

GLOBAL ECONOMIC GOVERNANCE INITIATIVE



Dr. Rebecca Ray is a Senior Academic Researcher at GEGI. She holds a PhD in Economics from the University of Massachusetts-Amherst and an MA in International Development from the Elliott School of International Affairs at George Washington University.



Dr. Kevin P. Gallagher is a professor of global development policy at Boston University's Frederick S. Pardee School of Global Studies, where he directs the Global Development Policy Center.

IMF Austerity Since the Global Financial Crisis: New Data, Same Trend, and Similar Determinants

REBECCA RAY, KEVIN P. GALLAGHER, AND WILLIAM KRING¹

ABSTRACT

In the wake of the global financial crisis of 2008-9, the research department and flagship reports of the International Monetary Fund (IMF) suggested that tight fiscal consolidation was inappropriate for developing nations undergoing economic stress. In this paper, we evaluate the extent to which the IMF began to shift away from conditioning fiscal consolidation in its programs. To do this we do three things. First, we create a new dataset that measures the level of fiscal consolidation required in each IMF program from 2008-2018, which we refer to as the IMF Fiscal Adjustment Indicator (IMF FAI). Second, we analyze the extent to which IMF austerity lessened in the wake of the financial crisis. Third, we estimate the economic and political determinants that help explain the difference in levels of IMF austerity across IMF programs during the same period. We find that IMF austerity did not significantly change in the wake of the financial crisis. Those countries that were granted relatively more relaxed fiscal conditionality were found to be countries with larger voting rights in the IMF, with more overseas development assistance from non-traditional sources, and with strong export and United Nations voting alignments with Western Europe. Higher levels of austerity are associated with inflation and higher levels of foreign direct investment from Western Europe.

Keywords: Austerity, Fiscal policy, International Monetary Fund

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Dr. William N. Kring is the Assistant Director of the Global Development Policy Center, a university-wide center in partnership with the Frederick S. Pardee School for Global Studies. He previously was the Assistant Director and Research Fellow at the Global Economic Governance Initiative (GEGI).

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1. Introduction

Nearly eight years ago, the IMF's Chief Economist issued a major 'mea culpa' on the Fund's failure to account for the impacts of austerity on economic growth. In what was regarded as a seminal piece that could mark a shift in the IMF's approach to fiscal consolidation, Olivier Blanchard and Daniel Leigh found that "forecasters significantly underestimate the increase in unemployment and the decline in domestic demand associated with fiscal consolidation." (Blanchard and Leigh 2013) The fact that these research findings came from top economist led some to assert that "it is bound to change how the agency generates forecasts." (Schneider 2013)

To its credit, the IMF has undergone a significant internal reform in how conditionality is structured during the course of the last decade. Internal reviews and guidelines of conditionality over the last decade show a concerted trend toward fewer conditions (more parsimonious conditionality, in IMF parlance) that are more focused on headline fiscal adjustment and less focused on particular budgetary changes (see for example IMF 2011; IMF 2014b; Steinberg et al. 2018). However, it remains an open question for scholars whether the IMF has followed through on its commitments to alter the overall level of austerity required by its arrangements.

At least since the debt crises of the 1980s and 1990s and through the East Asian and Argentine financial crises at the turn of the century, typical emergency balance of payments and liquidity programs from the International Monetary Fund (IMF) were largely conditioned on so-called austerity measures such as fiscal consolidation, exchange rate devaluation, capital account opening, and contractionary monetary policy (Stiglitz 2002; Copelovitch 2010; Clift 2018). Many scholars have noted how the 2008 global financial crisis appeared to loosen those prescriptions in favor of more socially minded and counter-cyclical approaches (see for example Ban and Gallagher 2015; Gallagher 2015; Grabel 2018). An analysis of the IMF's World Economic Outlook reports from 2008 to 2014 found that the IMF became more open to fiscal stimulus packages as a response to financial and economic stress and changed its doctrine on the timing and content of fiscal consolidation (Ban 2015). That said, the IMF has recently found that in LICs, "50 percent of LIC programs involved fiscal consolidation" (IMF 2017).

However, anecdotal evidence suggests that the IMF still has a long way to go. Some countries that have recently engaged in IMF programs had their citizens take to the streets in opposition to IMF-imposed austerity. As investors lost faith in then-President Mauricio Macri's economic reforms, as evidenced by the run on the Argentine peso in the Spring and Summer of 2018, Macri turned to the IMF for a \$57 billion loan. Yet when Argentina sought the largest loan in IMF history, thousands of protesters took to the streets and blocked roadways in opposition to the IMF loan because of austerity measures. (Argentina agrees to \$50bn loan from IMF amid national protests) Similar scenes of protest against IMF imposed austerity unfolded in Ecuador and Egypt in 2019. Even in Lebanon, which did not have an IMF program, protesters rallied against proposed austerity measures in its 2018 Article IV consultation. (Bretton Woods Project 2019) But if the IMF had actually changed, why has it faced so much criticism for its policies?

This paper seeks to systemically assess IMF fiscal consolidation in the period since the Great Financial Crisis. While existing literature has assessed IMF conditionality through counting the conditions required by an IMF agreement, this article introduces a new dataset of IMF fiscal conditionality that measures the intensity of fiscal adjustment required by IMF loans from 2008 to 2018. Our novel approach creates an IMF Fiscal Adjustment Indicator (FAI) that measures the specific amount of fiscal consolidation or expansion required by borrowing countries as part of IMF programs². Additionally, we perform an econometric analysis to examine what economic and political factors determine the variance in the level of fiscal conditionality applied to recipient countries from 2008 to 2018. In doing so, we hope to carry the overall line of inquiry of the work described above into a new era where IMF conditions are fewer in number but may or may not have changed in the overall extent of fiscal adjustment that they require.

Following this short introduction, this paper is organized into five total parts. Part 2 presents a summary of the literature on the determinants of IMF programs. In part 3, we present the methodology of how we created a new measure of IMF fiscal conditionality and used that measure as an independent variable in a model derived from the existing literature. Part 4 presents and interprets our results. Part 5 summarizes our approach and results and draws out lessons for future research and policy.

2. Literature Review

The Articles of Agreement at the IMF state that the institution must follow a 'doctrine of economic neutrality' (Swedberg 1986) whereby decisions are made on economic grounds alone. Yet despite the lack of formal institutional change, the IMF became, the IMF began to focus on using "condition on its loans to promote more significant, long-lasting reforms" (Kentikelenis and Babb 2019). Indeed, economic variables such as a country's GDP per capita, GDP per capita growth, short term debt, and external debt service have all been found to consistently be important determinants of a country's involvement with the IMF across the econometrics literature on the subject (Dreher 2006). However, a vast quantitative and qualitative literature has also come to the conclusion that economic conditions in borrower countries alone are not enough to explain the determinants of the level and composition of IMF programs (Thacker 1999; Barro and Lee 2005; Copelovich 2010). Rather, IMF programs are equally a function of political factors such as the geopolitical and economic interests of those IMF member states with the largest amount of voting power at the Fund. An exhaustive literature review on IMF literature finds "substantial evidence of the influence of major IMF shareholders, of the Fund's own organizational imperative, and of domestic politics within borrowing countries" (Steinwand and Stone 2008).

This paper introduces a new variable of IMF fiscal conditionality to this literature and examines the economic and political determinants that drive the level of fiscal conditionality that the IMF requires borrower states to comply with. This section of the paper provides a brief summary of the literature to date that we have drawn from in order to construct our variable and econometric modeling approach. First, we discuss the literature on the determinants of IMF lending in general as these determinants could influence the nature of fiscal consolidation measures incorporated in IMF agreements. We then turn to the literature on the determinants of IMF conditionality programs.

An illustrative list of the major papers on the determinants of IMF programs in general is exhibited in Table 1. By and large, scholars in this literature tend to measure a country's probability of receiving an IMF loan through the following dependent variable approaches: IMF loan approval (dummy

² Throughout this paper we use 'fiscal consolidation', 'fiscal conditionality', and 'austerity' somewhat interchangeably in order to avoid redundancy.

variable), and the size of an IMF loan relative to a country's GDP or IMF quota (Barro and Lee 2005; Bird and Rowlands 2017; Copelovich 2010; Dreher 2006; Lang 2016). Scholars have taken a wide array of approaches to build models with independent variables that represent a country's political or economic relevance in relation to the IMF's largest shareholders. A common variable cited in the literature is a given country's voting affinity with the US or the G7 (Barro and Lee 2005; Copelovich 2010; Dreher 2006). Likewise, these studies include other important variables such as GDP per capita, budget balance, GDP growth and, debt service, among other variables. (Steinwand and Stone 2008)

The findings exhibited in Table 2 support the idea that IMF lending is affected by other factors in addition to economic conditions in a borrower country. Firstly, in terms of political relevance, the significant and positive relationship between UN voting affinity and IMF loans found by several studies suggests that "countries of greater geopolitical or foreign policy importance to the G5" are more likely to receive larger loans (Copelovich 2010). Furthermore, greater economic proximity to the US and European countries (in terms of trade flows) has also been associated with larger loans as is a country's quota size and the number of borrower-country nationals in the IMF staff (Barro and Lee 2005). Chwieroth (2013) finds that through its role in exercising informal governance over the institution, the IMF's staff has a significant role in determining loan size. His empirical work shows that larger loans are extended to countries who have officials who are "sympathetic interlocutors" -i.e. they share the Anglo-American professional training of IMF staff.

Copelovich (2010) finds that "preference heterogeneity" in terms of financial and political exposure among the G5 governments is a key determinant of loan size. For example, when the bank exposure of the G5 countries is heterogeneous (i.e. there is a divergence of financial interests among the G5), borrower countries receive smaller loans.

Table 1. Determinants of IMF Lending Programs

Author	Year	Countries	Period	Dependent Variable	Independent Variable	Finding: Effect
Barro and Lee	2005	130	1975-2000	IMF participation and loan size	IMF Quota	Positive effect ³
					IMF Staff Nationality	
					Econ. proximity to US/WE	
Dreher	2006	98	1970-2000	IMF programs	Pol. proximity to US/WE	Negative effect
					Short term debt	Negative effect
					Total debt service	Positive effect
				IMF loans	Democracy	Negative effect
					LIBOR	Positive effect
					Political instability	Negative effect
					Gov't. special interest	Negative effect
Copelovich	2010	47	1984-2003	Loan size/quota	Rule of Law	Positive effect
					G5 Preference heterogeneity (economic)	Negative effect
Chwieroth	2013	44 dev'ing co's.	1969-1998	Loan size/quota	G5 Preference heterogeneity (political)	Positive effect
					Professional ties between IMF staff and borrower country officials	Positive effect
Lang	2016	155	1973-2013	Probability of IMF program	IMF liquidity ratio	Positive effect
					IMF recidivism	Positive effect

³ "Positive/Negative effect" means a positive/negative statistical relationship between the variables, not a normative judgement about the variable's effect.

An illustrative list of major papers in the literature on the determinants of IMF conditionality is exhibited in Table 2. In this part of the literature, the hypotheses are similar to that of the case of variation in IMF lending: countries with greater links with the major IMF stakeholders are expected to receive more favorable treatment with relation to the level conditionality imposed within an IMF program.

Given the available data to date, scholars in this literature usually choose the number of conditions as their dependent variable and study how this is affected by a similar range of variables as those tested for IMF lending in general. As shown in Table 2, a number of political economy variables have been found to explain the level of IMF conditionality. Common findings are G5 bank and trade exposure, US military aid, GDP per capita, colonial ties with G5 countries, relevance in the Cold War system and temporary membership of the UNSC are all negatively correlated with the IMF conditionality imposed on a borrower country (Breen 2012; Copelovich 2010; Dreher, Sturm and Vreeland 2013; Kang 2007). Furthermore, borrower-country UNSC voting affinity with the West is also a determinant of conditionality. Countries who cast a higher proportion of their votes in line with the US receive less conditions in their IMF agreements (Dreher and Jensen 2007).

Dreher, Sturm, and Vreeland (2013) are the first to quantify the stringency of the conditionality imposed on a given country. To do so they incorporate the scope of conditionality by including the number of policy areas covered as well as the type of condition (prior action, structural benchmark or performance criteria) as dependent variables in addition to the number of conditions. Although their findings on the number of IMF conditions are consistent with the other studies, they find inconsistent relationships between political importance and scope of conditionality across the different specifications regressed. For example, Dreher, Sturm, and Vreeland find that UNSC membership does not significantly affect the number prior actions or structural benchmarks. However, they do find that that the scope of performance criteria is narrower for UNSC members and that they receive reduced conditionality in the policy areas of debt repayment, the balance of payments, credit to the government, and domestic pricing. These findings largely support the hypothesis that countries that are economically and politically connected to the IMF's largest shareholders receive favorable treatment in the form of more lenient conditionality.

Of course, this literature also confirms that economic factors are determinants of the level of conditionality as well, the size of the current account balance, monetary expansion, the LIBOR rate, the number of World Bank adjustment loans, lagged legislative election and size of the IMF loan relative to the borrower-country's IMF quota (Breen 2012; Dreher and Vaubel 2004; Dreher, Sturm, and Vreeland 2013; Kang 2007). Notably, Kang (2007), finds that external debt is a significant predictor of IMF conditionality but the direction of this effect changes depending on the size of the country's debt: "As a borrowing country accumulates more debt, the IMF increases the number of conditions. However, if the country's debt grows large enough, this trend is reversed, reducing the number of conditions" (Kang 2007). Furthermore, professional ties between IMF staff and borrower-country officials are also important determinants of conditionality. Countries with chiefs of government, finance ministers, or heads of the central bank who have weaker ties to IMF staff, in terms of shared beliefs receive more conditionality (Chwieroth 2013). Interestingly, countries with officials who have stronger ties are not found to receive less binding conditions, suggesting that other concerns such as "time inconsistency and moral hazard" come into play which preclude leniency in conditionality even upon countries with officials who are ideologically aligned with IMF staff.

Table 2. Determinants of IMF Conditionality

Author	Year	Countries	Period	Dependent Variable	Independent Variable	Finding
Dreher and Vaubel	2004	38	1997-2003	Number of conditions	International reserves	Negative effect
					LIBOR	Positive effect
					Monetary expansion	Positive effect
					Number of World Bank adjustment loans	Positive effect
Kang	2007	Not detailed	1983-1997	Number of performance criteria	Loan/Quota Ratio	Positive effect
					Colonial Ties with G5 Latin America	Negative effect
					External debt	Positive effect for low debt levels. Negative effect for higher debt levels.
					Cold War	Negative effect
					GDP per capita	Negative effect
					UNGA Voting Affinity with US	Negative effect
Dreher and Jensen	2007	38	1997-2003	Number of conditions	UNGA Voting Affinity with US	Negative effect
Stone	2008	96	1990-2002	Scope of conditions	U.S Foreign Aid	Negative effect
Copelovich	2010	47	1984-2003	Number of conditions	G5 Preference heterogeneity (economic)	No effect
					G5 Preference heterogeneity (political)	No effect
Breen	2012	87	1997-2006	Number of binding conditions	G7 Bank Exposure	Negative effect
					G7 Trade Exposure	Negative effect
Dreher, Sturm, and Vreeland	2013	101	1992-2008	Number prior actions Number of performance criteria	UNSC Temporary membership	Negative effect
Chwieroth	2015	22	1983-1998	Number of binding conditions	Professional ties between IMF staff and borrower country officials	Negative for weak professional ties. No effect for strong ties.

As scholars have developed increasingly sophisticated approaches for analyzing IMF conditionality, they have created new datasets to aid in this analysis. For example, the scholars listed in Table 2 introduce measures such as the scope and breadth of conditions that appear in IMF agreements. Gupta, Schena, and Yousefi (2020) create another important dataset, focusing exclusively on those quantitative performance criteria (QPC) that target government expenditure. While their work explores the impacts rather than determinants of IMF conditionality, and therefore does not appear in Table 2, it is important to mention as a precursor for the present dataset, which takes their approach one step further: rather than simply counting the number of conditions focused on expenditures, the present analysis measures the intensity of changes in fiscal balances required by IMF agreements.

This short literature review shows an emerging consensus that the determinants of the level and composition of IMF programs is a function of both economic and political variables. The next section of the paper develops our methodological approach to creating a new variable of IMF fiscal conditionality and then outlines our econometric approach to examining the determinants of IMF fiscal conditionality that draws on the literature just described.

3. Data and methods: Measuring the Intensity of IMF Austerity

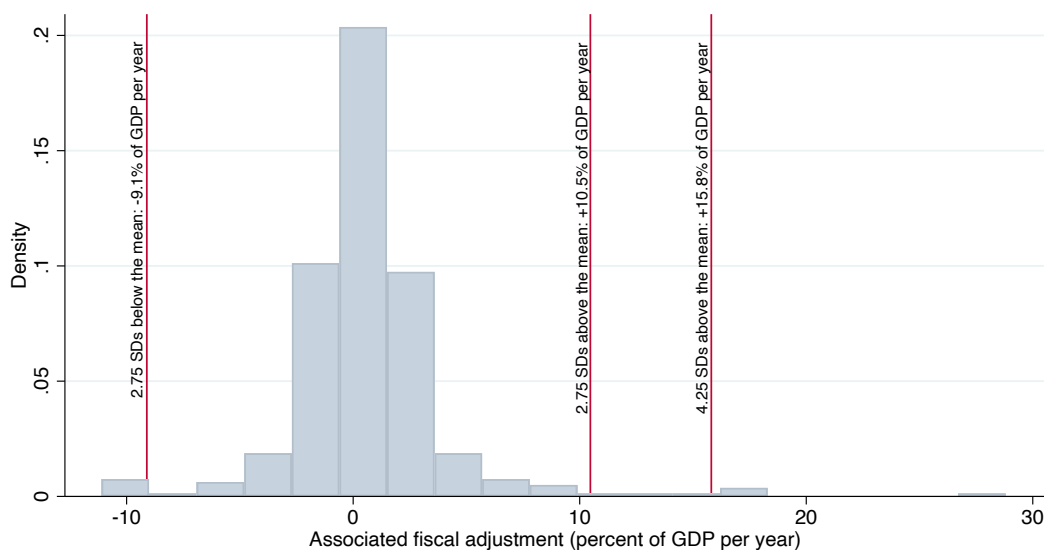
Since the financial crisis of 2008-2009, the IMF has undergone a significant internal reform in how conditionality is structured. Internal reviews and guidelines of conditionality over the last decade show a concerted trend toward fewer conditions (more parsimonious conditionality, in IMF parlance) that are more focused on headline fiscal adjustment and less focused on particular budgetary changes (see for example IMF 2011; IMF 2014b; Steinberg et al. 2018). However, as discussed at length above, it remains an open question for scholars whether the IMF has followed through on its commitments to alter the overall level of austerity required by its arrangements.

For this reason, we introduce here a new dataset of IMF fiscal conditionality, which measures the intensity of fiscal adjustment required by these newly parsimonious conditions, through a new Fiscal Adjustment Indicator (FAI). In doing so, we hope to carry the overall line of inquiry of the work described above into a new era where IMF conditions are fewer in number but may or may not have changed in the overall extent of fiscal adjustment that they require.

This new indicator, the IMF FAI, measures the fiscal changes required by IMF arrangements' quantitative performance criteria (QPC) for headline fiscal adjustment, using QPC records reported by the IMF Monitoring of Fund Arrangements (MONA) database (IMF no date-b). QPCs are binding targets for a borrowing country to continue in an ongoing IMF agreement. For each QPC included here, the fiscal target is measured as a share of the borrower's GDP. That level is compared to the baseline level from the calendar year prior to the agreement's signing. The variable of interest is the implied adjustment between those two levels, expressed as cumulative, annualized change in government fiscal balances, shown in percentage points of GDP per year increase (positive adjustment) or decreased (negative adjustment) in the fiscal balance. A required increase in a surplus – or decrease in a deficit – is shown as a positive FAI value, and a surplus that is allowed to shrink – or a deficit that is allowed to grow – is shown as a negative FAI value.

This dataset begins in 2001, after the IMF instituted its current definitions for headline fiscal balance variables. Considering the years 2001 through 2018 allows a comparison of the eight years from 2001 through to the Global Financial Crisis of 2009 with the decade thereafter. (We include 2009 QPCs in the second time period, as we exclusively use December target dates, as is discussed in more detail below.) Figure 1 shows the resulting distribution of the IMF Fiscal Adjustment Indicator.

Figure 1. Distribution of FAI values



As Figure 1 shows, FAI values are highly concentrated close to zero. Outside of the main distribution, a group of outliers appears beyond 2.75 standard deviations away from the mean (indicating very lenient agreements, allowing for headline fiscal balances to fall by more than 8.9 percent of GDP per year, and very austere agreements, requiring fiscal tightening of more than 10.3 percent of GDP per year). Another group of even more extreme outliers appears beyond 4.25 standard deviations above the mean (indicating extremely austere agreements, requiring headline fiscal balances to rise by over 15.5 percent of GDP per year). Table 3 shows the countries and years affected by these outlier agreements.

Table 3. Outlier Observations

Country	QPC Year	Fiscal Adjustment Indicator	
		% of GDP per year	SDs from the mean
<i>Extremely lenient:</i>			
Maldives	2009	-11.1%	-3.4
Azerbaijan	2003	-10.2%	-3.1
Azerbaijan	2004	-9.8%	-3.0
Iceland	2009	-9.5%	-3.0
Croatia	2004	-9.3%	-2.9
Croatia	2005	-9.0%	-2.8
<i>Extremely austere:</i>			
Burkina Faso	2010	11.2%	+3.0
Congo, Republic of	2006	13.4%	+3.6
Iraq	2006	15.6%	+4.3
Antigua and Barbuda	2010	16.8%	+4.6
Antigua and Barbuda	2011	17.8%	+4.9
Antigua and Barbuda	2012	17.8%	+4.9
Iraq	2005	28.8%	+8.1

As Figure 1 and Table 3 show, these 13 observations (3.4 percent of the sample) are highly unusual agreements with countries facing extraordinary circumstances. For example, Iraq's 2005 agreement, came during the country's post-conflict reconstruction. Because of their extreme position outside of the main distribution, we exclude them from models 1 through 5 here. However, an argument could be made for inclusion of agreements between 2.75 and four standard deviations away from the mean, including all of the more lenient outliers and two of the less-extreme austere outliers. This is particularly true because this category of "near" outliers includes several QPCs for peripheral European countries, and connectivity with Western Europe is one of the main determinants we examine here. For this reason, as a robustness check, we later extend the analysis to all observations within four standard deviations of the mean.

Figure 2 shows how the FAI distribution has changed over the time period studied here, through the median, 25th, and 75th, percentiles for each year. In keeping with IMF public statements, 2009 saw the most lenient median FAI of any year in this sample. However, the following few years saw a rebound into more positive FAI values.

Figure 2. Distribution of Cumulative, Annualized Fiscal Adjustment in QPCs, 2001-2018



Note: This figure excludes outlier observations, as described above.

Of course, it would be overly simplistic to examine trends in IMF fiscal conditionality without accounting for the substantial swings in macroeconomic condition that accompanied them. The remainder of this paper explores two main research questions: first, has IMF fiscal conditionality changed after the 2009 Global Financial Crisis, accounting for the changing macroeconomic context borrowers faced in the same period? Second, what other factors correlate with varying fiscal conditionality? This second question addresses the political economy of IMF lending – particularly the importance of borrower connectivity to major global economic power in determining the extent of IMF program conditionality – changed over this time?

3.1 Accounting for endogeneity

As many scholars have noted before, addressing endogeneity concerns is a crucial – and complex – task when examining IMF lending. This is especially true for investigations into the impacts of conditionality, which must account for the fact that borrowing countries have something important in common: they are approaching the IMF during tumultuous economic times. Although the present analysis is limited to the determinants of IMF conditionality, the question of endogeneity still arises. For example, while this analysis includes questions of global economic connectivity, it is important to remember that a country's connectivity with the rest of the world is likely to change during an economic crisis. Furthermore, especially insular countries are less likely to approach multilateral institutions in the first place, regardless of economic conditions.

This paper avoids endogeneity problems in two ways. First, it limits its scope to QPCs that target headline fiscal balances. Thus, it eliminates the question of the intrinsic differences between countries entering into these agreements and other countries. Second, potential determinants of IMF conditionality are measured over five-year periods prior to the QPC target date, to avoid questions of reverse causality.

Methodology

The rest of this paper explores determinants of these variations in IMF FAI levels. It takes individual QPCs as the unit of analysis, focusing only on those criteria that target headline fiscal balances. By considering each QPC separately, it allows for changes over the course of a particular agreement, as economic conditions change. Furthermore, it takes the final version of each QPC, including any revisions, to ensure that it takes into account all of the relevant contexts that can affect how QPCs are set and adjusted.

It sets aside QPCs that are one step removed from headline fiscal balances, such as requirements focusing on net domestic government financing or credit to the government from the banking sector. This allows for the greatest possible comparability across QPCs.

The resulting sample is made of 335 QPCs from 154 agreements between the IMF and 76 countries, between 2001 and 2018. As a robustness check, the last models presented in this analysis also include several additional QPCs that do not appear in the IMF's MONA dataset but which have been identified by Stubbs et al. (forthcoming), and which fit the qualifications for inclusion here. Those additional observations entail 38 additional QPCs from 21 agreements.

The IMF Fiscal Adjustment Indicator measured here is defined as the cumulative, annualized change in a QPC's targeted headline fiscal balance, compared to the baseline level during the calendar year prior to the agreement's signing. Thus, it focuses solely on QPCs at the end of calendar years, to enable the clearest possible comparability. This methodology choice also allows for the inclusion of 2001 QPCs, which were set after the IMF's change in fiscal definitions took place that year.

This analysis does not take into account whether a country successfully met a given QPC, because the research question at hand involves prior determinants in setting the QPC. However, if a country's agreement is terminated due to a missed QPC, then no further QPCs will be set in that arrangement, so no additional observations will be included in this dataset.

This paper gives special attention to the political economy of IMF lending, especially the economic and diplomatic relationships of borrowers. It follows Barro and Lee's (2005) seminal work in measuring these connectivity variables over five-year periods prior to the QPC, but also draws on relationships profiled in other work.

$$FAI_i = \beta_0 + \beta_1 MC_i + \beta_2 MS_i + \beta_3 GC_i + \beta_4 BC_i + \beta_5 AT_i + \beta_6 T_i + \varepsilon_i$$

Here, **FAI** is the Fiscal Adjustment Indicator, defined as the annualized fiscal adjustment embodied in the QPC, compared to the baseline fiscal state during the calendar year prior to the agreement's signing. It is measured in percentage points of GDP that the fiscal balance is expected to rise or fall over that time, per year that has elapsed. Positive values imply a rise in the fiscal balance (tightening) while negative values imply fiscal relaxation.

MC is a vector of medium-term macroeconomic context variables that describe the overall state of the borrowing country in the five years prior to the QPC: real GDP per capita, in absolute terms and squared, and membership in the OECD club of high-income countries. This approach is taken from Barro and Lee (2005) and is measured prior to the QPC to avoid reverse causality concerns. To avoid multicollinearity with borrowers' IMF quota share (listed below), we follow Dreher, Sturm, and Vreeland (2009) in omitting total GDP here, differing from Barro and Lee (2005) in that regard.

MS is a vector of short-term macroeconomic state variables during the year of the QPC: per-capita economic growth and inflation. They are included here to allow for the IMF's concept of "growth-friendly" fiscal adjustment (see for example IMF 2014a and 2015).

GC is a vector of general connectivity with the world: IMF quota share, membership on the UN Security Council (UNSC), net bilateral aid (Official Development Assistance, ODA), and net foreign direct investment (FDI) inflows as a share of GDP. Bilateral ODA is measured two ways: from high-income donors in the OECD Development Assistance Committee, and other bilateral donors. These variables are taken to represent the general connectivity measures used by Barro and Lee (2005); Dreher, Sturm, and Vreeland (2013); and others. The only liberty taken here is a country's UNSC membership. We measure this variable for the year of the QPC rather than the five years prior, for two reasons. First, there is no reverse-causality possibility here. Second, the purpose of including this variable is to capture what Dreher, Sturm, and Vreeland (2009) call "horse trading" which is only a possibility in the year of the QPC.

BC is a vector of bilateral connectivity variables measuring the strength of ties between the borrowing country and three global economic centers: the US, Western Europe, and China. Bilateral connectivity is measured in diplomatic terms, through vote alignment in UN General Assembly votes, as well as in economic terms, through trade (exports to each economic center as a share of GDP), and investment (FDI stocks from each center as a share of GDP). Bilateral UN voting alignment has a long history of inclusion in the literature cited here, dating back to Barro and Lee (2005) and Dreher and Jensen (2007). Barro and Lee (2005) also introduce the use of export connectivity.

AT categorizes each QPC as belonging to one of three arrangement types: long-term support for structural reforms, short-term support for balance-of-payments concerns, and other arrangements. As Table 4 shows, below, most agreements included here fall into the first two categories. In grouping arrangements by type, we follow the example of Dreher, Sturm, and Vreeland (2013). It is reasonable to expect differing levels of conditionality among arrangement types, as they are created for different situations with different needs.

Finally, **T** measures time by using a binary variable to indicate whether a QPC fell after the financial crisis. Because we include only year-end QPCs, we include 2009 in the second time period. This variable is included to seek a structural break in conditionality after the crisis.

Western Europe is defined here as the United Kingdom, France, and Germany. UN General Assembly voting alignment is measured as an average of a borrower's alignment with all three countries. Bilateral economic ties are measured as the sum of exports to, or investment from, all three countries.

OECD membership is listed in the vector of macroeconomic context variables, following Barro and Lee (2005), but it could equally belong among general connectivity variables like UN Security Council membership. As the results below show, it is never significantly associated with variations in the dependent variable, so this point is largely moot.

3.2 Description of Data

Table 4 summarizes the data used in this analysis. As Table 3 shows, the dependent variable is fairly tightly clustered around zero: the overwhelming majority of QPCs envision fiscal budgets that will be tightened or loosened by at most a few percentage points of GDP per year.

Table 4. Summary Statistics

Variable	Mean	Median	S.D	Min	Max	N
DV: Fiscal Adjustment Indicator	0.52	0.35	2.40	-8.95	9.68	335
IVs: Medium-term macroeconomic context, past 5 years						
GDP pc, thousands of USD	7.97	5.52	8.10	0.63	47.87	335
GDP pc, squared	129.32	30.62	298.52	0.40	2295.49	335
OECD membership, percent of time	0.05	0.00	0.21	0.00	1.00	335
IVs: Short-term economic situation, year of QPC						
Real GDP growth per capita	0.02	0.02	0.04	-0.15	0.21	335
CPI Inflation, annual percent	6.30	4.91	6.88	-2.41	55.50	335
IVs: General connectivity over the last 5 years						
IMF quota share, log %	-7.45	-7.44	1.35	-10.38	-4.23	335
UNSC membership, percent of time	0.03	0.00	0.16	0.00	1.00	335
Net ODA from DAC, USD per capita	68.82	42.95	80.71	-0.11	510.13	313
Net ODA, other, USD per capita	25.01	17.75	28.66	0.12	186.45	309
Net FDI inflows, log % of GDP	-3.38	-3.24	1.00	-6.22	0.54	333
IVs: Bilateral Connectivity over the last 5 years						
UNGA alignment w/ US, log %	-1.15	-1.19	0.31	-1.82	-0.56	326
UNGA alignment w/ WE, log %	-0.39	-0.44	0.15	-0.63	-0.07	326
UNGA alignment w/ China, log %	-0.22	-0.18	0.12	-0.57	-0.06	326
Exports to US, log % of GDP	-4.63	-4.68	1.68	-8.67	-0.85	332
Exports to WE, log % of GDP	-3.99	-4.03	1.11	-6.94	-1.55	332
Exports to China, log % of GDP	-5.56	-5.50	1.91	-11.41	-0.93	332
FDI stock from US, log % of GDP	-6.41	-6.28	2.60	-9.71	-0.37	277
FDI stock from WE, log % of GDP	-5.91	-7.11	2.08	-7.69	-0.83	284
FDI stock from China, log % of GDP	-8.92	-9.32	3.12	-12.26	-2.30	281
IVs: Time of QPC						
Year of QPC	2010.70	2011.00	4.75	2001	2018	335
QPC after 2008	0.65	1.00	0.48	0.00	1.00	335

Furthermore, this analysis takes into account the type of each arrangement, as each type has been developed for different circumstances with different needs. Most of the arrangements considered here fall into one of two categories: long-term support for low-income countries (LICs) or short-term support for countries of any income level facing balance-of-payments problems. Together, those two categories account for over three-fourths of the total sample. Table 5 shows the distribution of the sample among IMF arrangement types, and their classification for the analysis here. It should be noted that while this paper broadly refers to countries with IMF agreements as “borrowers,” this is not strictly the case for all such countries, as 19 of the fiscal targets included here are associated with Policy Coordination Instruments or Policy Support Instruments, which do not include credit operations.

Table 5. Sample Distribution by IMF Arrangement Types

Category	Arrangement Type	N
ECF/PRGF: Long-term support	ECF (Extended Credit Facility, initiated 2010) or PRGF (Poverty Reduction and Growth Facility, before 2010)	144
	Combination: ECF / PRGF and EFF (Extended Funds Facility)	9
	<i>Total</i>	<i>153</i>
SBA/SCF: Short-term balance-of-payments assistance	SBA (Stand-By Arrangement, for middle and high-income countries)	117
	SCF (Standby Credit Facility, for low-income countries)	3
	Combination: SBA-SCF	13
	<i>Total</i>	<i>133</i>
Other	EFF (Extended Funds Facility, medium-term balance-of-payments support)	56
	ESF (Exogenous Shock Facility, for LICs facing sudden exogenous shocks)	2
	PCI (Policy Coordination Instrument, a policy arrangement without credit)	2
	PSI (Policy Support Instrument, a policy arrangement without credit for LICs)	17
	<i>Total</i>	<i>77</i>
TOTAL		365

4. Results and Interpretation

As discussed above, the models here address two research questions: first, has IMF-conditioned austerity changed after the financial crisis of 2008-2009, as measured through our new IMF Fiscal Adjustment Indicator (FAI)? Secondly, what are the determinants of IMF conditioned austerity over time?

Regarding the first question, after controlling for a host of other variables in our model we find that IMF conditioned austerity did not significantly change after the financial crisis of 2008-2009. Consistent with the previous literature, we find that a number of political and governance factors in addition to economic factors determine the level and distribution of IMF FAI levels. Indeed, higher levels of inflation tend to be associated with higher IMF FAI levels. However, borrowers receive less stringent conditionality the more voting power they enjoy at the IMF, as measured by their IMF quota share. The stringency of austerity is also buffered when borrowing countries have non-OECD forms of development aid, and if they are significantly connected with Western Europe, with regards to voting alignment at the UN General Assembly and exports. Interestingly though, the presence of Western European investors in borrowers' economies tends to be associated with high levels of conditioned austerity.

The latter findings coincide with many of the studies described in detail above. The intuition here is that connectivity builds relationships that can alter the bargaining power of parties negotiating IMF arrangements. It is well-established in literature on IMF conditionality discussed above, including Breen (2012); Chwieroth (2012 and 2015); Dreher and Jensen (2007); Dreher, Sturm, and Vreeland (2013); Kang (2007), and Stone (2008). While not universally true, these studies generally find less stringent conditionality for countries that have stronger connectivity with major economic powers, through the United Nations, financial markets, or other ties.

The present analysis also adds a second dimension for economic connectivity: stocks of inbound foreign direct investment from the US, Western Europe, and China. This relationship between investors and fiscal policy – particularly in the context of IMF lending – builds on work developed by Stone (2002) and further elaborated by many other scholars in the years since.

Why might foreign investment reflect on IMF conditionality, and how? While a trading relationship cannot be severed without significant costs to both sides, investment relationships can be more asymmetric, leading to host countries – especially smaller, developing countries – having diminished bargaining power vis-à-vis the home countries of major investors. In the case of Western European and the US investors, such asymmetry may coincide with diminished host-country bargaining power with the IMF, in which those countries have significant power. Asymmetric bargaining power between developing host countries and multinational investors has been documented in domestic policy areas such as labor rights (see for example Phillips, 2017). Egan (2010) shows that as global value chains have become more fully developed in recent years, and global production networks have become more fragmented, host countries no longer have outsized bargaining power over foreign investors, who can sell their stakes and leave more easily than they could in past eras. As a result, Egan finds that multinational investors have had a significant independent impact on domestic economic policy in Latin America.

A second avenue for the importance of FDI in domestic fiscal policy is a process of harmonization between fiscal policy approaches among countries networked by foreign investment. For example, Chilarez and Ene (2014) and Cuenca Garcia, Navarro Pabsdorft, and Mihi-Ramirez (2013), explore the delicate balancing act of respecting fiscal sovereignty but maintaining connectivity across the European Union after the financial crisis of 2008-2009. Kuisma and Nygård (2015) expand on this approach to consider harmonization between the EU and Nordic states, which are closely intertwined

economically and yet have different fiscal policy approaches (namely, their famous “welfare states”). They find that in practice, fiscal policy harmonization has been limited to convergence in implementation of shared ideas such as family policy for workers. Thus, from their research, it seems that overarching fiscal policy harmonization is likely to happen when not only economic connectivity, but also intellectual connectivity are high, and philosophical approaches to fiscal management are shared.

Finally, a host of qualitative case studies have shown important roles for foreign investment coalitions in influencing domestic fiscal policy. Chandrasekhar (2011) does this for India, Drahokoupil (2009) does so for post-Soviet Eastern Europe, and Egan (2010) and Sanchez (2006) do so for Latin America. For any of the reasons cited above, it is reasonable to expect that economies where foreign investment makes up an important share of the local economy may also more philosophically inclined to fiscal discipline and/or unable to successfully negotiate for expansionary fiscal policy in IMF agreements. For either reason or both, we hypothesize that bilateral FDI in-stocks will be positively associated with IMF-conditioned fiscal austerity, especially when that FDI hails from the US and Western Europe.

4.1 Quantitative Results

Table 6 shows the OLS results for the model specified above, in parts and together. Model 1 focuses on economic context associated with a QPC’s Fiscal Adjustment Indicator (FAI) level, to shed light on our first research question: did IMF fiscal conditionality become more lenient after the financial crisis of 2008-2009? Model 2 introduces general determinants, which are included in the remaining models in order to hold these variables constant while we also examine the bilateral relationships highlighted in those later models. Model 3 explores diplomatic relationships through UN General Assembly voting alignment. Model 4 includes bilateral economic connectivity, measured through exports and FDI. Finally, Model 5 brings together the entire collection of relationships.

Based on the results in Table 6, the answer to our first research question appears straightforward. None of these models shows any significant difference in IMF FAI levels after 2008. Additional time-based models in the supplementary appendix explore this avenue more fully but overall these do not find a significant trend or break.

Models 2 through 5 explore connectivity, individually and combined. Results are mostly consistent across these models. Overall, these results echo the findings of scholars who have come before, measured through our new variable of interest. For example, the IMF’s prioritization of borrower inflation targets in designing conditionality is well-documented, and borne out here in Model 2, which shows a strong impact on IMF FAI levels. The IMF’s inflation targeting is more often considered in monetary policy than in fiscal policy (see for example Babb 2007; Dreher 2009). So it is notable that inflation levels are a significant determinant of fiscal adjustment as well.

Table 6. OLS Results, Determinants of IMF Fiscal Adjustment Intensity

	1. Context and Time Period	2. General Connectivity	3. UN Alignment	4. Bilateral Econ. Con.	5. Together
GDP pc	0.1397** (0.0512)	0.2973** (0.1021)	0.0029*** (0.0009)	0.0021 (0.1221)	0.1359 (0.1323)
GDP pc ²	-0.0030* (0.0013)	-0.0096* (0.0044)	-0.0001* (0.0000)	0.0063 (0.0053)	-0.0009 (0.0059)
OECD	0.5176 (0.8973)	0.1411 (1.5509)	0.0032 (0.0092)	-0.3998 (1.5719)	0.0920 (1.5542)
GDP pc growth	2.0061 (3.364)	0.4907 (3.4597)	0.0162 (0.0294)	2.0369 (3.7796)	2.7068 (3.7149)
Inflation	0.0250 (0.019)	0.0173 (0.0188)	0.0004** (0.0002)	0.0353 (0.0211)	0.0296 (0.0214)
IMF quota share		-0.2801 (0.1849)	-0.0039* (0.0016)	-0.4316 (0.2251)	-0.2744 (0.2465)
UNSC		-0.3916 (0.8095)	0.0047 (0.0064)	-0.5719 (0.9877)	-0.5561 (0.9678)
ODA from DAC		-0.0009 (0.0022)	-0.0000 (0.0000)	-0.0041 (0.0024)	-0.0031 (0.0025)
ODA, other		-0.0238*** (0.0066)	-0.0002*** (0.0001)	-0.0160* (0.0081)	-0.0197* (0.0082)
FDI net inflows		0.3618* (0.1683)	0.0033* (0.0015)	0.4261* (0.2002)	0.5881** (0.2119)
UNGA align. w/ USA			0.0048 (0.0098)		-0.3662 (1.3341)
UNGA align. w/ W. Europe			-0.0548*** (0.0125)		-5.2751** (1.9723)
UNGA align. w/ China			0.0098 (0.0271)		-3.7019 (3.7059)
Exports to U.S.				0.2308* (0.1081)	0.1207 (0.1204)
Exports to W. Europe				-0.4956** (0.1615)	-0.5244** (0.1711)
Exports to China				0.0505 (0.0883)	0.0120 (0.0906)
FDI in-stocks from U.S.				0.0309 (0.0898)	0.0393 (0.094)
FDI in-stocks from W. Europe				0.2341* (0.1014)	0.2624* (0.1054)
FDI in-stocks from China				-0.0406 (0.0620)	-0.0323 (0.0608)
Type: ECF/PRGF	0.5765 (0.3992)	0.0027 (0.0036)	0.6095 (0.4095)	0.7968 (0.4982)	0.8168 (0.4940)
Type: SBA/SCF	-0.4598 (0.369)	-0.0071* (0.0033)	-0.2187 (0.4010)	-0.5139 (0.5220)	-0.3108 (0.5347)
Post-2008	0.3189 (0.2923)	0.0026 (0.0026)	-0.0010 (0.3015)	0.2983 (0.3363)	0.0801 (0.3469)
Constant	-0.6941 (0.5451)	-0.0278* (0.0139)	-4.6933 (2.4519)	-1.1055 (1.8353)	-3.4953 (2.9001)
R ²	0.0374	0.1255	0.1479	0.1789	0.2229
N	335	337	301	245	240

Note: * $p \leq 0.05$; ** $p \leq 0.01$, *** $p \leq 0.001$. Standard errors in parentheses. Exports to and FDI from China includes Hong Kong and Macao.

Greater borrower connectivity (particularly with Western Europe) is generally associated with more lenient QPCs (reflected in a negative impact on FAI levels), except in the case of FDI. The importance of bilateral connectivity as a determinant of IMF conditionality echoes Breen (2012); Dreher and

Jensen (2007); and Dreher, Sturm, and Vreeland (2013), who study similar relationships. However, the findings here have importance differences from their results, and can help deepen our understanding of the nuances involved. For example, Dreher and Jensen (2007) focus their analysis solely

on bilateral connectivity with the US and find a similar relationship to our findings. Breen (2012) broadens the scope to the G-7 and finds that countries that are well-connected to the G-7 through trade receive significantly more lenient IMF conditionality. Our model takes this line of inquiry one step further by considering economic centers separately and finds that relationships with Western Europe are even more important than with the United States. The leadership role played by European actors – particularly France, Germany, and the European Union – in setting expectations for fiscal adjustment and austerity has been well-documented, for example by Clift (2018). Clift shows that in the wake of the 2008-2009 financial crisis, IMF borrowers were sometimes more fiscally restrained due to European requirements than due to IMF conditions. Thus, it is no surprise that now – over a decade after Dreher and Jensen’s (2007) work on US relationships, it is Western European connectivity that is most determinant of fiscal conditionality.

The impact of borrowers’ connectivity with Western Europe changes direction when FDI in-stocks are considered. Western European FDI is significantly associated with higher FAI levels (more austerity) in Model 5. The relationships profiled by Stone (2002) and Egan (2010) appear to continue to hold true here regarding the influence of FDI on fiscal policy.

However, not all of our findings coincide with earlier work. For example, Models 1 through 3 find that higher-income countries have higher FAI levels (indicating more austere IMF conditionality), though this effect loses significance when economic connectivity determinants are included in Models 4 and 5, while Dreher, Sturm, and Vreeland (2009) find that higher-income countries receive less stringent conditionality, as measured by the number of conditions. This apparent difference is easily resolved, however. Dreher, Sturm, and Vreeland (2009) do not account for different types of IMF arrangements (though they do so in later articles). Long-term (ECF/PRGF) arrangements are limited to low-income countries, and these agreements are by definition focused on broader structural reforms than the standby (SBA/SCF) arrangements that countries of any income level can access. Thus, it is reasonable to expect that when arrangement types are not held constant, lower income countries would be more likely to exhibit higher numbers of conditions. However, the results presented here show that the income-conditionality relationship is direct rather than inverse regarding the intensity of fiscal adjustment required, as measured by the FAI levels.

Stone (2008) hypothesizes that countries with larger IMF quota shares would have more bargaining power, but does not find evidence of this pattern in his research into the breadth of IMF conditionality (the number of categories of conditions present in a given agreement). The present analysis focuses on one category of conditionality: headline fiscal adjustment. It appears that Stone’s original hypothesis – while not true regarding breadth – does hold regarding FAI levels in Model 3.

The aid results are noteworthy in that it is only ODA from non-DAC donor countries that is significantly associated with more lenient QPCs. While ODA from DAC countries appears to have no impact, other ODA may act as a buffer that bolsters recipients’ negotiating power. China is by far the most active non-DAC aid donor. The College of William and Mary’s AidData initiative (AidData Research and Evaluation Unit 2017; Bluhm et al. 2018) estimates that ODA-like flows from China amounted to over \$3 trillion USD between 2001 and 2014: over 40 percent of the total difference between ODA from DAC countries and other ODA, as reported by World Bank (no date). Thus, this finding almost certainly reflects the importance of Chinese aid. Unfortunately, however, a lack of more transparent, precise data hampers our ability to pinpoint Chinese aid directly.

Finally, it is worth exploring in more detail the difference between types of IMF arrangements. Models 1 through 5 examine the two major arrangement categories (long-term, ECF/PRGF; and short-term standby, SBA/SCF) in contrast with the remaining type: projects that fall into neither of those first two categories. Only Model 2 shows any difference among categories: it finds that short-term arrangements are significantly more lenient than those in the “other” category. However, Wald tests

show differences between long-term and short-term arrangements in Model 5 as well. This finding is not surprising, given that SBA/SCF arrangements are designed to for countries that are not considered to be facing long-term structural problems, and thus they require less extensive conditionality.

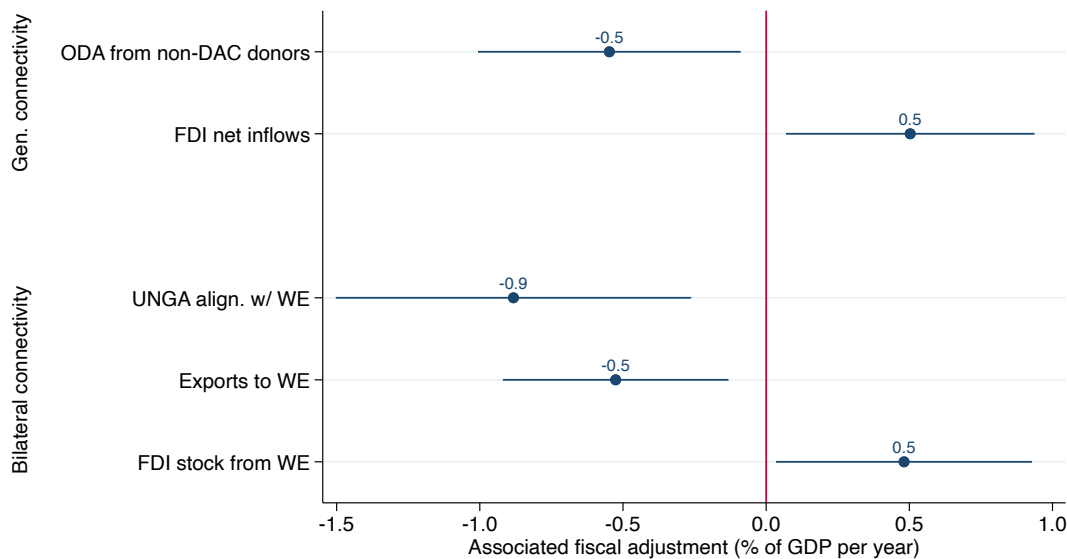
Table 7. Model 1 Wald Test Results for Significant Differences Among Arrangement Types (F-statistics)

	ECF/PRGF	SBA/SCF
ECF/PRGF		9.71**
Other	1.18	3.98*

Note: * $p \leq 0.05$, ** $p \leq 0.01$.

While Table 6 shows the significance of various determinants of IMF conditionality, as measured in FAI levels, Figure 3 explores the size of each determinant's impact, relative to each other. It shows the coefficients and 95 percent confidence intervals for Model 5, with each variable normalized by standard deviation. It shows only those variables found to be significant in that model, for the sake of legibility.

Figure 3. Coefficients and 95% Confidence Intervals, Model 5 (Normalized, Significant Variables Only)



As Figure 3 shows, the sizes of impact of increasing any of the significant determinants by one standard deviation is roughly the same. For example, an increase by one standard deviation in net FDI inflows (from 3.4 percent to 9.3 percent of GDP) is associated with QPCs that require 0.5 percent of GDP tighter fiscal adjustments: the same impact as an increase by one standard deviation in the FDI in-stocks from Western Europe (from 0.3 percent to 2.2 percent of GDP). Similarly, an increase on one standard deviation in aid from non-DAC countries (from \$25 to \$54 per capita) is associated with QPCs that are an average of 0.5 percent of GDP less austere, which is the same effect as an increase by one standard deviation in the importance of a country's exports to Western Europe (from 1.8 percent to 5.6 percent of GDP). While it may seem intuitive for aid to serve as a cushion against the perceived need for austerity, it is not widely recognized that FDI inflows have about the same size effect, in an opposite direction, or that connectivity with Western Europe is equally important.

4.2 Robustness Checks

We perform two robustness checks on the models in Table 5. First, we check for multicollinearity among independent variables, using variable inflation factors. The only variables with factors above 10, indicating possible multicollinearity, are GDP per capita and GDP per capita, squared. These two variables are obviously related to each other, and they are also related to which countries have long-term structural support from the IMF (ECF/PRGF arrangements), as this type of agreement is limited to low-income countries. None of the other macroeconomic or connectivity variables shows signs of potential multicollinearity.

Second, we repeat Model 5 with small changes in specification to ensure that our choices have not biased the results here. Table 8 shows such alterations. First, Model 6 includes QPCs that do not appear in the IMF's public MONA datasets of QPCs or Additional QPCs. As Arpac, Bird, and Mandilaras (2008) point out, MONA includes only arrangements that have upcoming executive board actions pending, and thus does not include interrupted or cancelled programs, whose QPCs should still be considered here. Furthermore, some early QPCs in this sample date from arrangements originally signed before 2001; MONA is not designed to include these earlier agreements. Thus, Stubbs et al. (forthcoming) have compiled additional QPCs, 38 of which meet the criteria for inclusion here (December targets for headline fiscal adjustment). For the sake of replicability, we rely on MONA data for our main results in Table 5. Model 8 includes the moderate outliers shown in Figure 1, between 2.75 and 4.25 standard deviations away from the mean. Model 8 includes both of these categories of observations.

As Table 8 shows, the core findings of Table 6 are unchanged. First, none of these models show any difference in the time periods before and after the financial crisis. Second, the bilateral diplomatic and economic connectivity variables highlighted as significant determinants of austerity in Model 5 continue to play that role in Models 6 through 8. In addition to these findings, Models 7 and 8 show a significant relationship between IMF-imposed austerity and borrower GDP growth, as well as with exports to the US, in the opposite direction as exports to Western Europe. Countries that are more dependent on exporting goods to the US face more austere IMF agreements, on average. One variable with significance in Model 5 but not in Models 7 or 8 is overall FDI net inflows for the five years prior to the QPC.

Table 8. Robustness Checks: Alternate Specifications of Model 5

	6: Including non-MONA observations	7: Including outliers up to 4.25 SDs	8: Including outliers to 4.25 SDs and non-MONA observations
GDP pc	0.1397 (0.1371)	0.2499 (0.1704)	0.1384 (0.1688)
GDP pc ²	-0.0026 (0.0061)	-0.0070 (0.0075)	-0.0031 (0.0074)
OECD	0.3453 (1.0812)	0.1001 (2.0168)	-0.3095 (1.3321)
GDP pc growth	4.4353 (3.9702)	14.2225** (4.7887)	12.2163** (4.6589)
Inflation	0.0471* (0.0211)	0.0963*** (0.0263)	0.0939*** (0.025)
IMF quota share	-0.4541 (0.2553)	-0.1262 (0.3034)	-0.1634 (0.3023)
UNSC	-0.4249 (0.9413)	0.7780 (1.1596)	0.6232 (1.0931)
ODA from DAC	-0.0040 (0.0026)	0.0028 (0.0031)	0.0013 (0.0030)
ODA, other	-0.0176* (0.0084)	-0.0109 (0.0105)	-0.0044 (0.0103)
FDI net inflows	0.4998* (0.2028)	0.0986 (0.2649)	-0.0299 (0.2412)
UNGA align. w/ USA	0.2863 (1.2444)	-2.1997 (1.7122)	-1.1937 (1.5358)
UNGA align. w/ W. Europe	-4.8649* (1.9469)	-6.9373** (2.5307)	-5.6170* (2.3901)
UNGA align. w/ China	-2.4261 (3.4865)	-9.9509* (4.7881)	-7.8461 (4.3111)
Exports to USA	0.1992 (0.1129)	0.3732* (0.1528)	0.4863*** (0.1351)
Exports to W. Europe	-0.4149* (0.1758)	-0.7640*** (0.221)	-0.7594*** (0.2150)
Exports to China	0.1140 (0.0938)	0.1313 (0.1170)	0.2115 (0.1158)
FDI in-stocks from USA	-0.0172 (0.0924)	0.0147 (0.1191)	-0.1389 (0.1112)
FDI in-stocks from W. Europe	0.2702* (0.1087)	0.3482** (0.133)	0.3636** (0.1311)
FDI in-stocks from China	-0.0551 (0.0616)	-0.0112 (0.0776)	-0.0079 (0.0762)
Type: ECF/PRGF	0.3171 (0.5299)	0.7015 (0.6561)	0.4179 (0.6597)
Type: SBA/SCF	-0.6839 (0.5406)	-0.9625 (0.6789)	-0.6275 (0.6651)
Post-2008	-0.0340 (0.3516)	0.2733 (0.4483)	0.0196 (0.4341)
Constant	-2.7494 (2.7861)	-8.3581* (3.6974)	-6.1744 (3.4130)
R ²	0.1833	0.2703	0.2381
N	266	246	274

Note: * $p \leq 0.05$; ** $p \leq 0.01$, *** $p \leq 0.001$. Standard errors in parentheses. Exports to and FDI from China includes Hong Kong and Macao.

5. Discussion, Conclusion, and Suggestions for Further Research

We have developed a new IMF Fiscal Adjustment Indicator (IMF FAI) and corresponding dataset that measures the level of fiscal consolidation required in IMF programs and then examined the trends and determinants of that indicator over time. Despite significant research at the IMF showing that fiscal consolidation may not be an optimal path to economic recovery and subsequent pledges to ease the stringency of fiscal consolidation in IMF programs—we find that there has been no significant change in the level of fiscal consolidation required by the IMF since the global financial crisis of 2008.

With these new data in hand, we have sought to explain the determinants of the level of fiscal consolidation required in IMF programs over the same period. To this end we have drawn from the existing literature on the determinants of IMF conditionality to build a model to estimate the economic and political determinants of fiscal consolidation. Similar to what is found in that literature, higher levels of inflation are associated with more stringent fiscal consolidation requirements in IMF programs. In addition to economic factors, we find that increases in levels of FDI from Western Europe and sometimes the US are also associated with fiscal consolidation.

Countries that receive less stringent fiscal conditionality tend to have more voting power at the IMF as measured by their relative voting shares. What is more, we find that aid from non-DAC countries is also associated with less stringent fiscal conditionality. Finally, countries that align with Western Europe in the UN General Assembly and that strong trade ties with Western Europe also tend to receive less stringent austerity requirements in IMF programs.

These data will be useful in future research on not only the determinants of IMF programs, but also on the impact of IMF programs. Indeed, the logical next set of steps will be to use these data as an independent variable rather than a dependent variable. In other words, to what extent is there a correlation between increases in fiscal consolidation and outcomes such as economic growth, health and education expenditure, poverty and inequality, and growth and stability? Upon publication of this manuscript, we will make the data publicly available so researchers can pursue these and many other research questions.

This paper was written in the midst of the COVID-19 pandemic and associated global economic crisis. In just the first six months of the COVID crises, upwards of 100 emerging market and developing countries filed for IMF lending programs, more than three times the number of programs sought for in the aftermath of the global financial crisis of 2008. The design of those IMF programs, and those that will inevitably follow it, will be crucial to the economic health and welfare of those countries and the world economy alike. It is our hope that this paper, and the new data arising from it, can also be used to examine the extent to which the IMF can design programs that can allow countries to eradicate the COVID-19 virus, protect the vulnerable, and to mount a green and inclusive recovery.

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Statistical Appendix

This appendix complements the main text with more detailed methodology and results. Each table below shows a model from the main text, with related models to explore each aspect of IMF conditionality in greater detail.

Detailed Methodology

QPCs analyzed here are from the IMF Monitoring of Fund Arrangements (MONA) database, in the “QPC” or “Other QPC and Indicative Targets” dataset. We use the last value for each QPC, after revisions and adjustments. For QPCs in Stubbs, et al. (forthcoming) but not MONA, we use the values for each QPC as listed in the first agreement review after the criteria deadline or if that is not available, the last one before the target date. We use only headline fiscal criteria, targeting overall government surpluses (expressed as positive balances) and deficits (expressed as negative balances). We exclusively focus on QPCs with target dates at the end of calendar years for the sake of comparability with baseline values, which are most often expressed for calendar years.

We express each target as a share of calendar year GDP, as it was projected to be when the QPC was set. We use projected rather than actual GDP, for comparability between QPCs that are expressed as a share of projected GDP and those expressed in absolute levels, which we compare to projected GDP. In most cases, projected GDP for the year of each QPC can be found in the last arrangement reviews before each target deadline. Where projected GDP is not listed in the review, we rely on projected GDP for the year as reflected in the IMF World Economic Outlook database for Autumn (usually October) of the QPC year.

We then compare the target to the baseline value for the same fiscal variable, for the calendar year prior to the arrangement’s signing. This can be done in one of two ways. Where arrangements specify the actual value in absolute terms, we use that value in comparison to the reported value for nominal, calendar-year GDP. Where arrangements specify the baseline value only as a percent of that year’s GDP, we use that value.

In a few cases, countries have multiple headline fiscal targets for a particular year. For example, Armenia’s 2008 arrangement targeted the 2009 central government fiscal balance, while Armenia’s 2009 arrangement targeted the 2009 overall fiscal balance. Both of these targets are listed in MONA. As our unit of observation is QPC, rather than country or arrangement, in these cases we included both QPCs, and compare them to the baseline values for the years before each agreement was signed.

Required fiscal adjustment is expressed as the cumulative difference between the target and the baseline values. The resulting adjustment is annualized over the years between the baseline and the target date.

We drew independent variables from a variety of sources, most of which are publicly available for ease of replicability. Several independent variables are shown in log form. In those cases, it is important to avoid losing observations with valid values of zero. Thus, we add the minimum non-zero observed value to every observation before taking the log value. This step preserves the explanatory power of the analysis in OLS form while preserving observations of zero. Table A1 lists the sources (and where applicable, minimum non-zero values) for each of these variables.

Table A1. Detail, Independent Variables

Variable	Unit	Source	Min. value added before log
Fiscal adjustment indicator	Perc. points of GDP / year	Authors, IMF (n.d.-b)	-
GPD per capita	Thousands of 2011 USD	IMF, 2019	-
GPD per capita, squared	Thousands of 2011 USD	IMF, 2019	-
OECD Membership	Percent of the last 5 years	OECD	-
GDP growth per capita	Percentage growth	Authors	-
Inflation	Percentage growth	World Bank (n.d.)	-
IMF quota share	Logged percent	IMF (n.d.-a)	None (no zeros)
UNSC	UNSC membership	UN (n.d.-b)	-
Net ODA from DAC donors	USD per capita	World Bank (n.d.)	-
Net ODA, others	USD per capita	World Bank (n.d.)	-
Net FDI inflows	Logged share of GDP	World Bank (n.d.)	None (no zeros)
UN alignment with US	Logged percent	Kilby (forthcoming)	None (no zeros)
UN alignment with W.E.	Logged percent	Kilby (forthcoming)	None (no zeros)
UN alignment with China	Logged percent	Kilby (forthcoming)	None (no zeros)
Exports to U.S.	Logged share of GDP	UN (n.d.-a)	0.000172
Exports to W. Europe	Logged share of GDP	UN (n.d.-a)	0.000966
Exports to China	Logged share of GDP	UN (n.d.-a)	0.000011
FDI In-stocks from U.S.	Logged share of GDP	UNCTAD (2014)	0.000061
FDI In-stocks from W.E.	Logged share of GDP	UNCTAD (2014)	0.000459
FDI In-stocks from China	Logged share of GDP	UNCTAD (2014)	0.000005
QPC Year	Target year	IMF (n.d.-b)	-

Detailed Quantitative Results

Table A2 focuses on the economic and time determinants of IMF fiscal conditionality. Model A1 (equivalent to Model 1 in the main text) uses a binary variable to test for a structural break after the 2008-2009 financial crisis. Model A2 tests each year separately, to probe whether 2009 (or any other year) was significantly unusual compared to the rest of the sample. Models A3 and A4 split the sample into the two time periods, to test whether the relationship between fiscal conditionality and the borrower's economic context changed after the crisis.

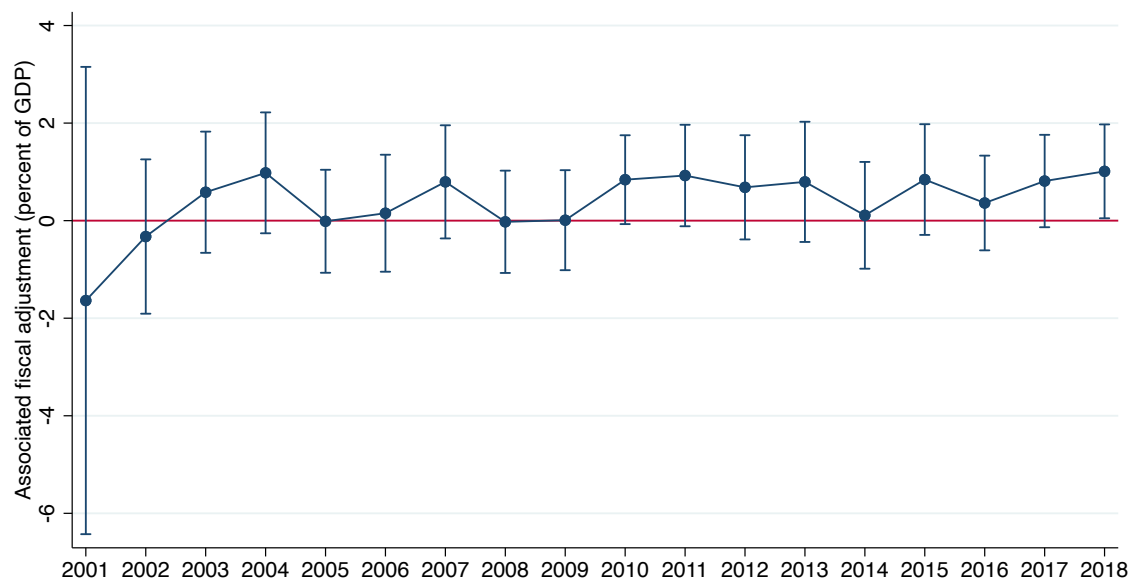
Model A1 does not show evidence of a structural break in 2009. Model A2 shows that there was no significant difference between 2009 – or any other year – and the rest of the sample. Figure A1 shows the results of Model A2 in more detail: it traces the predicted austerity of QPCs in each year, holding constant all of the other factors in the model. While 2009 does appear somewhat unusual in its leniency, its predictions are not significantly different from the other years in the sample.

Table A1. IMF Fiscal Conditionality and Borrower Macroeconomic Situation

	Model A1: Break after 2008		Model A2: Each year		Model A3: Through 2008 only		Model A4: After 2008 only	
	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE
GDP pc	0.1441**	0.0531	0.1357*	0.0545	0.1	0.102	0.1615*	0.0636
GDP pc ²	-0.0032*	0.0014	-0.0032*	0.0014	-0.0059*	0.0028	-0.0032	0.0017
OECD	0.605	0.9361	0.6895	0.9657	-0.4495	1.5149	1.2026	1.1813
GDP pc growth	1.9059	3.6187	0.9212	3.8659	-2.4569	4.9023	5.2568	5.0278
Inflation	0.0354	0.0199	0.0347	0.0208	0.0605*	0.0296	0.0321	0.026
ECF/PRGF	0.4608	0.4235	0.4264	0.4376	0.4256	0.9626	0.8318	0.5019
SBA/SCF	-0.7664*	0.384	-0.7445	0.4107	0.4182	1.087	-0.8499	0.4452
Post-2008	0.3596	0.3046						
2002			1.3121	2.5627				
2003			2.2202	2.5176				
2004			2.6178	2.5022				
2005			1.6249	2.4744				
2006			1.7899	2.496				
2007			2.4328	2.489				
2008			1.6139	2.4903				
2009			1.6473	2.512				
2010			2.478	2.4785				
2011			2.563	2.4868				
2012			2.3209	2.5				
2013			2.433	2.5195				
2014			1.7471	2.4992				
2015			2.4801	2.5075				
2016			2	2.4882				
2017			2.45	2.4851				
2018			2.6484	2.4887				
Constant	-0.683	0.5788	-2.5145	2.499	-0.7226	1.0669	-0.6701	0.5832
R ²	0.0501		0.0751		0.1270		0.0770	
N	335		335		116		219	

Note: * $p \leq 0.05$; ** $p \leq 0.01$, *** $p \leq 0.001$. As explained in Table 4, ECF/PRGF denotes long-term IMF agreements, and SBA/SCF denotes short-term balance-of-payments support. Model A1 is equivalent to Model 1 in the main text.

Figure A1. Predicted QPC Austerity Levels By Year, Based on Model A2



Note: Bars show 95% confidence intervals.

The remainder of this analysis uses the binary variable found in Model A1, which is most relevant to the first research question explored here: whether IMF conditionality changed after the Global Financial Crisis. Though the results are not significant in Model A1, it is worthwhile to inquire in future models whether there is a break once diplomatic and economic connectivity are taken into account.

IMF-Conditioned Austerity and Borrower Connectivity

The remaining models explained here test for the importance of borrower connectivity, across the diplomatic and economic pathways described above. Table A3 shows the general and diplomatic aspects of these relationships. The first of these models, Model A5 (equivalent to Model 2 in the main text), explores the impact of general connectivity with the world: IMF quota share, membership on the United Nations Security Council (UNSC) during the QPC year, official development assistance (ODA) received from the Development Assistance Committee of countries (24 rich countries that have harmonized their aid definitions), ODA from other countries, and FDI inflows. Models A6-A9 also include bilateral diplomatic connectivity, measured as United Nations General Assembly (UNGA) voting alignment with the US, Western Europe, China, and all three together. Model A9 is equivalent to Model 3 in the main text.

Table A3. IMF Fiscal Conditionality, General Connectivity, and Bilateral Diplomatic Connectivity

	A5. General connectivity	A6. UNGA, United States	A7. UNGA, Western Europe	A8. UNGA, China	A9. Together
GDP pc	0.1996 (0.1036)	0.2175* (0.1043)	0.3382*** (0.1049)	0.2086* (0.1039)	0.3574*** (0.1067)
GDP pc ²	-0.0045 (0.0044)	-0.0053 (0.0044)	-0.0114* (0.0045)	-0.0049 (0.0044)	-0.0125** (0.0046)
OECD	-0.3514 (1.6701)	-0.0657 (1.6676)	0.5770 (1.6227)	0.0306 (1.6717)	0.4627 (1.6295)
GDP pc growth	-1.5115 (3.8399)	-1.7164 (3.8485)	0.6131 (3.7685)	-1.9035 (3.8450)	1.0277 (3.7943)
Inflation	0.0285 (0.0202)	0.0334 (0.0202)	0.0325 (0.0196)	0.0352 (0.0203)	0.0291 (0.0198)
IMF quota share	-0.4964** (0.1814)	-0.5242** (0.1844)	-0.4087* (0.1796)	-0.5638** (0.1870)	-0.3300 (0.1942)
UNSC	-0.1849 (0.878)	-0.1064 (0.8750)	-0.2629 (0.8478)	-0.0866 (0.8756)	-0.3314 (0.8514)
ODA from DAC	-0.0029 (0.0022)	-0.0020 (0.0023)	-0.0007 (0.0023)	-0.0022 (0.0023)	-0.0004 (0.0023)
ODA, other	-0.0244*** (0.0070)	-0.0236*** (0.0070)	-0.0260*** (0.0068)	-0.0242*** (0.0070)	-0.0258*** (0.0069)
FDI net inflows	0.2506 (0.1787)	0.2276 (0.1790)	0.3523* (0.1742)	0.2471 (0.1785)	0.3518* (0.1774)
UNGA align. w/ USA		-0.8775 (0.4752)			-0.7658 (1.2225)
UNGA align. w/ W. Europe			-6.0049*** (1.2795)		-6.8119*** (1.5445)
UNGA align. w/ China				2.3250 (1.2819)	-3.2723 (3.4298)
Type: ECF/PRGF	0.5939 (0.4468)	0.5457 (0.4497)	0.4569 (0.4358)	0.5274 (0.4496)	0.4625 (0.4373)
Type: SBA/SCF	-0.7805 (0.4235)	-0.7957 (0.4279)	-0.6296 (0.4165)	-0.8221 (0.4277)	-0.5822 (0.4197)
Post-2008	0.2920 (0.3092)	0.3179 (0.3128)	0.0025 (0.3057)	0.2665 (0.3109)	0.0057 (0.3174)
Constant	-2.8827 (1.7075)	-4.3848* (1.8960)	-4.7561** (1.7039)	-3.0054 (1.7107)	-6.1401* (2.5974)
R ²	0.0944	0.1068	0.1613	0.1064	0.1648
N	307	298	298	298	298

Note: * $p \leq 0.05$; ** $p \leq 0.01$, *** $p \leq 0.001$. Standard errors are shown in parentheses. Models A5 and A9 are equivalent to Models 2 and 3 in the main text, respectively.

Models A10 through A13: Incorporating bilateral economic connectivity

Table A4 shows the results of incorporating bilateral economic connectivity, through two avenues: exports to – and FDI stocks from – the US, Western Europe, and China. These models use FDI stocks, rather than flows, to differentiate from total FDI inflows, already included in the general connectivity variables. Bilateral FDI data is available through 2012, which diminishes the sample size by about one-sixth compared to Models A5 through A9. Model A13 is equivalent to Model 4 in the main text.

Models A14 through A17: Uniting All Prior Models

Finally, Table A5 shows the results of combining all prior models for the US, Western Europe, China, and all three together. As mentioned above, the impact of FDI stocks takes the opposite sign from other forms of bilateral connectivity, indicating that the presence of Western foreign investors makes countries more prone to accepting IMF arrangements with stringer austerity requirements.

Table A4. IMF Fiscal Conditionality and Bilateral Economic Connectivity

	A10. Connectivity w/ USA	A11. Connectivity w/ W. Europe	A12. Connectivity w/ China	A13. Together
GDP pc	0.1046 (0.1266)	0.1327 (0.121)	0.0465 (0.1285)	0.0650 (0.1314)
GDP pc ²	-0.0000 (0.0055)	-0.0000 (0.0053)	0.0031 (0.0057)	0.0028 (0.0057)
OECD	-0.1579 (1.7089)	-0.3172 (1.6900)	-0.5818 (1.7070)	-0.0091 (1.6912)
GDP pc growth	-0.7562 (4.0817)	1.0345 (4.1799)	-0.8137 (4.1639)	2.6273 (4.2791)
Inflation	0.0321 (0.0222)	0.0409 (0.0224)	0.0312 (0.0222)	0.0492* (0.0230)
IMF quota share	-0.5585* (0.2249)	-0.5092* (0.2153)	-0.2951 (0.2075)	-0.5645* (0.2415)
UNSC	0.0698 (1.0545)	-0.2225 (0.9646)	-0.1876 (0.9738)	-0.4919 (1.0636)
ODA from DAC	-0.0023 (0.0025)	-0.0036 (0.0025)	-0.0045 (0.0026)	-0.0036 (0.0026)
ODA, other	-0.0212** (0.0081)	-0.022** (0.0078)	-0.0185* (0.0085)	-0.0174* (0.0087)
FDI net inflows	0.2231 (0.2115)	0.4622* (0.1996)	0.5153* (0.2059)	0.3650 (0.2152)
Exports to U.S.	0.1989 (0.1151)			0.2694* (0.1162)
Exports to W. Europe		-0.3180* (0.1584)		-0.4535** (0.1747)
Exports to China			0.0968 (0.0935)	0.0861 (0.0951)
FDI in-stocks from USA	0.0932 (0.0949)			0.0597 (0.0967)
FDI in-stocks from W. Europe		0.2317* (0.1005)		0.2140 (0.1095)
FDI in-stocks from China			-0.1074 (0.0636)	-0.0509 (0.0662)
Type: ECF/PRGF	0.5273 (0.5404)	0.8260 (0.5092)	0.4462 (0.5256)	0.4802 (0.5461)
Type: SBA/SCF	-0.8249 (0.5445)	-0.6509 (0.5068)	-0.7508 (0.5322)	-1.1089* (0.5582)
Post-2008	0.2662 (0.3418)	0.2631 (0.3375)	0.2646 (0.3603)	0.3728 (0.3626)
Constant	-1.8116 (1.8966)	-2.3480 (1.8468)	-0.4364 (1.9138)	-1.8010 (1.9767)
R ²	0.1267	0.1233	0.1086	0.1723
N	248	255	252	245

Note: * $p \leq 0.05$; ** $p \leq 0.01$, *** $p \leq 0.001$. Standard errors appear in parentheses. Exports to and FDI from China includes Hong Kong and Macao. Model A13 is equivalent to Model 4 in the main text.

Table A5. IMF Fiscal Conditionality and All Bilateral Connectivity

	A14. Connectivity w/ USA	A15. Connectivity w/ W. Europe	A16. Connectivity w/ China	A17. Together
GDP pc	0.0869 (0.1266)	0.2726* (0.1239)	0.0461 (0.1283)	0.2109 (0.1417)
GDP pc ²	0.0006 (0.0054)	-0.0071 (0.0054)	0.0032 (0.0056)	-0.0050 (0.0063)
OECD	0.1320 (1.7004)	0.5753 (1.6461)	-0.2698 (1.7065)	0.4904 (1.6679)
GDP pc growth	-0.9118 (4.0652)	2.1768 (4.0557)	-1.2798 (4.1512)	4.0407 (4.2161)
Inflation	0.0388 (0.0222)	0.0415 (0.0218)	0.0376 (0.0223)	0.043 (0.0232)
IMF quota share	-0.5659* (0.2286)	-0.4234* (0.213)	-0.3461 (0.2128)	-0.3816 (0.2644)
UNSC	0.1614 (1.0468)	-0.2143 (0.9305)	-0.0787 (0.9691)	-0.4778 (1.041)
ODA from DAC	-0.0020 (0.0025)	-0.0024 (0.0024)	-0.0041 (0.0026)	-0.0025 (0.0027)
ODA, other	-0.0181* (0.0082)	-0.0241** (0.0075)	-0.0187* (0.0084)	-0.0207* (0.0088)
FDI net inflows	0.1862 (0.2116)	0.5799** (0.1944)	0.5195* (0.2046)	0.5208* (0.2279)
UNGA align. w/ USA	-0.8379 (0.5523)			-0.8769 (1.4371)
UNGA align. w/ W. Europe		-5.6234*** (1.5214)		-5.8971** (2.1035)
UNGA align. w/ China			2.1037 (1.4443)	-5.2986 (3.9914)
Exports to USA	0.2383* (0.1181)			0.1560 (0.1296)
Exports to W. Europe		-0.2886 (0.1545)		-0.4878** (0.1856)
Exports to China			0.057 (0.0957)	0.0497 (0.0975)
FDI in-stocks from USA	0.0657 (0.0961)			0.0758 (0.101)
FDI in-stocks from W. Europe		0.2108* (0.1002)		0.2405* (0.1133)
FDI in-stocks from China			-0.1007 (0.0634)	-0.0458 (0.0648)
Type: ECF/PRGF	0.4181 (0.5444)	0.7024 (0.4961)	0.3857 (0.5274)	0.4716 (0.5420)
Type: SBA/SCF	-0.7792 (0.5505)	-0.5342 (0.4925)	-0.7659 (0.5301)	-0.8964 (0.5692)
Post-2008	0.2185 (0.3408)	0.0329 (0.3332)	0.2362 (0.362)	0.1373 (0.3736)
Constant	-3.0473 (2.0493)	-3.9067* (1.8327)	-0.5879 (1.908)	-5.2786 (3.1276)
R ²	0.1412	0.1842	0.1194	0.2213
N	243	250	247	240

Note: * $p \leq 0.05$; ** $p \leq 0.01$, *** $p \leq 0.001$. Standard errors appear in parentheses. Exports to and FDI from China includes Hong Kong and Macao. Model A17 is equivalent to Model 5 in the main text.

IMF Austerity since the Global Financial Crisis: New Data, Same Trend, and Similar Determinants

Dataset Codebook

Introduction

This codebook explains the derivation of the Fiscal Austerity Indicator (FAI) and its use in the manuscript “IMF Austerity since the Global Financial Crisis: New Data, Same Trend, and Similar Determinants.” Code and datasets are openly available. For maximum replicability, this codebook includes formulas for calculating the FAI and for OLS regressions that incorporate it in the main text.

Defining and Calculating our Variable of Interest

Step One: Defining fiscal conditionality

The aim of this work is to measure and analyze the depth of fiscal adjustment required by IMF agreements. For this, we chose to focus on agreements’ quantitative performance criteria (QPCs). Among all of the varied types of targets set in IMF agreements – including QPCs as well as structural conditionality and indicative targets – only QPCs are both measurable and binding (for more on the variety of IMF conditions, see Stone, 2008; Kentikelenis, Stubbs, and King, 2016; and others). In order for a country to continue in good stead in an IMF program, they must either meet the QPCs or – in extenuating circumstances – receive a waiver.

To ensure that our variable of interest is comparable across countries and years, we use only QPCs for headline fiscal balances, with fiscal surpluses recorded as positive balances and fiscal deficits recorded as negative balances. In the IMF’s Monitoring of Fund Arrangements (MONA) database (IMF, n.d.-b), these are classified under the main subject of “credit to government/ public sector” and “fiscal balance.” Using MONA for these levels ensures that we are incorporating only the final value of each target, after any revisions and adjustments are made.

In addition to the QPCs listed in MONA, Stubbs et al (forthcoming) have identified additional QPCs that do not qualify for inclusion in MONA for several possible reasons, including agreements from before MONA’s data collection began in 2002, or agreements which were cancelled. In these cases, to ensure that we include the latest QPC level, we use the values for each QPC as listed in the first agreement review after the criteria deadline, or if that is not available, the last one before the target date.

Within the categories of “credit to government/public sector” and “fiscal balance,” only headline balances are considered, which include:

- Net borrowing/lending
- Borrowing requirement
- Cash deficit/surplus
- Fiscal balance/deficit/surplus

We focus exclusively on targets for national government bodies, rather than sub-national government bodies or state-owned enterprises. Government entities studied here include:

- Central government
- General government

- Non-financial public sector
- Combined public sector

We include both basic and primary balances (which measure fiscal balances with and without taking grants into account). We also include balances with or without the inclusion of state-owned enterprises (SOEs). However, grants and SOEs are not considered on their own. Balances may also be expressed on a cash or accrual basis. In each of these cases, we ensure that the baseline values we use for calculating the extent of adjustment over the course of the IMF agreement are defined in an identical way as the target values. (Precise calculation methods are explained in more detail below).

We exclude “one step removed” fiscal measures, including domestic balances, net domestic or external borrowing, or banking sector or central bank credit to the government. These measures mix fiscal deficits with how governments choose to fill those deficits. Thus, they are not appropriate for measuring overall fiscal adjustment requirements.

We focus exclusively on QPCs set for the end of calendar years. This allows clean comparison with the baseline values from the year before the agreement was signed, which are nearly universally expressed for calendar years.

Finally, this analysis does not take into account whether a country successfully met a given QPC, because the research question at hand involves prior determinants in setting the QPC. However, if a country’s agreement is terminated due to a missed QPC, then no further QPCs will be set in that arrangement, so no additional observations will be included in this dataset.

Later steps: Calculating fiscal adjustment

With headline fiscal balance targets defined according to the section above, we measure the extent to which those targets require fiscal adjustment, compared to their baseline levels before the agreement was signed. We use the following method:

1. We first express QPC targets – taken from MONA (IMF, n.d.-b) or Stubbs et al (forthcoming) – relative to size of the country’s economy. For this step, we divide the absolute fiscal balance in the QPC by the country’s GDP, as it was projected at the time the QPC was set. We use projected rather than actual GDP levels, in order to focus on the intention embedded in the IMF agreement rather than actual performance. The final QPC levels (after all adjustments and revisions) are available in the IMF MONA database (in the “QPC” and “Other QPC and Indicative Targets” datasets). The projected GDP levels are nearly always available in the most recent program review published before the QPC target date. In the cases where this is not true (either because the document does not list the levels or because the document is not available online), we used projected GDP from the fall IMF World Economic Outlook (WEO) database.
2. We then compare the QPC (expressed as a share of GDP) with its baseline equivalent from the year before the agreement was signed. The baseline fiscal balance levels are drawn from the text and tables of IMF agreements and reviews. Where they are reported as a share of GDP, we use that estimation. Where they are reported in absolute levels, we use GDP values taken from these same reports, or when they are not reported there, from the IMF WEO database. As the baseline level of GDP is actual, not projected, GDP, it does not need to be drawn from a particular WEO version. Subtracting the QPC (as a share of projected GDP) from the baseline fiscal balance (as a share of actual GDP) produces the total fiscal adjustment.

3. Finally, we annualize the total fiscal adjustment, to express it in percentage points of GDP per year. In this step, we simply divide the total fiscal adjustment by the number of years that transpired between the target year and the baseline year. This is the year of the program, plus one. For example, in the first year of a program, Year 0, one year has passed after the baseline data, and so on.

The result of this process is our variable of interest, the Fiscal Adjustment Indicator, which can be expressed in the following formula:

$$FAI_{k,t} = \frac{\frac{HFB_{k,t}^T}{GDP_{k,t}^P} - \frac{HFB_{k,-1}^B}{GDP_{k,-1}^B}}{t + 1} \times 100$$

Where:

FAI_{k,t} = the Fiscal Adjustment Indicator for country k at time t, with t=0 as the first year of an agreement

HFB_{k,t}^T = Targeted headline fiscal balance set for country k at time t, with t=0 as the first year of an agreement

GDP_{k,t}^P = Calendar-year GDP for country k at time t, as it was projected when the QPC was set, with t=0 as the first year of an agreement

HFB_{k,-1}^B = Baseline headline fiscal balance for country k in the year prior to the IMF agreement's signing

GDP_{k,-1}^B = Baseline calendar-year GDP for country k in the year prior to the IMF agreement's signing

t + 1 = The number of years that have passed between the baseline year (the year prior to the IMF agreement's signing) and the year of the QPC, with t=0 as the first year of an agreement

Resolving observations with multiple headline fiscal targets

In 27 cases, countries have multiple headline fiscal targets for a particular year. For example, the Dominican Republic's 2009, 2010, and 2011 QPCs (all stemming from their 2009 agreement) target both the central government balance and the consolidated public sector balance. In these cases, in order to best reflect the overall programmed fiscal tightening or loosening of an agreement, we first compute the FAI for each QPC and then take the average, to yield one average fiscal adjustment measure.

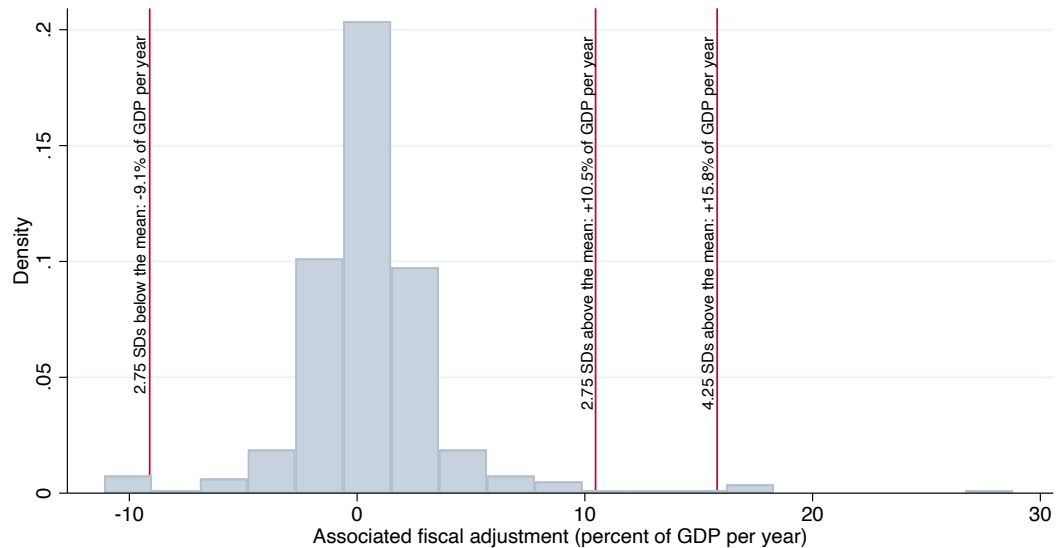
One additional unusual case merits mentioning here. At the end of 2016, Rwanda headline fiscal had two concurrent agreements (a policy support instrument, signed in 2013, and a standby credit facility, signed in 2016). Their end-2016 reviews for both agreements are consolidated into one document, in which a headline fiscal QPC appears. In this case, the question arises of which year to choose as a baseline, for the sake of calculating the total fiscal adjustment required. In this case, we have calculated the effective adjustment from both baseline years and taken the average adjustment.

Resulting FAI dataset

The resulting sample includes 365 QPCs from 156 agreements between the IMF and 77 countries, between 2001 and 2018. As a robustness check, the last models presented in the main research text accompanying this codebook also includes several additional QPCs that do not appear in the IMF's MONA dataset but which have been identified by Stubbs et al (forthcoming), and which fit the qualifications for inclusion here. Those additional observations entail 38 additional QPCs from 21 agreements.

This dataset begins in 2001, after the IMF instituted its current definitions for headline fiscal balance variables. It extends through 2018, the last year for which all reviews are available, including those not in MONA. Figure 1 shows the distribution of FAI levels. Positive values imply a rise in the fiscal balance (tightening) while negative values imply fiscal relaxation.

Figure 1. Distribution of FAI Values



As Figure 1 shows, FAI values are highly concentrated close to zero. Outside of the main distribution, a group of outliers appears beyond 2.75 standard deviations away from the mean (indicating very lenient agreements, allowing for headline fiscal balances to fall by more than 8.9 percent of GDP per year, and very austere agreements, requiring fiscal tightening of more than 10.3 percent of GDP per year). Another group of even more extreme outliers appears beyond 4.25 standard deviations above the mean (indicating extremely austere agreements, requiring headline fiscal balances to rise by over 15.5 percent of GDP per year). Table 3 shows the countries and years affected by these outlier agreements.

Table 1. Outlier Observations

Country	QPC Year	Fiscal Adjustment Indicator	
		% of GDP per year	SDs from the mean
<i>Extremely lenient:</i>			
Maldives	2009	-11.1%	-3.4
Azerbaijan	2003	-10.2%	-3.1
Azerbaijan	2004	-9.8%	-3.0
Iceland	2009	-9.5%	-3.0
Croatia	2004	-9.3%	-2.9
Croatia	2005	-9.0%	-2.8
<i>Extremely austere:</i>			
Burkina Faso	2010	11.2%	+3.0
Congo, Republic of	2006	13.4%	+3.6
Iraq	2006	15.6%	+4.3
Antigua and Barbuda	2010	16.8%	+4.6
Antigua and Barbuda	2011	17.8%	+4.9
Antigua and Barbuda	2012	17.8%	+4.9
Iraq	2005	28.8%	+8.1

As Figure 1 and Table 1 show, these 13 observations (3.4 percent of the sample) are highly unusual agreements with countries facing extraordinary circumstances. For example, Iraq's 2005 agreement, came during the country's post-conflict reconstruction. Because of their extreme position outside

of the main distribution, we exclude them from models 1-5 here. However, an argument could be made for inclusion of agreements between 2.75 and four standard deviations away from the mean, including all of the more lenient outliers and two of the less-extreme austere outliers. This is particularly true because this category of “near” outliers includes several QPCs for peripheral European countries, and connectivity with Western Europe is one of the main determinants we examine here. For this reason, as a robustness check, we later extend the analysis to all observations within four standard deviations of the mean.

Figure 2 shows how the FAI distribution has changed over the time period studied here, through the median, 25th, and 75th, percentiles for each year. In keeping with IMF public statements, 2009 saw the most lenient median FAI of any year in this sample. However, the following few years saw a rebound into more positive FAI values.

Figure 2. Distribution of Cumulative, Annualized Fiscal Adjustment in QPCs, 2001-2018

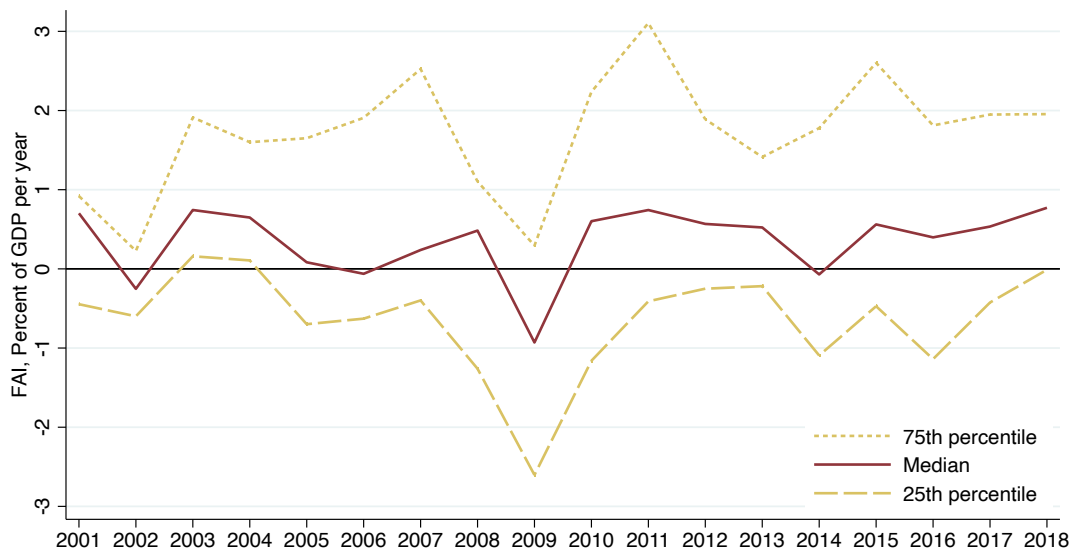


Table 2 shows the coverage of QPCs across countries and years. Coverage peaks in 2010 at 29 QPCs. Countries have between one and 13 QPCs, with the Kyrgyz Republic and Senegal tied for the most representation here.

Table 2. Countries and QPC Target Dates Included in this Sample

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total	
AGO																		•	1	
ALB														•	•					2
ARG			•																•	2
ARM		•	•	•	•	•	•	•	•	•				•	•	•				12
AZE	•	•																		2
BEN						•	•	•		•								•	•	6
BFA							•	•	•		•	•								5
BGR		•	•	•		•														4
BIH												•	•	•		•			•	5
BLR									•											•
BOL			•		•															2
BRA		•	•	•																3
CAF							•	•	•			•				•	•	•		7
CIV		•							•	•	•	•	•	•		•	•	•		10
CMR					•	•	•											•	•	5
COG								•	•	•										4
COL		•	•	•	•															4
CRI									•											•
CYP													•		•					2
DJI										•	•									2
DMA		•	•	•	•															4
DOM			•		•	•	•		•	•	•									7
ECU			•																	1
GAB				•			•	•										•	•	5
GEO	•			•	•			•	•	•		•	•	•	•		•	•		12
GHA									•	•	•				•	•	•	•		7
GIN		•					•	•				•	•	•				•	•	8
GMB							•	•	•	•										4



Table 2, Part 2. Countries and QPC Target Dates Included in this Sample

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
GRC														5
GRD								6
GTM		.	.						.										3
HND						9
HRV			.																1
IRL										.	.	.							3
IRQ																.	.	.	3
ISL								.		.									2
JAM													6
JOR			7
KEN											.	.				.			3
KGZ		13
KNA											.	.	.						3
LBR								.	.	.									3
LKA																.	.	.	3
LTU	.	.																	2
LVA								.	.	.									3
MDA																.	.	.	3
MDG																.	.	.	3
MKD														4
MNG																	.	.	2
MOZ				.	.														2
MRT										5
MWI																		.	1
NER					.														1
NGA					.	.													2
NIC									8
PAK													.	.	.				3

Table 2, Part 3. Countries and QPC Target Dates Included in this Sample

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
PER				.	.		.	.											4
PRT											.	.	.						3
PRY			.	.		.	.												4
ROU	.	.		.					.	.	.	.	.						8
RWA		.	.	.	.	.	.	.							.	.	.		10
SEN			.				.	.	.	.	.	.	.	.	.	.	.	.	13
SLB										.	.	.	.	.					5
SLE	.	.		.		.	.	.	.										7
SLV									.	.	.								3
SRB									.	.	.				.	.	.		6
STP					.	.	.		.	.		.	.	.	.	.	.	.	12
SUR																.			1
SYC								.	.	.	.	.		.	.	.	.	.	10
TCD					.									.	.	.	.	.	6
TGO								.	.	.							.	.	5
TJK									.	.	.								3
TUN													.	.		.	.	.	5
TUR		.	.	.	.	.	.												6
UKR	.							.	.	.	.			.	.	.	.	.	9
URY	.	.	.	.	.	.													6
UVK										.		.			.				3
ZMB				.	.	.													3
Total	8	17	19	19	20	17	19	23	26	29	22	20	17	19	18	24	26	25	368



Of course, it would be overly simplistic to examine trends in IMF fiscal conditionality without accounting for the substantial swings in macroeconomic condition that accompanied them. The remainder of the main research paper accompanying this codebook explores two main research questions: first, has IMF fiscal conditionality changed after the 2009 Global Financial Crisis, accounting for the changing macroeconomic context countries faced in the same period? Second, has the political economy of IMF lending – particularly the importance of country connectivity to major global economic power in determining the extent of IMF program conditionality – changed over this time?

Analytic Methodology

The research paper accompanying this codebook gives special attention to the political economy of IMF lending, especially the economic and diplomatic relationships of countries. It follows Barro and Lee’s (2005) seminal work in measuring these connectivity variables over five-year periods prior to the QPC, but also draws on relationships profiled in other work.

$$FAI_i = \beta_0 + \beta_1 MC_i + \beta_2 MS_i + \beta_3 GC_i + \beta_4 BC_i + \beta_5 AT_i + \beta_6 T_i + \varepsilon_i$$

Here, **FAI** is the Fiscal Adjustment Indicator, defined and measured as above. Positive values imply a rise in the fiscal balance (tightening) while negative values imply fiscal relaxation.

MC is a vector of medium-term macroeconomic context variables that describe the overall state of the country in the five years prior to the QPC: real GDP per capita, in absolute terms and squared, and membership in the OECD club of high-income countries. This approach is taken from Barro and Lee (2005) and is measured prior to the QPC to avoid reverse causality concerns. To avoid multicollinearity with countries’ IMF quota share (listed below), we follow Dreher, Sturm, and Vreeland (2009) in omitting total GDP here, differing from Barro and Lee (2005) in that regard.

MS is a vector of short-term macroeconomic state variables during the year of the QPC: per-capita GDP growth and inflation in the year of the QPC. They are included here to allow for the IMF’s concept of “growth-friendly” fiscal adjustment (see for example IMF, 2014 and 2015).

GC is a vector of general connectivity with the world: IMF quota share, membership on the UN Security Council (UNSC), net bilateral aid (Official Development Assistance, ODA), and net foreign direct investment (FDI) inflows as a share of GDP. Bilateral ODA is measured two ways: from high-income donors in the OECD Development Assistance Committee, and other bilateral donors. These variables are taken to represent the general connectivity measures used by Barro and Lee (2005); Dreher, Sturm, and Vreeland (2013); and others. The only liberty taken here is a country’s UNSC membership. We measure this variable for the year of the QPC rather than the five years prior, for two reasons. First, there is no reverse-causality possibility here. Second, the purpose of including this variable is to capture what Dreher, Sturm, and Vreeland (2009) call “horse trading” which is only a possibility in the year of the QPC.

BC is a vector of bilateral connectivity variables measuring the strength of ties between the country and three global economic centers: the US, Western Europe, and China. Bilateral connectivity is measured in diplomatic terms, through vote alignment in UN General Assembly votes, as well as in economic terms, through trade (exports to each economic center as a share of GDP), and investment (FDI stocks from each center as a share of GDP). Bilateral UN voting alignment has a long history of inclusion in the literature cited here, dating back to Barro and Lee (2005) and Dreher and Jensen (2007). Barro and Lee (2005) also introduce the use of export connectivity.

AT categorizes each QPC as belonging to one of three arrangement types: long-term support for structural reforms, short-term support for balance-of-payments concerns, and other arrangements. As Table 2 shows, below, most agreements included here fall into the first two categories. In grouping arrangements by type, we follow the example of Dreher, Sturm, and Vreeland (2013). It is reasonable to expect differing levels of conditionality among arrangement types, as they are created for different situations with different needs.

Finally, **T** measures time by using a binary variable to indicate whether a QPC fell after the financial crisis. Because we include only year-end QPCs, we include 2009 in the second time period. This variable is included to seek a structural break in conditionality after the crisis.

Western Europe is defined here as the United Kingdom, France, and Germany. UN General Assembly voting alignment is measured as an average alignment with all three countries. Bilateral economic ties are measured as the sum of exports to, or investment from, all three countries.

OECD membership is listed in the vector of macroeconomic context variables, following Barro and Lee (2005), but it could equally belong among general connectivity variables like UN Security Council membership. As the results below show, it is never significantly associated with variations in the dependent variable, so this point is largely moot.

Description of Data

The independent variables described above are drawn from a variety of sources, most of which are publicly available for ease of replicability. Several independent variables are shown in log form. In those cases, it is important to avoid losing observations with valid values of zero. Thus, we add the minimum non-zero observed value to every observation before taking the log. This step preserves the explanatory power of the analysis in OLS form while preserving observations of zero. Table 3 lists the sources (and where applicable, minimum non-zero values) for each of these variables.

Table 3. Variable Detail

Variable	Unit	Source	Min. value added before log
Fiscal adjustment indicator	Perc. points of GDP / year	Authors, IMF (n.d.-b)	-
GPD per capita	Thousands of 2011 USD	IMF, 2019	-
GPD per capita, squared	Thousands of 2011 USD	IMF, 2019	-
OECD Membership	Percent of the last 5 years	OECD	-
GDP growth per capita	Percentage growth	Authors	-
Inflation	Percentage growth	World Bank (n.d.)	-
IMF quota share	Logged percent	IMF (n.d.-a)	None (no zeros)
UNSC	UNSC membership	UN (n.d.-b)	-
Net ODA from DAC donors	USD per capita	World Bank (n.d.)	-
Net ODA, others	USD per capita	World Bank (n.d.)	-
Net FDI inflows	Logged share of GDP	World Bank (n.d.)	None (no zeros)
UN alignment with US	Logged percent	Kilby (forthcoming)	None (no zeros)
UN alignment with W.E.	Logged percent	Kilby (forthcoming)	None (no zeros)
UN alignment with China	Logged percent	Kilby (forthcoming)	None (no zeros)
Exports to U.S.	Logged share of GDP	UN (n.d.-a)	0.000172
Exports to W. Europe	Logged share of GDP	UN (n.d.-a)	0.000966
Exports to China	Logged share of GDP	UN (n.d.-a)	0.000011
FDI In-stocks from U.S.	Logged share of GDP	UNCTAD (2014)	0.000061
FDI In-stocks from W.E.	Logged share of GDP	UNCTAD (2014)	0.000459
FDI In-stocks from China	Logged share of GDP	UNCTAD (2014)	0.000005
QPC Year	Target year	IMF (n.d.-b)	-

Table 4 summarizes the data used in this analysis. As Table 3 shows, the dependent variable is fairly tightly clustered around zero: the overwhelming majority of QPCs envision fiscal budgets that will be tightened or loosened by at most a few percentage points of GDP per year.

Table 4. Summary Statistics

Variable	Mean	Median	S.D	Min	Max	N
DV: Fiscal Adjustment Indicator	0.52	0.35	2.40	-8.95	9.68	335
IVs: Medium-term macroeconomic context, past 5 years						
GDP pc, thousands of USD	7.97	5.52	8.10	0.63	47.87	335
GDP pc, squared	129.32	30.62	298.52	0.40	2295.49	335
OECD membership, percent of time	0.05	0.00	0.21	0.00	1.00	335
IVs: Short-term economic situation, year of QPC						
Real GDP growth per capita	0.02	0.02	0.04	-0.15	0.21	335
CPI Inflation, annual percent	6.30	4.91	6.88	-2.41	55.50	335
IVs: General connectivity over the last 5 years						
IMF quota share, log %	-7.45	-7.44	1.35	-10.38	-4.23	335
UNSC membership, percent of time	0.03	0.00	0.16	0.00	1.00	335
Net ODA from DAC, USD per capita	68.82	42.95	80.71	-0.11	510.13	313
Net ODA, other, USD per capita	25.01	17.75	28.66	0.12	186.45	309
Net FDI inflows, log % of GDP	-3.38	-3.24	1.00	-6.22	0.54	333
IVs: Bilateral Connectivity over the last 5 years						
UNGA alignment w/ US, log %	-1.15	-1.19	0.31	-1.82	-0.56	326
UNGA alignment w/ WE, log %	-0.39	-0.44	0.15	-0.63	-0.07	326
UNGA alignment w/ China, log %	-0.22	-0.18	0.12	-0.57	-0.06	326
Exports to US, log % of GDP	-4.63	-4.68	1.68	-8.67	-0.85	332
Exports to WE, log % of GDP	-3.99	-4.03	1.11	-6.94	-1.55	332
Exports to China, log % of GDP	-5.56	-5.50	1.91	-11.41	-0.93	332
FDI stock from US, log % of GDP	-6.41	-6.28	2.60	-9.71	-0.37	277
FDI stock from WE, log % of GDP	-5.91	-7.11	2.08	-7.69	-0.83	284
FDI stock from China, log % of GDP	-8.92	-9.32	3.12	-12.26	-2.30	281
IVs: Time of QCP						
Year of QPC	2010.70	2011.00	4.75	2001	2018	335
QPC after 2008	0.65	1.00	0.48	0.00	1.00	335

Furthermore, this analysis takes into account the type of each arrangement, as each type has been developed for different circumstances with different needs. Most of the arrangements considered here fall into one of two categories: long-term support for low-income countries (LICs) or short-term support for countries of any income level facing balance-of-payments problems. Together, those two categories account for over three-fourths of the total sample. Table 5 shows the distribution of the sample among IMF arrangement types, and their classification for the analysis here.

Table 5. Sample Distribution by IMF Arrangement Type

Category	Arrangement Type	N
ECF/PRGF: Long-term support	ECF (Extended Credit Facility, initiated 2010) or PRGF (Poverty Reduction and Growth Facility, before 2010)	144
	Combination: ECF / PRGF and EFF (Extended Funds Facility)	9
	<i>Total</i>	<i>153</i>
SBA/SCF: Short-term balance-of-payments assistance	SBA (Stand-By Arrangement, for middle and high-income countries)	117
	SCF (Standby Credit Facility, for low-income countries)	3
	Combination: SBA-SCF	13
	<i>Total</i>	<i>133</i>
Other	EFF (Extended Funds Facility, medium-term balance-of-payments support)	56
	ESF (Exogenous Shock Facility, for LICs facing sudden exogenous shocks)	2
	PCI (Policy Coordination Instrument, a policy arrangement without credit)	2
	PSI (Policy Support Instrument, a policy arrangement without credit for LICs)	17
	<i>Total</i>	<i>77</i>
TOTAL		365

As many scholars have noted before, addressing endogeneity concerns is a crucial – and complex – task when examining IMF lending. This is especially true for investigations into the impacts of conditionality, which must account for the fact that countries with IMF agreements have something important in common: they are approaching the IMF during tumultuous economic times. Although the present analysis is limited to the determinants of IMF conditionality, the question of endogeneity still arises. For example, while this analysis includes questions of global economic connectivity, it is important to remember that a country's connectivity with the rest of the world is likely to change during an economic crisis. Furthermore, especially insular countries are less likely to approach multilateral institutions in the first place, regardless of economic conditions.

The main text accompanying this codebook avoids endogeneity problems in two ways. First, it limits its scope to QPCs that target headline fiscal balances. Thus, it eliminates the question of the intrinsic differences between countries entering into these agreements and other countries. Second, potential determinants of IMF conditionality are measured over five-year periods prior to the QPC target date, to avoid questions of reverse causality.

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