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ASSESSING THE EFFECTIVENESS OF IMF PROGRAMS FOLLOWING THE GLOBAL FINANCIAL CRISIS: HOW DID IT CHANGE SINCE THE ASIAN CRISIS?

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Abstract

The paper identifies key features of International Monetary Fund (IMF)–supported programs following the 2008 global financial crisis. The statistical analysis of a large sample of countries that borrowed from the IMF during 1997–2013 indicates that, compared to the amount of financing provided to crisis countries during the post-Asian crisis period, the amount was larger on average by more than 3 percentage points of GDP. Yet, the observed magnitude of adjustment in key macroeconomic variables, such as output, the exchange rate, and the current account balance, was just as large, even when the influence of less favorable global economic conditions was controlled for. The paper argues that the puzzle can be explained, in part, by the large-scale global financial deleveraging, as well as the large initial domestic imbalances observed during the post-global crisis period. The IMF's post-global crisis programs routinely allowed fiscal balance targets to be relaxed in the face of adverse shocks; some attempted to bail in private investors or accommodated the use of capital and exchange controls to limit capital outflows; and the IMF often collaborated with other donors to boost total official financing. It is reasonable to surmise that, without these innovations, the required macroeconomic adjustments would have been even greater.

Keywords: Asian financial crisis, global financial crisis, IMF programs

JEL Classification: E65, F33, F53, F55, F62

Contents

1. INTRODUCTION

This paper presents a statistical analysis of features of the International Monetary Fund's (IMF) crisis-lending programs concluded between 2008 and 2011. Following the collapse of Lehman Brothers in September 2008, the world economy became engulfed in a financial and economic crisis of historic proportions. As country after country experienced a reversal of capital inflows, tighter funding constraints, or a deterioration of the external environment, the IMF successively provided financial support to more than 30 countries under various facilities. The purpose of this exercise is to see how the IMF's crisis-lending programs may have changed since the Asian financial crisis of 1997. We do this by utilizing a large set of data to compare key variables between post-Asian and post-global crisis programs. The quantitative analysis is complemented by an examination of the content of individual programs during the global financial crisis period in order both to highlight additional features and to explain what emerges as an apparent puzzle.

Among the many criticisms of the IMF's crisis response following the Asian crisis (Radelet and Sachs 1998; Ito 2007; Takagi 2011) are: (1) the IMF went ahead with underfinanced programs, thereby failing to arrest the outflow of capital from the crisis countries and the attendant freefall of their currencies; and (2) its adjustment programs were ill-conceived in terms of macroeconomic conditionality (e.g., fiscal and monetary tightening when output was falling), thereby aggravating the adverse impact of capital flow reversals on economic activity. In an earlier paper, one of the authors addressed how the IMF had applied the lessons learned from the Asian crisis in these and other areas by comparing early post-global crisis programs with Asian crisis counterparts (Takagi 2016). The present paper expands the dataset to include all IMF lending programs from 1997 to 2013, not only to generalize a few of the previous findings but also to compare the outcomes of IMF intervention across the two periods in terms of ex-post macroeconomic adjustment.

The successful management of a capital account crisis (caused by a sharp reversal of cross-border capital flows) requires international financial support to limit net capital outflows. If capital were allowed to flow out of the crisis economy freely, the requirement of external adjustment would cause (in addition to a currency depreciation) a sharp contraction of output in order to compress imports and, thereby, generate a narrowing of the current account deficit. International financial support is also useful in minimizing the negative balance sheet effect of currency depreciation. Before the Asian crisis, many in the economics profession held the view that any contractionary impact of a large capital outflow on output would be offset by the expansionary impact of currency depreciation on net exports (Boorman et al. 2000). This did not happen in Asia because the exchange rate depreciation exerted a negative wealth effect on the private sector that had net liabilities denominated in foreign currencies.[1] The size of financing is a critical determinant of the effectiveness of official international intervention to minimize the damage to real output by limiting capital outflows and currency depreciation.

Size is not the only factor, however. If investor confidence is totally lost, no amount of IMF financing would be sufficient, because not only foreign investors but also domestic residents could take money out of the country by liquidating assets and converting the proceeds into foreign currencies in the foreign exchange market. In this sense, IMF

[1] The negative wealth effect of exchange rate devaluation when there is net external debt in foreign currencies was first recognized half a century ago by Diaz-Alejandro (1963).

financing can only be catalytic. The objective of IMF financing is to induce international investors to stay in the country (or, better still, to bring additional money into the country) by presenting a program of corrective measures worthy of their confidence.[2] To the extent that a macroeconomic imbalance of one type or another has contributed to crisis vulnerability in the first place, some corrective adjustment in the fiscal balance, the current account balance, or the real exchange rate, along with the attendant output contraction, must be part of the crisis resolution. What IMF financing can hope to accomplish under these circumstances is to spread the burden of adjustment over time, but not to eliminate the need for adjustment altogether. To determine the right mix of financing and adjustment in an IMF program is ultimately a judgment call, but the optimal amount of adjustment cannot be zero except in the case of a pure liquidity crisis.

The rest of this paper is organized as follows. Section II explains the sample and the empirical methodology employed in the paper. Section III compares the size of IMF financing between the IMF's pre- and post-global crisis programs. Section IV compares the magnitude of macroeconomic adjustment across post-Asian and post-global crisis programs in terms of output, the exchange rate, and the current account balance. Section V discusses how the large-scale global financial deleveraging (whereby portfolio assets held abroad by the world's major financial centers were liquidated) and the stance of fiscal policy in post-global crisis programs may explain the large macroeconomic adjustments observed in the countries, despite the larger financing. Section VI, after presenting a summary, concludes the paper by reviewing the ongoing evolution of the IMF's efforts to collaborate with regional financing arrangements (RFAs), such as the Chiang Mai Initiative Multilateralization (CMIM). Finally, Appendix I provides a list of countries and the dates of their IMF arrangements that are included in the dataset; and Appendix II replicates the text of a Group of Twenty (G20) statement on IMF–RFA collaboration.

2. THE METHODOLOGY

2.1 The Sample

The IMF provides emergency and other balance-of-payments financing to member countries through various facilities, such as Stand-by Arrangements (SBAs), the Extended Credit Facility (ECF)—previously known as the Poverty Reduction and Growth Facility (PRGF)—and the Extended Fund Facility (EFF). Of these, SBAs remain the IMF's principal vehicle ("workhorse") of providing financial support quickly to member countries experiencing an adverse balance-of-payments pressure.[3] In contrast, lending arrangements supported under the ECF are for low-income developing countries, and those under the EFF are designed to address medium and longer-term balance-of-payments problems reflecting extensive distortions that require fundamental economic reforms.[4] For completeness, our sample includes a panel dataset of annual time series for all 113 countries that had IMF-supported programs between 1997 and 2013—covering 308 arrangements (see Appendix I for the list of

[2] Cottarelli and Giannini (2002) and Mody and Saravia (2003) provide empirical evidence on the effectiveness of the IMF's catalytic finance. De Resende (2007) assesses the welfare implications of the catalytic effect of IMF lending using a sovereign debt model with occasionally binding borrowing constraints.

[3] http://www.imf.org/external/np/exr/facts/sba.htm.

[4] http://www.imf.org/external/np/exr/facts/eff.htm.

countries and the dates of their IMF arrangements). Given the objective of this exercise, however, much of our discussion will focus on a subset of the full sample consisting of 56 countries that had a total of 113 SBAs (as indicated by asterisks in the appendix).

2.2 Excluding the Outliers

For our empirical work, we "clean" the data by removing extreme values ("outliers") in order to ensure that any difference one may detect statistically between two samples not be driven by a small number of outliers in both directions. We define an outlier as an observation that satisfies at least one of the five criteria explained below.

First, the following panel regression is estimated:

$$Z_{it} = c + e_{it}, \quad (1)$$

where Z_{it} is the variable of interest for county *i* at year *t*, c is a constant, and e_{it} is an error term. Next, based on the results from estimating equation (1), five sets of "influence statistics"—measures of the difference that a single observation makes to the regression—were computed, as follows:

1) A leverage value, h_{it}, is the corresponding diagonal element of the "hat matrix" (or projection matrix), which maps the vector of *observed values* to the vector of fitted values.[5] An absolute value of h_{it} larger than $2/n$, where n is the number of observations, indicates an outlier.

2) A "studentized residual," which is the estimated residual at observation *it* divided by an estimate of its standard deviation:

$$\bar{e}_{it} = \frac{\hat{e}_{it}}{s_{it}\sqrt{1-h_{it}}}, \quad (2)$$

where $\hat{e}_{it}$ is the original residual from equation (1) for observation *it*, s_{it} is the variance of the residuals that would have resulted from excluding the observation in the estimation, and h_{it} is the leverage value. An absolute value of $\bar{e}_{it}$ larger than 3 indicates an outlier.[6]

3) A scaled studentized residual, where the scaling is done by dividing the difference by an estimate of the standard deviation of the regression fit:

$$e^*_{it} = \left[\frac{h_{it}}{1-h_{it}}\right]^{1/2} \bar{e}_{it}. \quad (3)$$

Outliers are the observations for which the absolute value of e^*_{it} is larger than $2(1/n)^{1/2}$.

[5] In a regression of the type Y=XB+Σ —where Y is a n×1 vector containing n observations of the dependent variable, X is a n×k matrix of k regressors (including a constant term), B is a k×1 vector of coefficients, and Σ is a k×1 vector of regression errors—the vector of fitted values is given by $\hat{Y}$=HY, where H = X (X'X)$^{-1}$X' is the hat matrix.

[6] The residual $\bar{e}_{it}$ is also numerically identical to the *t*-statistic that would result from including a dummy variable in the original equation which is equal to 1 on that particular observation and zero elsewhere. Thus, it can be interpreted as a test for the significance of that observation.

4) The ratio of the determinant of the covariance matrix of the coefficients from the original equation to the determinant of the covariance matrix from an equation without that observation. This statistic measures the impact of each observation on the variances (and standard errors) of the regression coefficients and their covariance coefficients. A value lower than $1-(3/n)$ or greater than $1+(3/n)$ are considered to be associated with an outlier.

5) The scaled difference in the estimated coefficients between the original equation and an equation estimated without that observation:

$$b_{it} = \frac{\hat{c} - \hat{c}(it)}{s_{it}\sqrt{var(\hat{c})}}, \quad (4)$$

where $\hat{c}$ is the estimated constant in (1), $\hat{c}(it)$ is that coefficient's estimate without observation *it* and $var(\hat{c})$ is the variance of $\hat{c}$. This measure assesses how much an observation has affected the estimated coefficient. A value larger than $2/\sqrt{n}$ is considered to be associated with an outlier.

2.3 Removing the Influence of External Factors

When we compare the difference in key macroeconomic variables between two periods, we attempt to remove the influence of factors external to IMF programs. For example, the Asian financial crisis of 1997 affected a relatively small number of countries, whereas the global financial crisis of 2008 affected a large number of countries simultaneously; the world economy was expanding in the late 1990s, while it stagnated for many years after 2008. A fair comparison of post-Asian and post-global crisis programs would dictate that any difference attributable to the external economic environment (e.g., a larger output fall in IMF program countries during the global financial crisis) not be attributed to the features of the IMF's post-global crisis programs.

Again, let Z_{it} be the variable of interest for county *i* at year *t*. We proceed in two steps. First, to isolate the effects of external factors, we estimate a fixed effect panel regression of Z_{it} on a set of control variables arguably unrelated to IMF programs and obtain the centered residuals, as follows:

$$Z_{it} = \alpha + \beta_i + \boldsymbol{\gamma}\mathbf{K}_{it} + \varepsilon_{it}, \quad (5)$$

where α is a cross-country, time-invariant common factor, β_i (scalar) is a country-specific parameter, $\mathbf{K}_{it}$ is a matrix of control variables included to capture the effects of external factors; $\boldsymbol{\gamma}$ is a vector of associated parameters, and ε_{it} represents an error term.

Second, using the estimated coefficient, $\hat{\alpha}$, and residuals, $\hat{\varepsilon}_{it}$, from equation (5), we create the transformed variable $Z^*_{it} = \hat{\alpha} + \hat{\varepsilon}_{it}$, which is the part of Z_{it} that is orthogonal to the set of control variables. We discuss the choice of control variables in the context of identifying the difference in macroeconomic adjustment between post-Asian and post-global crisis programs in Section IV.

3. COMPARING THE SIZE OF IMF FINANCING BETWEEN PRE- AND POST-GLOBAL CRISIS PROGRAMS

3.1 Estimating the Size of IMF Financing Relative to GDP

In order to identify any difference in the size of financing between pre- and post-global crisis arrangements, we reorganize the data around 159 cross-sections, each representing a single IMF arrangement concluded between 1997 and 2013, and estimate the following equation:[7]

$$Fin_j = c + \mathbf{\theta K(0)}_j + \varphi D_{Sep2008-2013} + \eta_j, \quad (6)$$

where Fin_j is the size of financing provided by the IMF at the start of program *j* (as percent of the country's GDP); $\mathbf{K(0)}_j$ is a matrix of control variables measured in the first year of the program (T_0) or the year before (T_0-*1*) to account for factors that may influence the size of financing for program *j*;[8] c and φ (scalars) and $\mathbf{\theta}$ (vector) are coefficients; η_j is an error term; and $D_{Sep2008-2013}$ is a dummy variable that takes the value of 1 when the program started after September 2008. The following control variables were used: [9]

- *CURBAL*: current account balance (percent of GDP);
- *GROWTH*: real GDP growth (annual percent change);
- Δ *RES*: change in international reserves (percent of GDP);
- *EXTDEBT*: external debt (percent of GDP); and
- *FBAL:* fiscal balance (percent of GDP).[10]

The results from estimating equation (6), considering all IMF programs during 1997–2013 and SBAs alone, are reported in Table 1. A positive estimate of φ (shown in the last row) provides a measure of the additional financing associated with the arrangements approved after September 2008 relative to those approved before that date.

[7] Here, only the outliers in the control variables are removed from the sample.

[8] The date for the "start" of a program was adjusted backwards to take account of the length of program discussion. If the program was approved during the first three months of a year, the previous year is taken as the start date.

[9] The time series for these variables are obtained from the World Economic Outlook (WEO) database, except for foreign exchange reserves for which the International Financial Statistics (IMF/IFS) database is used.

[10] The difference between central government net lending and borrowing was used as a proxy for the consolidated government deficit.

Table 1: Size of IMF Financing Before and After September 2008

Dependent Variable: *Fin* = Size of IMF financing (% GDP)
Method: Least Squares
Sample: IMF programs in 1997–2013, excluding outliers
White heteroskedasticity-consistent standard errors and covariance

	All IMF Programs				Only SBA Programs			
	T_0		T_0 - 1		T_0		T_0 - 1	
Variable	**Coef.**	**Prob.**	**Coef.**	**Prob.**	**Coef.**	**Prob.**	**Coef.**	**Prob.**
Constant	0.6590	0.3320	0.6475	0.2688	–0.9074	0.4976	–0.9157	0.4803
CURBAL	–0.1725	0.0200	0.0105	0.8872	–0.2618	0.0503	–0.2225	0.0631
GROWTH	–0.1835	0.0208	–0.1505	0.0103	–0.0248	0.9102	0.1437	0.2770
Δ RES (% GDP)	–0.0193	0.8654	–0.1041	0.1312	0.1932	0.4811	–0.1421	0.2329
EXTDEBT	0.0285	0.0000	0.0278	0.0001	0.0580	0.0268	0.0371	0.0337
FBAL (% GDP)	–0.1534	0.0209	–0.1124	0.0744	0.0007	0.9970	–0.1204	0.3487
$D_{Sep2008-2013}$	**1.1408**	**0.0073**	**1.1798**	**0.0025**	**3.2739**	**0.0025**	**3.6083**	**0.0001**
# Obs.	159		159		48		52	
R-squared	0.3540		0.3307		0.3594		0.5051	

Source: Authors' estimates.

Our estimates indicate that the IMF's post-global crisis arrangements on average committed more financing to countries seeking assistance than their pre-global crisis counterparts, by 1.1–1.2 percentage points of GDP in the case of all lending arrangements and by as much as 3.3–3.6 percentage points of GDP in the case of SBAs alone, depending on whether the current-year (T_0) or previous-year (T_0-1) values are used for the control variables. Focusing on the SBAs alone, the access size that is larger on average by more than 3 percentage points of GDP represents a considerable increase in financial support.

3.2 Examination of Individual Arrangements

An examination of individual arrangements suggests that, following the global financial crisis, the IMF liberally availed itself of its exceptional access policy to lend to countries beyond normal limits and increased the size of access in several instances when the initial amount proved inadequate in light of subsequent developments.[11] A review of post-global crisis programs by Takagi et al. (2014: 6) concluded that "the IMF provided, irrespective of the access policy, whatever it saw was appropriate in each country in the light of the perceived external financing gap." Clearly, this represented a lesson from the Asian crisis, where inadequate financing contributed to the failure of the IMF programs to arrest the capital outflows and the freefall of currencies.

3.2.1 Collaboration with Other Official Donors

As another post-global crisis innovation, the IMF collaborated from the outset of program involvement with other multilateral institutions and bilateral donors in a number of cases (Table 2). Notably, the program for Hungary represented the first case of IMF–European Union (EU) collaboration. Although the EU Treaty required Hungary to consult with the EU Economic and Financial Committee before seeking

[11] Normal lending limits were 100% of quota annually and 300% of quota cumulatively. These limits were doubled in March 2009. The first 14 arrangements after September 2008 were all exceptional access cases.

assistance from the IMF, the EU agreed to joint consultations with the IMF under accelerated procedures. Likewise, the program for Latvia was part of a coordinated international effort, in which the European Commission actively participated, along with representatives from the European Central Bank, the World Bank, and Nordic countries. The EU's financial support was not confined to EU members—it was part of six financing packages. The IMF programs counted on these additional sources of financing in a transparent way.

Table 2: The IMF's Collaboration with Public and Private Sector Partners at Program Design Stage

Country (Period of IMF Engagement)	Multilateral Institutions and Bilateral Donors	Banks and Other Private Sector Investors
Georgia (09/08–06/11)	In 2008, SBA covers $350 million of $550 financing gap, with World Bank contributing $30 million and United States remaining $170 million; details of how 2009 financing gap is closed are to be provided at first program review	N.A.
Hungary (11/08–10/10)	Financing gap of €20 billion is filled by European Union (€6.5 billion), World Bank (€1 billion) and IMF (€12.5 billion)	Government is seeking agreement with commercial banks on private debt resolution strategy if asset quality deteriorates significantly; parent banks of all foreign subsidiaries affirmed their willingness to support their clients' forint and foreign exchange needs
Iceland (11/08–10/10)	Other official institutions are assessing size, timing and modalities of their contributions, with assurances expected by Board meeting	Capital and exchange controls
Pakistan (11/08–09/11)	World Bank and ADB participated in program design	N.A.
Latvia (12/08–12/11)	EU provides €3.1 billion, Nordic countries up to €1.8 billion, Czech Republic, Poland and Estonia €0.2 billion, €0.1 billion and €0.1 billion, respectively; World Bank and EBRD provide €0.4 and €0.1 billion	Program includes private debt restructuring and commitments from foreign banks to maintain presence; Nordic parent banks issued public statements of support
Belarus (01/09–3/10)	EU and World Bank may provide additional financing though not prepared to make firm commitments	N.A.
Serbia (01/09–04/11)	(Original program) N.A. (Revised program) Access takes into account prospective additional contributions from EU and World Bank in 2009–10	(Original program) N.A. (Revised program) Foreign parent banks requested to maintain exposure, which is monitored bi-weekly
Armenia (03/09–06/10)	World Bank signaled additional package of $525 million, followed by possible financing from Russia, EU and ADB; domestic adjustment and funding from other donors needed	N.A.
Mongolia (04/09–10/10)	ADB, World Bank, and Japan together agreed to provide US$160 million with staff to reassess additional donor financing at first review	N.A.
Costa Rica (04/09–07/10)	Contingent financing envisaged from World Bank and IDB	N.A.

continued on next page

Table 2 *continued*

Country (Period of IMF Engagement)	Multilateral Institutions and Bilateral Donors	Banks and Other Private Sector Investors
Romania (05/09–03/11)	Program incorporates €5 billion from EU, €1 billion from World Bank, and roughly €1 billion from EBRD, EIB, and IFC	Foreign parent banks pledged support for subsidiaries, committing to maintain exposure, which is monitored by central bank and home country supervisors
Bosnia and Herzegovina (07/09–07/12)	Commitments of €189 million from World Bank and €100 million from EU	Foreign parent banks encouraged to maintain exposure to subsidiaries under Vienna Initiative
Sri Lanka (07/09–07/12)	Donor financing envisaged from World Bank, ADB, and Japan	N.A.
Angola (11/09–03/12)	Prospect of support from World Bank, AfDB, Brazil, and Portugal, with staff reassessing at first review	N.A.
Maldives (12/09–12/12)	Financing assurances secured from World Bank and ADB for $59 million, with further pledges from regional and bilateral sources sought at donor meeting	N.A.
Jamaica (02/10–03/12)	Government is requesting $2.4 billion from multilaterals, with the IMF contributing about $1.3 billion and $1 billion coming from World Bank, IDB, and Caribbean Development Bank	Government is engaged in par-neutral debt exchange with creditors to cut interest bill by 3% of GDP and NPV by 20%
Greece (05/10–03/12)	EC and ECB participated in program design and negotiations, with euro area and other EU members contributing €80 billion of the €110 billion package.	N.A.
Antigua and Barbuda (06/10–06/13)	Financing requirement to be filled by IMF and Caribbean Development Bank, with residual through debt restructuring	Government negotiated a voluntary debt restructuring with commercial banks and a major foreign investor
St. Kitts and Nevis (07/11–07/14)	N.A.	Public debt restructuring involving collateralized debt of St. Kitts Sugar Manufacturing Corporation through debt-land swap

Sources: IMF staff reports for program requests and Article IV consultations, 2008–14.

Some observers have argued that the transparent manner in which the IMF collaborated with official donors contributed to the effectiveness of SBA-supported programs in building investor confidence (e.g., Takagi 2016). The early European programs, in particular, did not have the credibility problem that had affected the Asian programs, where the total amount of available financing appeared to be too small relative to the financing need or the conditions under which these funds were to be made available were not specified. This caused market participants to question not only their availability but also the credibility of the overall official financial packages (IEO 2003).[12] In contrast, Europe's official financing packages appeared to have more substance, with a clear backing for the numbers. The IMF had a long history of co-financing with the World Bank and other multilateral regional banks. The post-global

[12] In Thailand, total official financing of $17.2 billion was less than half the amount of short-term external liabilities ($38 billion at the end of May 1997). In Indonesia and in the Republic of Korea, though the World Bank and the Asian Development Bank agreed to provide financing, the amount included the funds that had already been committed before the crisis; bilateral financing ($17 billion for Indonesia and $20 billion for the Republic of Korea) was designated as the second line of defense, and was to be activated only when financing from all other sources proved insufficient, but the conditions for activation were not specified. See IEO (2003).

crisis innovation was that the IMF collaborated with official partners from the program design stage. The onset of crises in the euro area from 2010 saw an intensification of the IMF's collaborative efforts with European institutions in an informal arrangement that came to be known as the "troika" (IEO 2016; Kincaid 2017).[13]

3.3 Private Sector Involvement

Private sector involvement (PSI), in the broad sense of bailing in private creditors in the resolution of a capital account crisis, was attempted in several countries from the outset of the global financial crisis (see Table 2). This represented another case of learning from previous emerging market crises. Especially in Hungary, Latvia, and Ukraine, foreign-owned banks constituted a significant share of the banking sector. In these countries, the SBA-supported programs were able to secure a commitment from the parent banks to maintain their exposure to the local subsidiaries.[14] In Iceland, PSI involved "unilateral government action" in the form of capital controls and de facto repudiation of foreign debts (Truman 2013). Outside Europe, SBA-supported programs included a debt restructuring scheme of one type of another in three countries. PSI had also been tried in the Republic of Korea in 1997 and contributed to resolving the crisis quickly, but only after the initial program had failed; in Thailand, there was an understanding that foreign banks would maintain their exposure during the crisis, but the commitments did not amount to much. Following the global financial crisis, PSI was tried from the outset and, though the amount was not included in the headline figures of the IMF programs, appears to have contributed to enhancing the credibility of the overall financing packages.

3.4 Capital and Exchange Controls

Capital and exchange controls of one type or another were also used in some countries as unconventional means of arresting the pace of capital outflows and the pressure on the exchange rate. The most notable case was Iceland's decision to introduce capital controls under the 2008 SBA-supported program. The IMF was fully behind the decision, as it recognized that alternatives were few and not palatable. There was agreement that, in the absence of controls, the currency could depreciate beyond the 40% that had already occurred. Exchange controls, including Latvia's partial freeze on deposit withdrawals, were more widely employed (often before the IMF was called in) and the IMF allowed them to be removed in stages. Exchange restrictions related to current transactions (except those approved under the transitional arrangements of Article XIV) are in violation of Article VIII of the IMF Articles of Agreement, and are normally not permitted in IMF programs as "measures destructive of national or international prosperity" (IMF 2002). But they were permitted in some programs on the condition that they would be removed as soon as practical. Though capital controls do not violate the IMF Articles as long as they do not restrict payments for current transactions, the IMF had generally taken a position unfavorable to any administrative

[13] The troika refers to the IMF, the European Commission, and the European Central Bank.

[14] This was formalized in 2009 as the Vienna Initiative, which would cover all of emerging Europe (Aslund 2010; Berglof 2012; de Haas et al. 2012). In Hungary, foreign banks injected capital into their Hungarian subsidiaries in the range of €2–3 billion and many times more in the form of loans, which exceeded the combined amount of IMF–EU tranches utilized. See http://hvg.hu/gazdasag/20130225_Simor_Az_orszag_erdeke_volt_az_adatok_ata.

measure that interfered with the free movement of capital.[15] Following the global financial crisis, the IMF became more open to the use of capital controls as a legitimate tool of crisis management.[16]

4. COMPARING THE SIZE OF MACROECONOMIC ADJUSTMENT BETWEEN POST-ASIAN AND POST-GLOBAL CRISIS PROGRAMS

The ultimate test of the effectiveness of IMF crisis-management programs involves the magnitude of macroeconomic adjustment, though interpretation is not straightforward. While a total bailout would mean that the country concerned has no need to make macroeconomic adjustment—as the capital outflow is fully financed by official inflows, there would be no need for current account adjustment or exchange rate depreciation; any adverse impact on the real economy would be minimal—such cannot be a sustainable outcome. If there was a fundamental macroeconomic imbalance to begin with, some correction of that imbalance must take place. Except in the case of a pure liquidity crisis, zero adjustment is not the objective of a crisis-management program. Ex post macroeconomic adjustment reflects both the *outcome* and the *policy design* of IMF intervention. The objective of crisis intervention is to facilitate a smooth adjustment of the underlying imbalances by providing official financing.

Take the example of a large fiscal balance. Any fiscal adjustment (through a combination of an expenditure cut and a tax hike) would necessarily exert a contractionary impact on output. Thus, a fall in GDP cannot be equated with a failure of the IMF program. A more sensible assessment of the contribution of the IMF program would be possible if the counterfactual were known, namely, how much the output would have fallen in the absence of the IMF intervention. Even then, there is no way of knowing whether the IMF program should have let the output fall more or less. Likewise, some downward adjustment of the nominal exchange rate would be necessary if the real exchange rate was substantially overvalued to begin with. But too rapid a depreciation of the nominal exchange rate could exert a severe contractionary impact on real output if the country's external assets were denominated in foreign currencies. A case can be made that a free, uncontrolled fall in output or the exchange rate is a failure of IMF intervention, but how much fall it should tolerate would be a judgment call.

4.1 Preparing the Data

We focus below on annual real GDP growth (in percent), annual nominal exchange rate change (depreciation in percent), and annual current account adjustment (improvement as percent of GDP) in comparing the magnitude of macroeconomic adjustment between post-Asian and post-global crisis programs. In order to ensure that the influences of factors external to the IMF programs are removed, we use the following control variables:

[15] In 1998, at the height of the Asian crisis, many observers believed that the IMF was hostile to the introduction of a capital outflow control by Malaysia. See IEO (2005) for a general review of the IMF's approach to capital account liberalization and related issues.

[16] In contrast, as EU member countries, Hungary and Latvia did not have the option to introduce capital controls. This position was relaxed for Cyprus five years later.

- Annual rate of GDP growth in globally important economies (OECD countries and the People's Republic of China);
- United States (US) short-term interest rates;
- US CPI inflation;
- Annual percent changes in oil and commodity prices; and
- An index of the *implied volatility* of S&P 500 index options (VIX, a proxy for market expectations of stock market volatility over the next 30-day period).[17,18]

The results from estimating equation (5) are summarized in Table 3, where regressors found not to be statistically significant at the 5% level have been removed.

Table 3: First-Stage Fixed-Effect Panel Regressions

Method: Panel Least Squares
Sample: 1989–2013, excluding outliers
Cross-sections included: 113

	Real GDP Growth (% per year)		**Nominal Exchange Rate** (% annual depreciation)		**Current Account Balance** (annual change, % GDP)	
Control Variable	**Coefficient**	**Prob.**	**Coefficient**	**Prob.**	**Coefficient**	**Prob.**
Constant	2.2523	0.0000	–0.9176	0.6134	1.8368	0.0000
GROWTH OECD	0.3287	0.0000	0.4479	0.0107	–0.1436	0.0222
GROWTH PRC	0.1112	0.0004			–0.0831	0.0128
US INT. RATES	–0.1641	0.0007	0.6928	0.0000	0.1517	0.0009
Δ% COMM. PRICES	0.0288	0.0023	–0.2219	0.0000		
Δ% OIL PRICES			–0.0298	0.0047		
US CPI INFLATION					–0.2992	0.0003
VIXHAT			0.1381	0.0113		
FIX			–1.0363	0.0513		
# Obs.	2,560		2,466		2,443	
R-squared	0.2175		0.2935		0.0399	

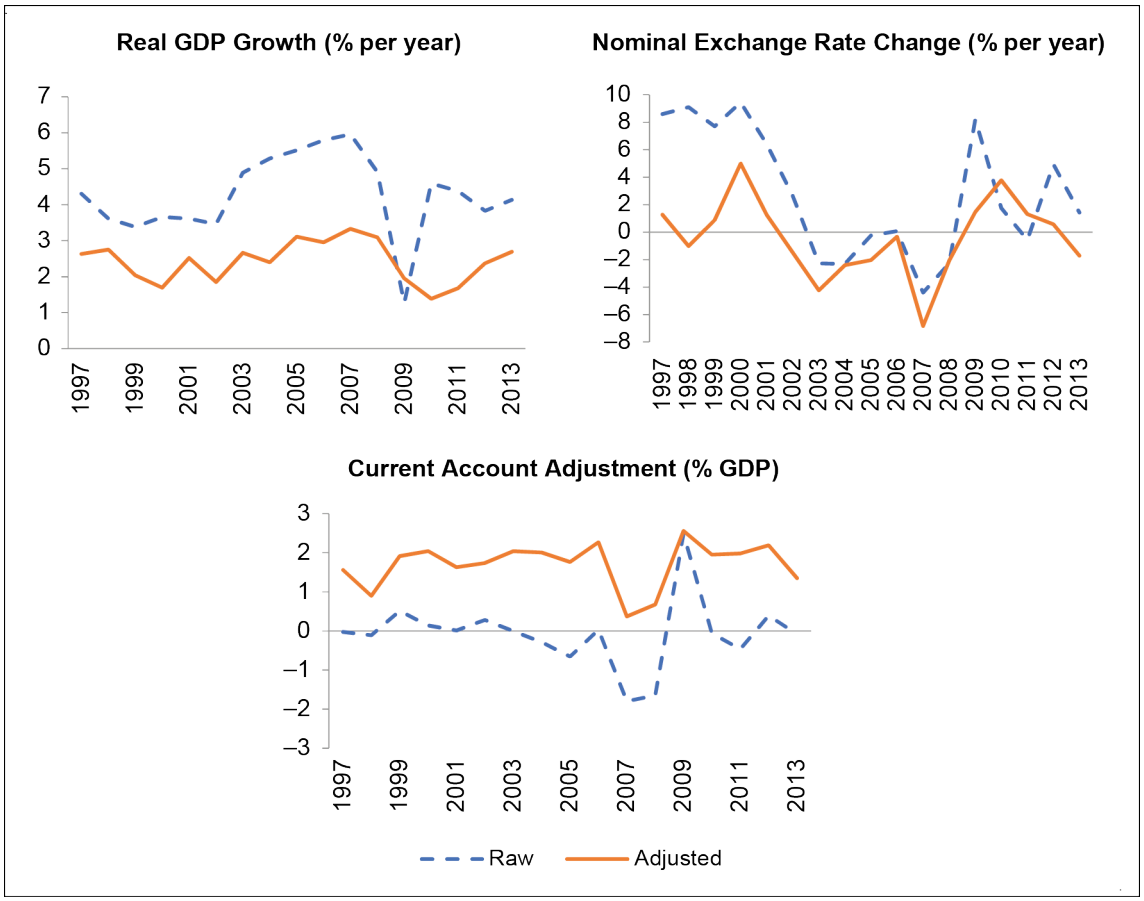
Source: Authors' estimates using the IMF WEO database.

These estimates show that global growth and commodity price inflation have a positive impact on GDP growth, while US interest rates have a negative effect. Moreover, the exchange rate depreciates when global economic growth is higher, conditions in international financial markets are less favorable (i.e., higher US interest rates and market volatility), and oil and other commodity prices fall. The current account (CA) balance improves when US interest rates are higher and global growth and US inflation are lower. Overall, the external factors explain a larger share of the averages of the three variables, with a positive impact on the first two and a negative impact on the third. The cross-country averages of the three variables, using both the raw and adjusted data, are shown in Figure 1.

[17] The VIX is strongly correlated with US interest rates. In estimating (5), we used the residuals from a least squares regression of the former on the latter as a control variable (VIXHAT). Data on the VIX come from the Chicago Board Options Exchange.

[18] Short-term interest rates refer to deposit or treasury-bill rates. Oil and commodity prices are obtained from the IMF WEO database.

Figure 1: Raw and Adjusted Time-Series of Three Key Macroeconomic Variables, 1997–2013 (Cross-country Averages)



Source: Authors' estimates based on Table 3.

4.2 Comparing Post-Asian and Post-global Crisis Programs

For completeness, we estimate the following two regressions of $Y_{it} = \{Z_{it}, Z_{it}^{*}\}$ on period dummy variables:

$$Y_{it} = \phi_1 D_{1997-Aug08} + \phi_2 D_{Sep08-2013} + \mu_{it}, \quad (7)$$

$$Y_{it} = \phi_3 D_{1997-99} + \phi_4 D_{2000-Aug08} + \phi_5 D_{Sep08-2010} + \phi_6 D_{2011-2013} + \tilde{\mu}_{it}, \quad (8)$$

where the dummy variables D_{t0-T} take the value of one from year *t*0 to year *T*, and zero otherwise, while the associated coefficients ϕ's indicate the cross-country average for that period.

Table 4: Macroeconomic Adjustment: GDP, the Exchange Rate, and the Current Account Balance

						Exchange Rate (% change)					**Current Account Balances** (change, % GDP)				
		Program Years			Non-program Years		Program Years			Non-program Years		Program Years			Non-program Years
	Full Sample	All	SBA	Non-SBA		Full Sample	All	SBA	Non-SBA		Full Sample	All	SBA	Non-SBA	
Raw Data															
1997–2013	4.3	4.3	3.3	4.7	4.3	2.7	3.0	2.9	3.0	2.5	–0.1	0.1	0.4	0.0	–0.3
1997–Aug 08	**4.6**	**4.8**	**4.1**	**5.0**	**4.4**	**2.5**	**2.5**	**2.3**	**2.6**	**2.5**	**–0.3**	**–0.2**	**0.0**	**–0.3**	**–0.4**
Sep 08–2013	**3.7**	**3.2**	**1.6**	**3.9**	4.0	3.2	**4.1**	4.2	**4.0**	2.3	**0.4**	**0.8**	**1.1**	**0.7**	**0.1**
1997–1999	**3.8**	**3.5**	**2.2**	**4.1**	**3.9**	**8.5**	**8.9**	**8.6**	**9.1**	**8.3**	**0.1**	**0.4**	**–0.1**	**0.6**	**0.0**
2000–Aug 08	**4.8**	**5.0**	**4.6**	**5.2**	**4.6**	**0.7**	**1.4**	**0.9**	**1.5**	**0.0**	**–0.4**	–0.3	0.0	**–0.4**	**–0.6**
Sep 08–2010	**3.0**	2.8	0.8	3.8	3.2	**5.0**	**6.3**	7.3	**5.8**	**3.3**	**1.1**	**1.6**	**2.5**	**1.1**	0.6
2011–2013	4.1	3.6	2.5	4.0	**4.5**	**1.9**	**2.1**	**0.7**	**2.6**	**1.8**	–0.1	0.1	–0.2	0.3	0.0
Obs	1,845	831	243	588	1,014	1,866	842	246	596	1,024	1,785	805	239	566	980
Cleaned Data															
1997–2013	2.4	2.4	1.8	2.7	2.4	–0.4	–0.5	–0.2	–0.6	–0.4	1.7	1.9	2.2	1.8	1.5
1997–Aug 08	**2.6**	**2.7**	**2.5**	**2.7**	**2.5**	**–1.1**	**–1.5**	**–1.2**	**–1.6**	**–0.8**	**1.6**	**1.7**	**2.0**	**1.7**	**1.4**
Sep 08–2013	**2.0**	**1.8**	**0.3**	2.5	**2.2**	**1.1**	**1.7**	**1.9**	**1.6**	**0.6**	**2.0**	**2.4**	2.7	**2.2**	1.7
1997–1999	**2.5**	**2.3**	**1.2**	**2.9**	**2.5**	**0.4**	**0.6**	**1.4**	**0.1**	**0.3**	**1.5**	**1.8**	**1.5**	**1.9**	**1.3**
2000–Aug 08	2.6	2.7	2.7	2.7	2.6	**–1.5**	**–1.8**	**–1.8**	**–1.8**	**–1.2**	1.6	1.7	2.1	1.6	1.5
Sep 08–2010	**1.7**	1.6	**–0.4**	2.7	**1.7**	**2.6**	**3.2**	4.2	**2.6**	**1.9**	**2.2**	**2.7**	**3.5**	2.2	1.7
2011–2013	2.3	2.0	0.9	2.4	2.4	0.1	0.3	**–0.7**	0.7	–0.1	1.8	2.1	1.9	2.2	1.6
Obs	1,845	831	243	588	1,014	1,866	842	246	596	1,024	1,785	805	239	566	980

Note: Numbers in bold indicate that they are statistically different from the corresponding numbers in the reference period at the 10% level of significance.

Source: Authors' estimates.

In equation (7), we are comparing the averages of $Y_{it} = \{Z_{it}, Z_{it}^*\}$ observed in two subsamples—January 1997–August 2008 and September 2008–December 2013 (before and after the collapse of Lehman Brothers). In equation (8), on the other hand, the sample is divided into four subperiods:

- January 1997–December 1999;
- January 2000–August 2009;
- September 2008–December 2010; and
- January 2011–December 2013

Our particular focus is on comparing the Asian crisis period (January 1997–December 1999) with the global financial crisis period (September 2008–December 2010). Thus, most of what follows refers to the results from estimating equation (8), rather than equation (7).

The results from estimating equations (7) and (8) are summarized in Table 4. They are each reported according to five subsamples, namely, program and non-program years, all program years, SBA years, non-SBA years, and non-program years. The results based on the raw data are reported in the upper panel of the table, while those based on the adjusted data are in the lower panel. In each case, the first row indicates the averages for the entire 1997–2013 period.[19] Wald tests are used to assess whether the difference in cross-country averages relative to the reference subperiod (highlighted in bold) is statistically significant at the 10% level.

4.2.1 Real GDP Growth

The coefficient estimates show that SBA countries experienced a slower GDP growth during the global financial crisis period relative to the Asian crisis period, regardless of whether the raw or adjusted data were used. The difference between the two, however, increases (from 1.4 to 1.6 percentage points) and becomes statistically significant when the adjusted data are used. A difference in growth performance between the two subperiods is also observed for non-program countries when the adjusted data are used, though it is only half the size (0.8 percentage points: 2.5 vs. 1.7%). Using the non-program countries as a control group, there is a strong case that, once the influence of external factors is controlled for, the IMF programs (independent of the global slowdown) caused the SBA countries to experience a sharper adjustment of output during the global financial crisis period, despite the larger size of access to IMF resources.

4.2.2 Nominal Exchange Rate Change

The coefficient estimates show that, when the raw data were used, SBA countries experienced a larger depreciation of their currencies during the Asian crisis period (8.6%) than during the global financial crisis period (7.3%) though the difference is not statistically significant. When the adjusted data are used, the reverse becomes true (1.4 vs. 4.2%) though the difference remains statistically not significant. It is safe to conclude that, despite the larger size of access to IMF financing, the exchange rate adjustment experienced by the SBA countries during the global financial crisis period was substantial. Even so, the exchange rate adjustment experienced by the non-program countries during the global financial crisis was larger (by statistically significant 1.6 percentage points), indicating the severity of the crisis. From this

[19] Obtained from the regression of $Y_{it} = \{Z_{it}, Z_{it}^*\}$ on a constant. The estimated constant is the cross-country average.

standpoint, the fact that the depreciation experienced by the SBA countries was similar across the two samples may imply a possible lesson applied from the Asian crisis, namely, the programs deliberately attempted to limit the extent of depreciation.

It is important in this context to separate the depreciation observed for the period as a whole from that experienced under the IMF programs, given the fact that some early program countries had experienced significant currency depreciation before approaching the IMF. Takagi (2016) characterized the exchange rate behavior of the 2008 European programs (relative to the 1997 Asian programs) as lacking significant depreciation *under the programs*. For example, while the Icelandic krona had depreciated against the US dollar by nearly 70% by the time the government approached the IMF, the currency actually appreciated somewhat over the subsequent months.[20] It is possible that not only the larger access but also the judicious use of exchange and capital controls contributed to the generally more limited exchange rate depreciation observed under the post-crisis SBAs. It is worth noting that the SBA countries on average experienced an appreciation of their currencies during the subsequent period, 2011–13.

An examination of individual SBA-supported programs during 2008–11 suggests that, although 13 of the 25 programs were calling for exchange rate flexibility, the IMF, aware of the potentially adverse balance sheet effect (Allen et al. 2002), cautioned against too rapid a pace of exchange-rate depreciation. Six European programs noted the balance sheet vulnerabilities, and four of these accommodated temporary use of exchange controls, as noted above. Outside Europe, some programs calling for exchange rate flexibility cautioned against moving too quickly; five programs included maintaining or shifting to a pegged exchange rate regime of one type or another (Takagi et al. 2016). A controversial decision of the IMF was to support Latvia's choice to maintain the peg to the euro, in view of the risk of contagion to other currency pegs in the region if the lat were to be devalued (Purfield and Rosenberg 2010; Blanchard, Griffiths, and Gruss 2013).

4.2.3 Current Account Adjustment

The coefficient estimates show that the current account balance improved for all countries during the global financial crisis, irrespective of whether the raw or adjusted data were used, suggesting that they all experienced large capital outflows. Focusing on the SBA countries alone, the change in the current account balance was –0.1% for the Asian crisis period and 2.5% for the global financial crisis period when the raw data were used; when the adjusted data were used, the change was 1.5% and 3.5%, respectively. The differences from the reference period were statistically significant in both cases. The larger current account adjustment for SBA countries following the global financial crisis is consistent with the observed greater slowdown of their GDP growth.

[20] In contrast, the currencies of the three crisis Asian countries continued to fall against the dollar after the programs with the IMF had been agreed.

5. EXPLAINING WHY PROGRAM COUNTRIES EXPERIENCED LARGER MACROECONOMIC ADJUSTMENTS FOLLOWING THE GLOBAL FINANCIAL CRISIS

The combined findings in the preceding sections suggest that, despite the larger size of financing provided by the IMF to crisis countries following the global financial crisis, the observed macroeconomic adjustment, in terms of GDP deceleration, exchange rate depreciation, or current account improvement, was not any smaller compared to the magnitude of adjustment observed earlier during the post-Asian crisis period, even when the influence of global factors was controlled for. What accounts for this seeming puzzle? Does this mean that IMF intervention was ineffective in mitigating the adverse impact of the global financial crisis on countries seeking IMF support? It would be impossible to evaluate fully the effectiveness of IMF intervention without knowing the counterfactual, i.e., how different the outcome would have been had the IMF not intervened. Ceteris paribus, and almost by definition, greater financing must have limited the required magnitude of macroeconomic adjustment. We assert that at least part of the puzzle must be explained by (i) the financial deleveraging observed in the world's major financial centers, especially the United Kingdom and the US, whereby a large volume of portfolio assets held abroad was liquidated; and (ii) the larger initial domestic macroeconomic imbalances with which the crisis countries approached the IMF.[21]

First, the initial impact of the global financial crisis on emerging market economies was effected through a sharp withdrawal of capital from these countries. From the end of 2007 to the end of 2008, for example, the balance of external portfolio assets declined by $967 billion in the United Kingdom and by $2.9 trillion in the US; the balance declined by $4.9 trillion in five major financial centers combined (Table 5). This is not to suggest that some $5 trillion was withdrawn entirely from emerging market economies (undoubtedly, much of the deleveraging was taking place within the mature economies), but it clearly indicates an external environment of tightening global liquidity in which the crisis economies were operating following the global financial crisis. The control variable VIX was meant to capture part of this effect, but it is clearly an imperfect proxy. In contrast, no financial deleveraging was experienced following the Asian crisis period. From the end of 1997 to the end of 1998, for example, the same five financial centers saw an accumulation of nearly $1 trillion in external assets.

Second, the chief among the domestic imbalances observed at the outset of the global financial crisis were the fiscal deficits, which required larger corrections. While fiscal tightening was a common feature of both the Asian and the global crisis programs, the Asian crisis countries did not have a fiscal imbalance to begin with (in fact, they all had fiscal surpluses before the crisis), and the tight policy initially programmed was quickly reversed. From 1997 to 1998, for example, the fiscal balance was allowed to deteriorate by 1% of GDP in Indonesia,[22] by 2.6% of GDP in the Republic of Korea, and by 3.6% of GDP in Thailand (even in Brazil, where the fiscal balance was in deficit prior to the 1998 crisis, the deficit was allowed to widen by 2.1% of GDP from 1998 to 1999). In contrast, all the countries affected by the global financial crisis had

[21] In addition, the puzzle could also have reflected the larger geographical scope of the global financial crisis, the adverse impact of which working through regional linkages is not fully controlled for by our choice of global control variables.

[22] From Fiscal Year 1997/98 to Fiscal Year 1998/99, in the case of Indonesia.

fundamental fiscal imbalances at the outset of IMF intervention, and the strategy of fiscal tightening was maintained throughout. Noting that the initially tight fiscal policy was subsequently eased in Asia, Truman (2013) argued that fiscal policy prescriptions had been tighter in post-global crisis programs than those in post-Asian crisis programs.[23]

Table 5: External Assets Held by Major International Financial Centers, 1997–98 and 2007–09
(year-end balances in billions of US dollars)

	France	Germany	Japan	United Kingdom	United States	Total
Asian Financial Crisis						
1997	340	503	902	1,077	1,751	4,573
1998	489	724	1,056	1,171	2,053	5,493
1999	590	893	1,242	1,355	2,525	6,605
Change from 1997 to 1998	+149	+221	+154	+94	+302	+920
Global Financial Crisis						
2007	2,965	2,625	2,524	3,393	7,192	18,699
2008	2,553	2,149	2,377	2,426	4,268	13,773
2009	2,879	2,508	2,846	3,036	5,953	17,242
Change from 2007 to 2008	–412	–476	–147	–967	–2,924	–4,926

Sources: International Monetary Fund, *International Financial Statistics* and Coordinated Portfolio Investment Survey (http://data.imf.org)

In fact, an examination of individual IMF programs following the global financial crisis suggests that most targeted a modest reduction in the fiscal deficit, amounting in the case of 25 countries examined to 1.0% of GDP from T to T+1 and 1.8% of GDP from T+1 to T+2; the actual tightening was 1.4% and 0.8% of GDP, respectively (Table 7). All of the few programs that either programmed or projected a fiscal surplus involved commodity exporters, such as Angola and Iraq. Roaf (2012) notes that, as the immediate impact of the global financial crisis dissipated, fiscal policy became less accommodative of adverse shocks; overall, the post-global crisis programs were tighter than past crisis cases in cyclically adjusted terms. In applying the lessons from the Asian crisis, the IMF may have been more accommodative of fiscal automatic stabilizers; the larger financing may have allowed a slower pace of fiscal consolidation for a given size of initial imbalance (IMF 2009). Even so, the magnitude of the initial imbalances at the outset of the global crisis meant that the outcome was a generally tighter stance of fiscal policy throughout the subsequent period.

[23] Truman (2013)'s analysis covers, in addition to six euro-area countries, Hungary, Iceland, Latvia, and Romania. In Latvia, the revised 2009 budget included measures adding up to 7% of GDP; after the new government was installed, fiscal consolidation in 2009 is estimated to have been about 8% of GDP (Blanchard et al. 2013).

Table 6: Programmed or Projected Versus Actual Fiscal Balances, from T (program year) to T+3
(Simple averages for each group; in percent of GDP)

		T	T+1	T+2	T+3
All programs	Programmed or projected	–5.3	–4.3	–2.5	–2.0
	Actual	–5.5	–4.1	–3.3	–3.5
Earlier programs (though Romania)	Programmed or projected	–3.0	–3.4	–2.8	–2.1
	Actual	–4.3	–5.2	–4.4	–3.4
Later programs (from Bosnia and Herzegovina)	Programmed or projected	–8.3	–5.4	–2.1	–1.8
	Actual	–7.1	–2.7	–1.9	–3.5
Off-track programs	Programmed or projected	–5.8	–3.7	–2.1	–2.3
	Actual	–6.0	–2.9	–2.7	–3.1
Completed programs	Programmed or projected	–5.1	–4.5	–2.7	–1.8
	Actual	–5.3	–4.6	–3.6	–3.7

Note: Excludes the SBAs for Greece and Iceland as well as the costs of financial sector restructuring in Latvia.
Sources: IMF Staff Reports for Program Requests and Article IV consultations, 2008–2014.

6. CONCLUSION

6.1 Summary of Main Findings

The paper has compared key features of International Monetary Fund (IMF) lending programs between post-Asian and post-global crisis programs. Our analysis, using a large sample of countries that borrowed from the IMF during 1997–2013, has indicated that, compared to the amount of financing provided to program countries following the Asian crisis, the amount was larger on average by more than 3% of GDP. Yet, the observed magnitude of adjustment in key macroeconomic variables, such as output, the exchange rate, and the current account balance, was just as large, even when the influence of less favorable global economic conditions was controlled for. The paper has argued that the puzzle can be explained, in part, by the significant deleveraging observed in global financial centers (whereby a large volume of external portfolio assets was liquidated) and the larger initial domestic imbalances in program countries (which required greater corrections). The IMF's post-global crisis programs routinely allowed fiscal balance targets to be relaxed in the face of adverse shocks; some attempted to bail in private investors or accommodated the use of capital and exchange controls to limit capital outflows; and the IMF often collaborated with other donors to boost total official financing. It is reasonable to surmise that, without these innovations, the required macroeconomic adjustments would have been even greater.

6.2 The IMF and Regional Financing Arrangements

The IMF's crisis-lending programs are still evolving. Among the notable ongoing initiatives is an attempt to operationalize the "Principles for Cooperation between the IMF and Regional Financing Arrangements," as endorsed by G20 finance ministers and central bank governors in October 2011 (Appendix II). They consist of six non-binding principles, among which are found: (1) need to respect the roles, independence, and decision-making processes of each institution; (2) need to include open sharing of information and to benefit from the comparative advantages or relative expertise of each institution; (3) need to be consistent in lending conditions in order to prevent arbitrage and facility shopping while maintaining flexibility; and (4) need to respect the preferred-creditor status of the IMF. The G20 principles were intended to provide high-level guidance for IMF–RFA collaboration, in the light not only of a recent proliferation of RFAs,[24] but also of the involvement of European institutions in IMF lending operations in the euro area, where the opaque nature of the collaboration raised the issue of legitimacy and accountability (IEO 2016).

Although the IMF has a long history of collaborating with the World Bank and regional development banks, its collaboration with a regional entity only originated in the SBAs for Hungary and Latvia in 2008. In Hungary, the IMF provided 62.5% of the total financing compared to 32.5% by the EU; in Latvia, the IMF was a minority lender with a share of 22.7% compared to the EU's 41.3%. As there was no established modus operandi, frictions arose in these and other countries where the two institutions provided conditional lending (Kincaid 2017). In Latvia, this led to a major disagreement on fiscal policy in the summer of 2009, when the IMF was unwilling to conclude the program review on account of lingering doubts on fiscal targets, but the EU made a decision (at the heads-of-state level) to release the second tranche as it became concerned that a delay would precipitate a run on the national currency (European Commission 2009).

Despite an urging by the International Monetary and Financial Committee (IMFC) to do so in April 2011, and the preparation of a staff paper raising the topic for discussion in May 2013 (IMF 2013), the IMF Executive Board did not develop a formal modality of engagement with RFAs, as it saw the extent and form of such cooperation as "the most difficult question to answer" (as quoted in Kincaid 2017). Much of the difficulty came from the overlapping mandates of the IMF and RFAs as crisis manager, which presented the possibility that their judgments and approaches could differ, a situation that would not generally arise in the case of collaboration between the IMF and development banks where the division of labor was more clearly understood.[25] In a common currency area, moreover, there was an additional complication that the member countries might be subject to union-wide policy rules (such as the Stability and Growth Pact, and the associated Excessive Deficit Procedure, in the euro area).

[24] As of July 2017, there existed seven RFAs: Arab Monetary Fund (established in 1976); BRICS Contingent Reserve Arrangement (2014); Chiang Mai Initiative Multilateralization (2000; 2010); Eurasian Fund for Stabilization and Development (2009); European Union Balance of Payments Facility (2002); European Stability Mechanism (2012); and Latin American Reserve Fund (1978). See IMF (2017a; 2017b) for details.

[25] Typically, the IMF takes the lead in designing a macro framework while the development bank assumes primary responsibility for designing structural reforms.

6.3 The IMF's Evolving Role in the Global Safety Net

Concrete steps have been taken to make IMF–RFA collaboration operational. In 2016, the IMF was invited to participate in a test run with the Chiang Mai Initiative Multilateralization (CMIM), where a borrower is required to conclude an adjustment program with the IMF when the borrowing exceeds 30% of the maximum drawable amount; the test run revealed the challenges posed by the CMIM's shorter repayment periods and program length (IMF 2017a, Box 2 on page 17). In July 2017, the IMF Executive Board formally discussed a set of staff papers, which noted, among other things, the importance of having a single program framework including by aligning the qualification standards for lending instruments and the need for mutual respect of institutional independence and capacity (IMF 2017a; case studies are discussed in IMF 2017b). The Board endorsed the proposed principles "as an important first step" and encouraged continued dialogue with RFAs and joint test-runs to gain further experience and to identify emerging issues (IMF 2017c).

These were followed, in October 2017, by the signing of a formal memorandum of understanding between the IMF and the ASEAN+3 Macroeconomic Research Office (AMRO).[26] According to the press release by the IMF,[27] the two institutions agreed to "enhance cooperation to promote the common goal of regional and global financial stability" through "advancing cooperation and leveraging of each other's expertise." The cooperation is said to involve exchanging views related to macroeconomic surveillance, providing training and staff exchange opportunities for staff, and joint research projects. Fully aligning the competing mandates and approaches of different institutions remains a difficult task. Only time can tell how these and further efforts will enhance the efficacy of the global financial safety net, of which the IMF is increasingly becoming only a part.

[26] At the same time, a similar memorandum was signed by the IMF and the European Stability Mechanism.

[27] International Monetary Fund, Press Release, No. 17/395, 11 October 2017.

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APPENDIX 1: COUNTRIES AND IMF LENDING ARRANGEMENTS (*STAND-BY ARRANGEMENTS)

Country	Date of Arrangement	Country	Date of Arrangement
Afghanistan	2006, 2011	Lao PDR	2001
Albania	1998, 2002, 2006	Latvia	1997*, 1999*, 2001*, 2008*
Angola	2009*	Lesotho	2001, 2010
Antigua and Barbuda	2010*	Liberia	2008, 2012
Argentina	1998, 2000*, 2003*, 2003*	Lithuania	2000*, 2001*
Armenia	2001, 2005, 2008, 2009*, 2010	Macedonia, FYR	1997, 2000, 2003*, 2005*, 2011
Azerbaijan	2001	Madagascar	2001, 2006
Bangladesh	2003, 2012	Malawi	2000, 2005, 2008, 2010, 2012
Belarus	2009*	Maldives	2009, 2009*
Benin	2000, 2005, 2010	Mali	1999, 2004, 2008, 2011, 2013
Bolivia	1998, 2003*	Mauritania	1999, 2003, 2006, 2010
Bosnia and Herzegovina	1998*, 2002*, 2009*, 2012*	Mexico	1999*, 2009, 2010, 2011, 2012
Brazil	1998*, 2001*, 2002*	Moldova	2000, 2006, 2010
Bulgaria	1997*, 1998, 2002*, 2004*	Mongolia	1997, 2001, 2009*
Burkina Faso	1999, 2003, 2007, 2010, 2013	Morocco	2012
Burundi	2004, 2008, 2012	Mozambique	1999, 2004, 2009
Cambodia	1999	Nepal	2003
Cameroon	1997, 2000, 2005	Nicaragua	1998, 2002, 2007
Cape Verde	1998*, 2002	Niger	2000, 2005, 2008, 2012
Central African Republic	1998, 2006, 2012	Nigeria	2000*
Chad	2000, 2005	Pakistan	1997, 1997, 2000*, 2001, 2008*, 2013*
Colombia	1999, 2003*, 2005*, 2009, 2010, 2011, 2013	Panama	1997, 2000*
Comoros	2008, 2009	Papua New Guinea	2000*
Congo, DR	2002, 2009, 2009	Paraguay	2003*, 2006*
Congo, Republic of	2004, 2008	Peru	1999, 2001*, 2002*, 2004*, 2007*
Costa Rica	2009*	Philippines	1998*
Cote d'Ivoire	1998, 2002, 2009, 2011	Poland	2009, 2010, 2011, 2013
Croatia	1997, 2001*, 2003*, 2004*	Portugal	2011
Cyprus	2013	Romania	1997*, 1999*, 2001*, 2004*, 2009*, 2011*, 2013*
Djibouti	1999, 2008	Russian Federation	1999*
Dominica	2002*, 2003	Rwanda	1998, 2002, 2006
Dominican Republic	2003*, 2005*, 2009*	Sao Tome and Principe	2000, 2005, 2009, 2012
Ecuador	2000*, 2003*	Senegal	1998, 2003, 2008
El Salvador	1997*, 1998*, 2009*, 2010*	Serbia and Montenegro	2009*, 2011*, 2001*, 2002
Estonia	1997*, 2000*		

continued on next page

Appendix 1 *table continued*

Country	Date of Arrangement	Country	Date of Arrangement
Ethiopia	2001, 2009, 2009	Seychelles	2008*, 2009
Gabon	2000*, 2004*, 2007*	Sierra Leone	2001, 2006, 2010, 2013
Gambia	1998, 2002, 2007, 2012	Solomon Islands	2010, 2011, 2012
Georgia	2001, 2004, 2008*, 2012	Sri Lanka	2001*, 2003, 2009*
Ghana	1999, 2003, 2009	St. Kitts and Nevis	2011*
Greece	2010*, 2012	St. Vincent and the Grenadines	2009
Grenada	2006, 2010	Tajikistan	1998, 2002, 2009
Guatemala	2002*, 2003*, 2009*	Tanzania	2000, 2003, 2009, 2012
Guinea	1997, 2001, 2007, 2012	Thailand	1997*
Guinea-Bissau	2000, 2010	Togo	2008b
Guyana	1998, 2002	Tunisia	2013*
Haiti	2006, 2010	Turkey	1999*, 2002*, 2005*
Honduras	1999, 2004, 2008*, 2010	Uganda	1997, 2002
Hungary	2008*	Ukraine	1997*, 1998, 2004*, 2008*, 2010*
Iceland	2008*	Uruguay	1997*, 1999*, 2000*, 2002*, 2005*
Indonesia	1997*, 1998, 2000	Viet Nam	2001
Iraq	2005*, 2007*, 2010*	Yemen, Rep. of	1997, 2010
Ireland	2010	Zambia	1999, 2004, 2008
Jamaica	2010*, 2013	Zimbabwe	1998*, 1999*
Jordan	1999, 2002*, 2012*		
Kazakhstan	1999		
Kenya	2000, 2003, 2009, 2011		
Republic of Korea	1997*		
Kosovo	2010*, 2012*		
Kyrgyz Republic	1998, 2001, 2005, 2008, 2011		

Source: IMF MONA database.

APPENDIX 2: G20 PRINCIPLES FOR COOPERATION BETWEEN THE IMF AND REGIONAL FINANCING ARRANGEMENTS

October 15, 2011

In November 2010, G20 Leaders also tasked G20 Finance Ministers and Central Bank Governors to explore "ways to improve collaboration between RFAs and the IMF across all possible areas." Based on contributions by the EU and by ASEAN + 3 countries' members of the G20, the following non-binding broad principles for cooperation have been agreed. Also, collaboration with the IMF should be tailored to each RFA in a flexible manner in order to take account of region-specific circumstances and the characteristics of RFAs.

1) An enhanced cooperation between RFAs and the IMF would be a step forward towards better crisis prevention, more effective crisis resolution and would reduce moral hazard. Cooperation between RFAs and the IMF should foster rigorous and even-handed surveillance and promote the common goals of regional and global financial and monetary stability.
2) Cooperation should respect the roles, independence, and decision-making processes of each institution, taking into account regional specificities in a flexible manner.
3) While cooperation between RFAs and the IMF may be triggered by a crisis, ongoing collaboration should be promoted as a way to build regional capacity for crisis prevention.
4) Cooperation should commence as early as possible and include open sharing of information and joint missions where necessary. It is clear that each institution has comparative advantages and would benefit from the expertise of the other. Specifically, RFAs have better understanding of regional circumstances and the IMF has a greater global surveillance capacity.
5) Consistency of lending conditions should be sought to the extent possible, in order to prevent arbitrage and facility shopping, in particular as concerns policy conditions and facility pricing. However, some flexibility would be needed as regards adjustments to conditionality, if necessary, and on the timing of the reviews. In addition, definitive decisions about financial assistance within a joint programme should be taken by the respective institutions participating in the programme.
6) RFAs must respect the preferred creditor status of the IMF.

Source: http://www.g20.utoronto.ca/2011/2011-finance-principles-111015-en.pdf.