

## **“Keep the Receipts:” The Political Economy of IMF Austerity During and After the Crisis Years of 2009 and 2020**

### **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 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. 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. The resulting variable is defined as

$$FAI = \frac{\left(QPC_T / GDP_T\right) - \left(Actual_{-1} / GDP_{-1}\right)}{Y_T - Y_{-1}} * 100$$

Where

$QPC_T$  = the quantitative performance criterion in year T of the agreement

$GDP_T$  = nominal GDP in year T of the agreement, as projected at the time the QPC was set

$Actual_{-1}$  = the actual value for the variable targeted in the QPC, in the year prior to the agreement

$GDP_{-1}$  = actual nominal GDP in year prior to the agreement

$Y_T$  = the calendar year of the QPC  
 $Y_{-1}$  = the calendar year prior to the agreement

In a few cases, countries have multiple headline fiscal targets for a particular year. For example, in 2013 Côte D'Ivoire had two headline fiscal QPCs, targeting the overall and primary balance. In cases such as this, a simple average is taken of the FAI values that arise from each of these targets.

We draw independent variables from a variety of sources, all 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 before logs
IMF FAI	Perc. points of GDP / year	Authors, IMF (2022c)	-
GPD per capita	Thousands of 2011 USD *	IMF, (2022b)	-
GPD per capita, squared	Thousands of 2011 USD *	IMF, (2022b)	-
OECD Membership	Percent of time *	OECD (2022)	-
GDP growth per capita	Percentage growth	IMF (2022b)	-
Inflation	Percentage growth	IMF (2022b)	-
IMF quota share	Logged percent *	IMF (2022b)	**
UNSC	Binary	UN (2022b)	-
ODA from DAC	Logged percent of GDP *	OECD (2022)	0.00724%
Net ODA, others	Logged percent of GDP *	OECD (2022)	0.00004%
Net FDI inflows	Logged percent of GDP *	World Bank (2022)	**
UNGA alignment w/ USA	Logged percent of GDP *	Voeten (2013),	**
UNGA alignment w/ W.E.		Voeten, Strezhnev,	**
UNGA alignment w/ China		and Bailey (2009).	**
Exports to USA	Logged percent of GDP *	UN (2022)	0.01718%
Exports to W.E.			0.09359%
Exports to China			0.19714%
FDI In-stocks from USA	Logged percent of GDP *	UNCTAD (2014),	0.00409%
FDI In-stocks from W.E.		IMF (2022a)	0.00216%
FDI In-stocks from China			0.00011%
QPC Year	Target year	IMF (2022c)	-

Note: \* indicates variables measured in the 5 years prior to a QPC. \*\* indicates variables for which zeros indicate missing values, and therefore minimum values are not taken before logs are calculated.

Compiling data for FDI in-stocks is a two-step process to maximize data coverage. UNCTAD (2014) includes data for 2001 through 2014, while IMF (2022a) includes data for 2009 through 2020. In order to create a continuous dataset from 2001 through 2014, simple averages are taken for the overlapping years. For FDI from China, IMF (2022a) has a more limited range of years, and so countries' reported inbound FDI is used rather than China's reported outbound FDI.

## Detailed Quantitative Results

This section gives more detail to the connectivity results in Models 5 through 7, allowing for each external partner to be considered in turn.. Table A2 shows the general and diplomatic aspects of these relationships. The first of these models, Model 4 (equivalent to Model 4 in the main text and presented here for ease of comparison), 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. Model 5 (equivalent to Model 5 in the main text) also includes bilateral diplomatic connectivity, measured as United Nations General Assembly (UNGA) voting alignment with the US, Western Europe, China, and all three together. Models 5A through 5C display the same model for one external partner each.

When considered individually, it is clear that voting alignment with both the US and Western Europe are strongly and significantly associated with more lenient IMF agreements. However, when taken together, the impact of voting in alignment with China is the only one of these three variables to maintain its significance. As explained in the main text, this is likely due to the extremely strong positive correlation between countries' UNGA alignment with the US and with Western Europe, and the extremely strong *negative* correlation between each of these variables with the Chinese corollary. Thus, it is safe to interpret these results as indicative of all three relationships.

**Table A2: IMF fiscal conditionality, general connectivity, and bilateral diplomatic connectivity**

	4. General connectivity	5. UNGA, All partners	5A. UNGA, United States	5B. UNGA, W. Europe	5C. UNGA, China
GDP pc	0.0528 (0.0562)	0.1224* (0.0566)	0.1076 (0.0572)	0.1063 (0.0566)	0.1137* (0.056)
GDP pc <sup>2</sup>	-0.0024* (0.0010)	-0.0032*** (0.0010)	-0.003** (0.001)	-0.0031** (0.001)	-0.003** (0.001)
GDP pc growth	6.0737* (3.0862)	6.7820* (3.0351)	6.7389* (3.039)	7.715* (3.0492)	6.0259* (2.9957)
Inflation	0.0325*** (0.0098)	0.0301** (0.0096)	0.0279** (0.0097)	0.0313*** (0.0096)	0.0293** (0.0096)
Type: ECF/PRGF	-0.5175 (0.4019)	-0.2399 (0.3950)	-0.2874 (0.4)	-0.3584 (0.3955)	-0.2372 (0.3945)
Type: SBA/SCF	-1.2966*** (0.3611)	-0.9328* (0.3641)	-0.9725** (0.3658)	-0.9308* (0.365)	-1.0232** (0.3552)
IMF quota share	-0.1982 (0.1311)	-0.0127 (0.1329)	-0.0654 (0.1339)	-0.0755 (0.1319)	-0.0266 (0.1322)
OECD	1.0522 (0.9375)	1.8275 (0.9444)	1.3876 (0.9261)	2.0336* (0.9496)	1.4172 (0.9132)
UNSC	0.0624 (0.5367)	0.0432 (0.5208)	-0.0023 (0.5278)	0.0332 (0.5256)	0.0422 (0.521)
ODA from DAC	-0.1435 (0.1601)	-0.1002 (0.1568)	-0.0809 (0.1583)	-0.0774 (0.1576)	-0.1192 (0.1555)
ODA, non-DAC	-0.1345* (0.0582)	-0.0969 (0.0572)	-0.1283* (0.0572)	-0.1192* (0.0571)	-0.0988 (0.057)
FDI net inflows	0.0655 (0.1394)	0.1812 (0.1425)	0.1145 (0.1377)	0.2315 (0.1425)	0.1073 (0.1356)
UNGA Alignment with U.S.		0.4042 (0.8236)	-1.8615*** (0.5065)		
UNGA Alignment with W. Eur.		-2.4136 (1.4398)		-4.4322*** (1.0959)	
UNGA Alignment with China		5.7563** (2.1608)			6.6971*** (1.3975)
Post-2009	0.6366* (0.2778)	0.6433 (0.3299)	1.0526*** (0.2956)	0.4536 (0.2757)	0.8654** (0.2738)
Constant	0.8132 (1.7622)	1.8301 (2.1860)	-1.6036 (1.8529)	-0.5286 (1.7572)	2.2358 (1.7361)
R <sup>2</sup>	0.1200***	0.1798***	0.1521***	0.1586***	0.1732***
N	372	372	372	372	372

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 6 through 6C: Incorporating bilateral economic connectivity**

Table A3 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. Model 6 is equivalent to Model 6 in the main text, while Models 6A through 6C isolate one external partner each.

As Table A3 shows, borrowers' economic relationships do not change in significance when considered in isolation rather than in conjunction with each other. In other words, in contrast to UNGA voting alignment, trade and investment relationships do not appear to be highly enough correlated with each other to impact the overall results. Thus, it is appropriate to interpret Models 6 through 6C as showing the importance of trade with Western Europe and FDI from the US but not other avenues for these relationships.

**Table A3: IMF fiscal conditionality and bilateral economic connectivity**

	6. Bilat. Econ. Connectivity	6A. Bilat. Econ. Conn., USA	6B. Bilat. Econ. Conn., W. Eur.	6C. Bilat. Econ. Conn., China
GDP pc	0.0806 (0.0579)	0.032 (0.0562)	0.0845 (0.0571)	0.0629 (0.058)
GDP pc <sup>2</sup>	-0.0026** (0.0010)	-0.0021* (0.001)	-0.0026** (0.001)	-0.0026* (0.001)
OECD	7.9605* (3.2518)	6.3499* (3.064)	6.1924* (3.0896)	6.9948* (3.3228)
GDP pc growth	0.0319*** (0.0099)	0.0345*** (0.0098)	0.0296** (0.01)	0.033*** (0.0099)
Inflation	-0.4322 (0.4068)	-0.5848 (0.4008)	-0.4793 (0.4027)	-0.4446 (0.4122)
Type: ECF/PRGF	-1.5107*** (0.3772)	-1.3931*** (0.3621)	-1.4038*** (0.3614)	-1.2473*** (0.3828)
Type: SBA/SCF	-0.4077* (0.1623)	-0.3983** (0.1448)	-0.0959 (0.1452)	-0.2555 (0.1427)
IMF quota share	1.5341 (0.9463)	1.4043 (0.9373)	0.9043 (0.9356)	1.171 (0.9619)
UNSC	-0.0859 (0.5337)	0.0828 (0.5329)	0.0066 (0.5337)	0.0096 (0.5486)
ODA from DAC	-0.1832 (0.1619)	-0.1995 (0.1606)	-0.1159 (0.1595)	-0.1327 (0.1642)
ODA, other	-0.0976 (0.0638)	-0.086 (0.0611)	-0.1336* (0.0578)	-0.1617** (0.0625)
FDI net inflows	-0.0477 (0.1486)	-0.032 (0.1435)	0.1203 (0.1401)	0.025 (0.1472)
Exports to U.S.	0.1616 (0.0938)	0.0746 (0.0889)		
Exports to W. Europe	-0.4464*** (0.1306)		-0.2766* (0.121)	
Exports to China	0.1128 (0.0710)			0.0874 (0.0713)
FDI in-stocks from USA	0.1903** (0.0618)	0.1534** (0.0589)		
FDI in-stocks from W. Europe	-0.0562 (0.0543)		-0.0386 (0.0527)	
FDI in-stocks from China	0.0415 (0.0409)			0.0234 (0.041)
Post-2009	0.4668 (0.2942)	0.6118* (0.2755)	0.6085* (0.2885)	0.5528 (0.2884)
Constant	-0.3020 (1.8452)	0.783 (1.7537)	-0.0549 (1.8246)	0.8796 (1.8252)
R <sup>2</sup>	0.1906***	0.1453***	0.1365***	0.1255***
N	357	369	372	360

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.

### **Models 7 through 7C: Uniting All Prior Models**

Finally, Table A4 shows the results of combining all prior models for the US, Western Europe, China, and all three together. As above, Model 7 is equivalent to Model 7 in the main text, while Models 7A through 7C isolate one external partner each.

Notably, the importance of a QPC coming after the 2010 reforms is strongly significant for every model in Table A4 that does not include bilateral connectivity with Europe, and not significant for every model that does. These findings reinforce the likelihood that it is the changing composition of borrowers, and their political and economic relationships with Europe, that explain the seeming rise in austerity after the 2010 reforms.

**TABLE A4: IMF fiscal conditionality and all bilateral connectivity**

	7. Diplomatic, Econ. Connectivity	7A. Dip., Econ. Conn., USA	7B. Dip., Econ Conn., W. Eur.	7C. Dip., Econ Conn., China
GDP pc	0.1211* (0.0595)	0.0842 (0.0577)	0.135* (0.0574)	0.1216* (0.0578)
GDP pc <sup>2</sup>	-0.0030** (0.0010)	-0.0028** (0.001)	-0.0033*** (0.001)	-0.0031*** (0.001)
OECD	8.2217* (3.2470)	6.8605* (3.0267)	7.7562* (3.0528)	6.866* (3.2303)
GDP pc growth	0.0320*** (0.0099)	0.0301** (0.0097)	0.0284** (0.0098)	0.0297** (0.0097)
Inflation	-0.2267 (0.4070)	-0.3487 (0.4019)	-0.3304 (0.3964)	-0.1888 (0.4046)
Type: ECF/PRGF	-1.2369** (0.3928)	-1.0692** (0.3706)	-1.0417** (0.3657)	-1.0135** (0.3756)
Type: SBA/SCF	-0.2567 (0.1753)	-0.2561 (0.1493)	0.0231 (0.1454)	-0.0554 (0.1454)
IMF quota share	1.9163* (0.9564)	1.6581 (0.9279)	1.8658* (0.9481)	1.4459 (0.937)
UNSC	-0.0607 (0.5264)	0.0307 (0.5259)	-0.0179 (0.5229)	-0.0005 (0.5333)
ODA from DAC	-0.1528 (0.1630)	-0.1344 (0.1597)	-0.0534 (0.1571)	-0.1106 (0.1597)
ODA, other	-0.0743 (0.0638)	-0.0873 (0.0603)	-0.1188* (0.0568)	-0.1153 (0.0616)
FDI net inflows	0.0396 (0.1590)	0.0249 (0.1426)	0.28 (0.1431)	0.0771 (0.1436)
UNGA Alignment with U.S.	0.9716 (0.9143)	-1.6844*** (0.5145)		
UNGA Alignment with W. Eur.	-1.6546 (1.6099)		-4.3347*** (1.0903)	
UNGA Alignment with China	5.8279* (2.3454)			6.5847*** (1.4366)
Export intensity to U.S.	0.1064 (0.0988)	0.0472 (0.0881)		
Export intensity to W. Eur.	-0.3826** (0.1316)		-0.2562* (0.1186)	
Export intensity to China	0.0929 (0.0738)			0.0576 (0.0696)
FDI in-stocks from U.S.	0.1615** (0.0615)	0.1474* (0.0582)		
FDI in-stocks from W. Eur.	-0.0191 (0.0556)		-0.0411 (0.0517)	
FDI in-stocks from China	0.0306 (0.0406)			0.0117 (0.0399)
Post-2008	0.3436 (0.3736)	0.9927*** (0.2957)	0.4387 (0.2859)	0.7916** (0.2851)
Constant	1.6892 (2.3656)	-1.4462 (1.8592)	-1.2838 (1.8143)	2.2631 (1.7998)
R <sup>2</sup>	0.2203***	0.1706***	0.1733***	0.1759***
N	357	369	372	360

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.