
lag(invest, 1)	−0.197***	0.243***
	(0.076)	(0.056)
lag(g_xr, 1)	−0.002	0.006
	(0.001)	(0.004)
lag(reserves, 1)	−0.0001***	0.00002
	(0.00002)	(0.00002)
Observations	3,260	3,260
R^2	0.282	0.223
Adjusted R^2	0.251	0.190
Residual Std. Error (df = 3126)	0.191	0.187
F Statistic (df = 134; 3126)	9.167***	6.706***

Note: Baseline OLS panel regressions with country and year fixed effects. To test for robustness, I differentiate between left wing (*lpop*) and right wing populism (*rpop*). The standard errors are robust and clustered at the country level. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 11: Geographical regions

	Dependent variable:
	pop
post_b_crisis	−0.002
	(0.018)
lag(g_gdp, 1)	0.002
	(0.122)
lag(inf, 1)	0.043
	(0.063)
lag(r_unemp, 1)	0.422**
	(0.165)
lag(invest, 1)	0.015
	(0.096)
lag(g_xr, 1)	0.004
	(0.004)
lag(reserves, 1)	−0.00000
	(0.00003)
lag(debt, 1)	−0.001***
	(0.0002)
pre_under:western	−0.030*
	(0.016)
pre_under:asian	−0.009
	(0.053)
pre_under:sc_am	0.096
	(0.073)
pre_under:eastern	0.333*
	(0.170)
pre_under:other	−0.062***
	(0.024)
western:post_under	−0.011
	(0.015)
asian:post_under	0.233***
	(0.074)
sc_am:post_under	0.091*
	(0.050)
eastern:post_under	0.076
	(0.048)
other:post_under	0.071
	(0.060)
Observations	2,838
R^2	0.356
Adjusted R^2	0.323
Residual Std. Error	0.245 (df = 2698)
F Statistic	10.672*** (df = 140; 2698)

Note: OLS panel regressions with country and year fixed effects. To test for robustness, I differentiate between different geographical regions. The standard errors are robust and clustered at the country level. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 12: Former colonies

	Dependent variable:	
	pop	
	(1) w/o bop and debt	(2) with bop and debt
post_under	0.053**	0.069**
	(0.022)	(0.031)
pre_under	−0.025	−0.058
	(0.016)	(0.045)
post_b_crisis	−0.011	0.020
	(0.018)	(0.018)
colony	0.432***	0.454***
	(0.062)	(0.081)
lag(g_gdp, 1)	−0.097	−0.026
	(0.119)	(0.125)
lag(inf, 1)	0.051	0.022
	(0.059)	(0.071)
lag(r_unemp, 1)	0.250***	0.545**
	(0.156)	(0.242)
lag(invest, 1)	0.045***	0.175
	(0.091)	(0.134)
lag(g_xr, 1)	0.004***	0.005
	(0.005)	(0.004)
lag(reserves, 1)	−0.0001	−0.0001***
	(0.00002)	(0.00003)
lag(debt, 1)		−0.002***
		(0.0003)
lag(bop, 1)		0.0001**
		(0.0001)
pre_under:colony	0.102**	0.014
	(0.039)	(0.065)
post_under:colony	0.045	0.017
	(0.043)	(0.054)
Observations	3,260	2,043
R^2	0.328	0.431
Adjusted R^2	0.299	0.391
Residual Std. Error	0.254 (df = 3124)	0.250 (df = 1908)
F Statistic	11.216*** (df = 136; 3124)	10.720*** (df = 135; 1908)

Note: OLS panel regressions with country and year fixed effects. I differentiate between former colonies (*colony* = 1) and non-former colonies. The standard errors are robust and clustered at the country level. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 13: Economic development

	Dependent variable:
	pop
post_b_crisis	0.002
	(0.018)
lag(g_gdp, 1)	−0.015
	(0.121)
lag(inf, 1)	0.034
	(0.063)
lag(r_unemp, 1)	0.464***
	(0.171)
lag(invest, 1)	0.027
	(0.096)
lag(g_xr, 1)	0.004
	(0.004)
lag(reserves, 1)	−0.00002
	(0.00003)
lag(debt, 1)	−0.001***
	(0.0002)
pre_under:developing	0.025
	(0.039)
pre_under:transition	0.134
	(0.082)
pre_under:developed	−0.033**
	(0.015)
developing:post_under	0.147***
	(0.038)
transition:post_under	0.070
	(0.044)
developed:post_under	−0.018
	(0.014)
Observations	2,838
R^2	0.352
Adjusted R^2	0.320
Residual Std. Error	0.245 (df = 2702)
F Statistic	10.810*** (df = 136; 2702)

Note: OLS panel regression with country and year fixed effects. I differentiate between different levels of economic development. The standard errors are robust and clustered at the country level. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table 14: IMF conditions

	logit(pop)	pop
post_under	0.915**	0.066***
	(0.450)	(0.020)
pre_under	0.604	0.023
	(0.452)	(0.020)
post_b_crisis	0.109	−0.012
	(0.464)	(0.018)
lag(g_gdp, 1)	−1.717	−0.094
	(2.055)	(0.117)
lag(inf, 1)	−0.021	0.053
	(0.612)	(0.059)
lag(r_unemp, 1)	6.497	0.242
	(6.265)	(0.156)
lag(invest, 1)	−1.775	0.046
	(3.787)	(0.091)
lag(g_xr, 1)	0.031	0.004
	(0.038)	(0.005)
lag(reserves, 1)	−0.002	−0.000**
	(0.002)	(0.000)
post_under:av5y_amount	0.419***	0.073**
	(0.159)	(0.037)
post_under:av5y_undrawn	−1.132***	−0.151*
	(0.437)	(0.078)
Num. obs.	1477	3260
Num. groups: country	25	60
Num. groups: year	66	66
Deviance	1145.442	
Log Likelihood	−572.721	
Pseudo R^2	0.101	
R^2		0.330
Adj. R^2		0.301

Note: Baseline logit and OLS panel regression with country and year fixed effects. I differentiate between different IMF programs regarding the actually distributed amount of credit. The standard errors of the logit regression are two-way clustered at the country and year level. The standard errors of the OLS regression are robust and clustered at the country level. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Appendix C - Written assurance

"I hereby affirm that I have written the above Bachelor's thesis independently and have not used any sources or aids other than those indicated, that the thesis presented has not yet been submitted to any other university for examination and that it has not already been published, either in whole or in part. I have indicated verbatim quotations and passages taken from other works in each individual case."

Bonn, 28. October 2023 Carlo Knapp