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Once bitten:  
new evidence on the link between  
IMF conditionality and IMF stigma

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### **Abstract**

While the consequences and effectiveness of IMF conditionality have long been the focus of research, the possible negative impact of IMF conditionality on countries' willingness to ask for an IMF programme – often termed 'IMF stigma' – has recently received attention particularly from policy circles. In this paper we investigate how countries' past experience with the IMF and their peers' experience with the IMF affect their likelihood of entering a subsequent IMF arrangement. Our results indicate that, even when controlling for the success of past programmes, a country is less likely to approach the IMF for help if in the past it experienced an above-average number of disbursement-relevant conditions. We find hardly any impact of peers' experience, except for Asian countries.

**Keywords:** Financial arrangements; reserves; IMF MONA; crisis resolution

**JEL-Codes:** F33; F53; F55; H87

## Non-technical summary

The divergence in monetary policy in advanced economies as well as elevated levels of global uncertainty in recent years have raised the question among policy makers whether all countries are equally safeguarded against shocks and sudden movements in capital flows. In particular, there is a concern that some countries do not approach the International Monetary Fund (IMF) for support, even when they are in need of financial assistance.

However, the policy debate is not clear about the reasons why some countries may prefer not to ask the IMF for help, and whether these reasons should be a source of concern. If a country has economically rational reasons not to approach the IMF for help, policy makers should be less concerned. By contrast, if a country does not turn to the IMF for financial assistance because the IMF is perceived to be ‘stigmatised’ or ‘stigmatising’, a crisis could be allowed to worsen, possibly letting it spread to other countries and regions, and threatening global financial stability. A better understanding of ‘IMF stigma’ therefore contributes to developing policies which are conducive to global financial stability.

The common understanding of ‘IMF stigma’ is multi-faceted. First, an IMF programme may be stigmatising for the borrowing country since the IMF is often perceived as impinging on a country’s sovereignty. This is what we in the following call political IMF stigma. Second, an IMF arrangement may generate negative beliefs about a country’s economic situation. This might occur in cases when an IMF arrangement reveals previously unknown information, and thereby triggers capital outflows. This is what we in the following refer to as financial market stigma. Third, the notion of stigma has been associated with the IMF itself. Since IMF lending is provided with conditions attached to the loan, from the perspective of the borrowing country the IMF may be a comparatively less desirable source of crisis funding. Moreover, IMF conditionality may

not always lead to the desired macroeconomic outcomes which may (whether justifiably or not) be blamed on ill-designed IMF conditionality. In addition, IMF governance and policies which influence the design of conditionality and the provision of the loan may also contribute to the stigma related to IMF conditionality. In the following we refer to this type of stigma as IMF conditionality stigma. It is this type of stigma we investigate in this paper.

To investigate how and to which extent IMF conditionality can cause a possible reluctance to approach the IMF for help, we use the so called MONitoring of Fund Arrangements (MONA) data base, which provides a detailed account of almost every IMF programme since 1992, to measure the degree of the strings attached to an IMF loan.

The data base differentiates between the type of conditions attached to an IMF loan. Some conditions must be met at the beginning of a programme and can be made a pre-condition for the disbursement of a loan. These we consider ‘harder’ than those conditions which only have to be met at some point during the programme and which are not necessary for disbursements to happen. Based on the type of conditions, we develop an index of ‘hard’ IMF conditionality, in line with previous work on IMF conditionality.

Our hypothesis is that if there is something like conditionality stigma then – all else equal – a country which has experienced more than average ‘hard’ IMF conditions in the past is less likely to ask for an IMF programme during the next crisis. Our approach to then identifying whether this is the case has to make sure that ‘all else is equal’. That is to say, we have to make sure that we can control for the economic strength of a country, for the success of past programmes, for its institutional set-up and for indicators of a crisis. We also have to make sure that we do not measure regional differences or differences between developed and developing countries. To address these issues, our estimation approach therefore focuses on comparing most similar countries which only differ regarding their exposure to hard conditionality.

Moreover, we do not only look at a country's own experience with the IMF, but also at the experience of its peers. In the context of our study, we define peers as trade partners or as neighbouring countries.

Our results indicate that if a country has experienced an above-average number of 'hard' conditions attached to a past loan, it is less likely to start a new IMF arrangement, but only outside crisis years. This effect is not due to the high number of 'hard' conditions indicating a particularly successful past programme. The results are strongly robust to two different estimation approaches and various specifications. By contrast, we only find some limited evidence of peers' experience with conditionality affecting the likelihood of agreeing on a programme among Asian countries and, for the full sample, of peers' 'hard' conditionality having an effect during crises.

The policy implications are twofold. First, our work suggests that past experience matters if conditionality was above 'normal' levels of conditionality. This points to the importance of the design of conditionality in each programme for shaping a country's relationship with the IMF, irrespective of how the eventual success of implementing these conditions is measured. Second, however, our work also shows that conditionality stigma is not an issue during crisis episodes, and hence the concern of policy makers that stigma might lead to contagion and endanger financial stability may be overstated. The fact that there is evidence for IMF conditionality affecting the likelihood of asking for IMF help outside crisis episodes could nevertheless be considered an indication that crisis prevention is not only implemented through appropriate surveillance, but also through the IMF's longer-term relation with a country, which includes how it designs its programmes. Especially the take-up of the IMF's precautionary facilities, which have not been used frequently in the past, might benefit from well-designed conditionality in the IMF's other programmes.

# 1 Introduction

*Stigma: a mark of disgrace associated with a particular circumstance, quality or person.*

Oxford Dictionary

*Stigma: a set of negative and often unfair beliefs that a society or group of people have about something.*

Merriam Webster

The notion of ‘IMF stigma’ features frequently in the policy debate about the role of the IMF in crisis prevention and resolution. While stigma has been present in the discussions of IMF programmes prior to the Asian crisis, it has become a major issue in the policy debate particularly since Asia’s experience with IMF programmes during the Asian financial crisis (Vreeland, 2007; Ito, 2012).

The notion of IMF stigma has again been brought to the table against the backdrop of increased capital flow volatility experienced by emerging market economies, first in response to the global financial crisis and later in the context of diverging paths of monetary policy in advanced economies. In this context, IMF stigma is often mentioned as a reason for modifications of the IMF’s approach to crisis prevention and resolution or as a reason for expanding other layers of the global financial safety net (GFSN) (Denbee et al., 2016).

IMF stigma is important for policy makers because it can have important consequences for global financial stability. If stigma reduces the inclination of a country in crisis to approach the IMF for help in a timely manner, this may have substantial consequences. First, the crisis may become more severe and thereby the likelihood of spillovers and a need for larger amounts of financial help may rise. Second, it may lead to higher levels of precautionary international reserve holdings than would be prudent otherwise

(Jeanne, 2007). Third, the country may choose to turn to other layers of the GFSN, which may be less universally available than IMF financial support (e.g. Scheubel and Stracca, 2016).

The common understanding of ‘IMF stigma’ is multi-faceted. First, an IMF programme may be stigmatising for the borrowing country since the IMF is often perceived as impinging on a country’s sovereignty. This is what we in the following call political IMF stigma. Second, an IMF arrangement may generate negative beliefs about a country’s economic situation. This might occur in cases when an IMF arrangement reveals previously unknown information, and thereby triggering capital outflows. This is what we in the following refer to as financial market stigma and what is extensively analysed in Scheubel et al. (2018). Third, the notion of stigma has been associated with the IMF itself. Since IMF lending is provided with conditions attached to the loan, from the perspective of the borrowing country the IMF may be a comparatively less desirable source of crisis funding. Moreover, IMF conditionality may not always lead to the desired macroeconomic outcomes which may (whether justifiably or not) be blamed on ill-designed IMF conditionality. In addition, IMF governance and policies which influence the design of conditionality and the provision of the loan may also contribute to the stigma related to IMF conditionality (Volz, 2012). In the following we refer to this type of stigma as IMF conditionality stigma. It is this type of stigma we investigate in this paper.

IMF stigma has received surprisingly little attention from the academic community, which has largely been accepting stigma as the other side of the coin of the conditionality which comes with IMF programmes. In this paper, we investigate to which extent stigma really is just the other side of the coin of tough, but effective conditionality and to which extent it can explain a country’s reluctance to ask for IMF assistance. Moreover, we investigate whether countries learn from neighbouring countries’ experience with IMF programmes. In particular, we use two notions of neighbours, geographical neighbours

and trade partners.

To measure conditionality, we develop an index of conditionality based on the account of conditionality provided in the IMF's MONitoring of Fund Arrangements (MONA) database. For each country, we compute the number of specific conditions associated with each IMF programme on an annual basis. By closely inspecting the IMF conditionality record in the IMF MONA database, we compute an index of total conditions and of 'hard' conditions. 'Hard' conditions we understand to be essential for disbursements; these have to be met for a programme to start and to continue. We detail this distinction further in section 3.

In addition, we conduct a similar exercise for countries' neighbours and calculate trade-weighted and distance-weighted total and 'hard' conditionality faced by a country's peers. Both approaches are motivated by the assumption that countries consider neighbours' experience when evaluating the potential impact of a programme because neighbouring countries are likely to be similar in many respects, hence they are likely to be treated similarly by the IMF.

We use both a linear probability model and a propensity score matching model to investigate whether the extent of past conditionality faced by a country or its peers has an impact on its subsequent likelihood of agreeing on an IMF programme. Importantly, in the linear model we condition on a set of macroeconomic variables intended not only to capture current economic conditions, but also the success of past programmes. Moreover, we distinguish between the effect in crisis episodes and in normal times. However, since a linear model may not fully capture differences between countries, we also use a propensity score matching model in which we define countries which experienced high past levels of conditionality as treated, and compare them to different control groups. Importantly, we also compare them to countries which never had a programme in the past and therefore constitute a useful control group.

The linear model indicates that the likelihood of agreeing on an IMF programme



outside crisis episodes is approximately 7-8 percentage points lower if the country experienced a level of hard conditionality which was more than one standard deviation above the average, relative to sample. This is relatively high considering that the overall likelihood of starting a programme is 21% in the sample. However, we do not find any impact for countries which face an actual crisis.

Also when using the propensity score matching approach we find relatively strong effects for the group which experienced a level of hard conditionality more than one standard deviation above the average. Compared to countries with no previous programme, this group is 80-90% less likely to agree on a subsequent IMF programme.

This effect is not driven by a high number of structural conditions and instead seems to be driven by a combination of very binding conditions and a high number of them. Specifically, we do not find a negative effect for those countries which were in the past subject to more structural conditionality. Since the IMF discontinued some of its structural conditionality in 2010, we compare observations before and after 2010 and find that the likelihood of agreeing on a subsequent IMF programme is *higher* among those countries which were subject to more structural conditionality in the past.

Peers' past exposure to IMF conditionality has a much smaller effect. In the subset of Asian countries, the linear model indicates a 0.1 percentage point lower probability of agreeing on an IMF programme if neighbour trade-weighted hard conditionality was in the past at least one standard deviation above the mean, relative to sample. During a crisis, if either trade-weighted or distance-weighted past conditionality are at least one standard deviation above the mean relative to sample, a country's likelihood of agreeing on a programme is 0.2 percentage points lower according to the linear model. In the propensity score matching model, the effect of hard peer conditionality is also negative and between 5 and 10 %, but not robust to matching on the political determinants of agreeing on an IMF programme.

Our contribution is twofold. First, we contribute to the policy debate by provid-

ing, to our knowledge, the first quantification of how IMF stigma is related to how IMF conditionality is designed. Second, we contribute to the academic debate on how conditionality affects the likelihood of entering an agreement for IMF financial support by providing new estimates based on a matching model and by taking into account a potential learning from peers' experience with the IMF.

In Section 2 we review the literature dealing with stigma and IMF conditionality and Section 3 presents our data sources. In section 4 we discuss identification and econometric approach and in Section 5 we present descriptive and multivariate results. Section 6 concludes.

## 2 Background and literature

*So, is there really a basis for [...] IMF stigma? Maybe the answer is “no” from the purely macroeconomic point of view but “yes” from political and institutional considerations.*

– Takatoshi Ito (AER 2012), *Can Asia overcome the IMF Stigma?*

IMF financial support is granted only if the revolving nature of IMF resources is ensured (e.g. Khan and Sharma, 2003). As a precondition for any IMF-supported programme, a country's debt needs to be sufficiently sustainable to ensure that the IMF's resources are paid back. To ensure debt sustainability and to avoid moral hazard, the IMF demands programme countries to sign conditionality agreements (Bird and Willett, 2004). Even though conditionality is agreed to and implemented by the country requesting IMF assistance, conditionality is often perceived as imposed from outside the country, particularly structural conditionality (Conway, 2004; Dreher, 2009). It is therefore possible that a country's experience with the IMF shapes its future interaction with it (Bird and Mandilaras, 2011).

Conditionality in IMF programmes has not from the beginning been associated with a perception of stigma. The first arrangements were with Western European countries; even the US signed two consecutive arrangements in 1963/64. Also, early programmes were en vogue in Latin American countries.<sup>1</sup> None of these programmes were considered as a sacrifice of national sovereignty (Vreeland, 2007).

First discussions of IMF stigma have emerged with the African programmes of the 1970s and 1980s. As the IMF increasingly focused on developing countries, the reforms needed to ensure debt sustainability were more extensive and hence conditionality required for accessing IMF financing was perceived as “heavy-handed and intrusive” (Vreeland, 2007; Reichmann and de Resende, 2014). In addition, typical IMF conditionality aiming at macroeconomic stability, such as recommendations regarding the exchange rate policy, was perceived as difficult to agree to for recently independent African countries. The sovereignty in setting these policies was perceived as a key achievement of independence (Vreeland, 2007).

The perception of stigma evolved with the Asian crisis for two main reasons. First, having to ask for IMF support was perceived as particularly humiliating in Asian countries. For example, Korea was particularly proud of having overcome the negative effects of the war in the 1950s and asking the IMF for assistance was construed as having lost economic strength (Blustein, 2003). In Thailand, the need to bring in the IMF affected trust in national institutions (Warr, 1999). In Indonesia, the liquidity crisis in the banking and real sector, despite an on-going IMF programme, sparked demonstrations and caused a confidence crisis which was extended to the political class (Djiwandono, 2003). No South-Eastern Asian country has asked for an IMF programme since 2001 (Reichmann and de Resende, 2014).<sup>2</sup>

Second, during the Asian crisis, IMF policy recommendations were perceived as ill-

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<sup>1</sup> By 1965 all Latin American countries had at one point in time signed a Stand-by Agreement (SBA).

<sup>2</sup> Of the ten member states of the Association of Southeast Asian Nations (ASEAN), only two have signed an IMF arrangement to date: Lao PDR and Vietnam both accessed IMF resources under concessional terms as part of the IMF’s Poverty Reduction and Growth Facility (PRGF).

fitting and particularly harsh (Schmitt-Grohé and Uribe, 2012; Sussangkarn, 2014). For example, in Indonesia the IMF's recommendations to implement bank restructurings without deposit guarantees are considered a cause of wide-spread bank runs (Ito, 2012).

This anecdotal evidence from Asia suggests that ill-fitting conditionality could contribute to stigmatising the IMF as a lender. Economically sub-optimal outcomes could lead to protracted problems which might exacerbate a crisis and induce potential contagion (Khan and Sharma, 2003), thus contributing to a negative connotation of IMF conditionality.

However, the literature finds mixed results regarding the effectiveness of IMF programme conditionality. Barro and Lee (2005) do not find any significant effects of IMF programmes on investment, inflation, government consumption or international openness, but their results indicate that IMF programmes may have reduced GDP growth rates. Similar results are found by Dreher (2006). However, negative results may also be driven by negative self-selection into IMF programmes (Bas and Stone, 2014; Chapman et al., 2015) or by ineffective implementation of IMF macroeconomic adjustment programmes, which is often related to programme ownership of the national authorities (Khan and Sharma, 2003).<sup>3</sup> As a consequence, IMF programmes may not only become associated with weak authorities and a limited macroeconomic adjustment in countries using IMF funding (Reinhart and Trebesch, 2016), but may also result in a negative reputation of the IMF itself, contributing to the negative connotation of IMF conditionality, i.e. conditionality stigma.

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<sup>3</sup>The literature also recognises something we could describe as conditionality stigma related to the unwillingness to reform. Ivanova et al. (2003) and Bird and Willett (2004) find that political conditions at the onset of IMF programmes have a large influence on how successfully they are implemented. Because an IMF programme requires macroeconomic adjustment, governments unwilling to reform may either not agree to an IMF programme or accept it only grudgingly if they face a crisis. Bird (2002)'s results that the cross-country track record of implementation is poor and seems to worsen could be interpreted as evidence that an unwillingness to reform becomes more widespread.

### 3 Data

This paper uses data on IMF-supported arrangements drawn from the IMF Monitoring of Fund Arrangements (MONA) database, data from the IMF's Direction of Trade Statistics (DOTS) as well as macroeconomic data and balance of payments statistics data from the GFSN data base compiled by Scheubel and Stracca (2016).

#### 3.1 Monitoring of Fund Arrangements (MONA)

IMF MONA data are the primary source for information on a detailed account of programme conditionality. The data are publicly available for the period from 1992 to 2016 and cover a panel of 188 IMF members.<sup>4</sup>

MONA offers interesting insights into conditionality at each stage of an arrangement throughout the sample. There are 6 types of conditions listed in MONA: indicative targets (ITs), structural assessment criteria (SACs), prior actions (PAs), structural benchmarks (SBs) and structural and quantitative performance criteria (SPCs and QPCs). The conditions are grouped into eleven areas of economic activity such as financial sector, general government or labour markets. We detail in Section 4.1.3 how we use the information on the type of conditions to construct our indices of conditionality.

The MONA data were extracted with an algorithm which creates an annualised data set from the publicly available data.<sup>5</sup> We are not the first to develop a comprehensive database of IMF conditionality; similar databases have been compiled for example by Dreher et al. (2015) and Kentikelenis et al. (2016). Our version has the advantage of being easily updatable, both in terms of MONA-specific variables, and other macro variables of interest, but in terms of coverage it does not differ from other data bases. Supplementary Appendix A provides a short overview of the data coverage.

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<sup>4</sup>In the sample, the Federal Republic of Yugoslavia and Serbia & Montenegro are considered the predecessors of Serbia. Our combined dataset includes essentially all IMF members, considering that the latest country to join the IMF, Nauru, did so only in April 2016.

<sup>5</sup>The algorithm is detailed in a previous version of this paper, Andone and Scheubel (2017).

## 3.2 Direction of Trade Statistics (DOTS)

As detailed below, we use two approaches to summarise IMF conditionality experienced by a country's peers, we weigh it by trade relationships and by distance. To quantify the trade relationships, we use the IMF's Statistics Department Direction of Trade Statistics (DOTS) database, in particular the annual time series of merchandise export data for all available countries and years in the sample.<sup>6</sup> This allows us to identify each country's trading partners in any given year. The yearly export-shares derived from DOTS are then used to create a Neighbour Trade-Weighted (NTW) Index, which is in turn used to scale measures of trade partners' conditionality experience.

Our final data set also includes information on recent and ongoing banking and currency crisis source from Laeven and Valencia (2012)'s updated systemic banking crises database, as well as capital control measures sourced from Fernández et al. (2016). Macroeconomic and political control variables are taken from the GFSN database (Scheubel and Stracca, 2016) and from the IMF's World Economic Outlook (WEO) database. Table 1 lists all variables and data sources used in this study.

[Table 1 about here.]

## 4 Econometric considerations and estimation approach

### 4.1 Identification

The goal of this paper is to understand the extent to which past experience with IMF conditionality is related to countries' likelihood of entering subsequent IMF-supported arrangements. We are particularly interested in a potentially deterring effect of the prospect of IMF conditionality.

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<sup>6</sup>For the following 13 sample countries export data is not available in the DOTS database: Antigua and Barbuda, Bhutan, Botswana, Eritrea, Kiribati, Kosovo, Lesotho, Namibia, Palau, South Sudan, Swaziland, Timor-Leste, Tuvalu. For these countries, we use DOTS to back out import-partnerships and proxy neighbours as importing trade partners.

### 4.1.1 Key hypotheses

As described in section 2, there are different ways in which IMF conditionality may deter country authorities from agreeing to an IMF programme in the face of an actual or potential balance of payments need. On the one hand, conditionality could be associated with a (perceived) loss of sovereignty. On the other hand, the decision to seek IMF support could be related to the effectiveness of conditionality. In the latter case, three scenarios could arise of which we consider two as contributing to conditionality stigma.

First, countries which in the past have received IMF assistance might be less likely to turn to the IMF for support because the conditionality associated with previous arrangements was particularly conducive to economic stability, resulting in less need for IMF support later on. Therefore, we might observe a negative relation between past conditionality and probability of entering IMF programmes driven by the efficacy of past conditionality.<sup>7</sup>

Second, if conditionality has in the past not been effective in leading to the desired macroeconomic adjustment or even brought on adverse economic and social consequences, a country authority may be less likely to seek an IMF loan in the case of future macroeconomic difficulties. This second scenario is one which we consider an occurrence of conditionality stigma since a medicine which is not working might affect longer-term beliefs in the usefulness of using that medicine.

However, third, i conditionality might just be *perceived* as unsuccessful or as inadequate. For example, conditionality might have been effective, but is perceived as onerous or excessively tough. In this case, a country authority would be less likely to agree on an IMF programme once it has experienced IMF conditionality in the past, irrespective of whether conditionality was effective or not.

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<sup>7</sup> As discussed in section 2, the literature typically finds a negative selection into IMF programmes and thus evidence for recidivism of IMF programmes among more vulnerable countries. By itself, this would point to IMF conditionality not being effective enough to reduce the likelihood of future use of IMF resources of the same country.

This brings us to a set of testable hypotheses.

**Hypothesis 1** *If other than regarding their past exposure to IMF conditionality similar countries differ in their likelihood of agreeing on an IMF programme, and the country with more exposure to IMF conditionality is less likely to agree on an IMF programme, this phenomenon may be driven by conditionality stigma.*

**Hypothesis 2** *If other than regarding their past exposure to particularly tough IMF conditionality similar countries differ in their likelihood of agreeing on an IMF programme, and the country with more exposure to IMF conditionality is less likely to agree on an IMF programme, this phenomenon may be driven by conditionality stigma related to the perception of conditionality being excessively tough.*

One further argument often mentioned in policy circles is that IMF stigma could be a regional phenomenon, related to a country observing how the IMF treats its peers. Such ‘spillovers’ of stigma could occur for two reasons. The first one is a simple economic contagion argument. If IMF conditionality is ineffective in one country, limited economic growth prospects resulting from ineffective conditionality could affect a whole region. While this contagion of economic developments seems to be particularly relevant for countries with close financial and trade ties (e.g. Fratzscher, 1998; Haile and Pozo, 2008), neighbouring countries seem to be particularly affected by a contagion of crises (Fang and Qin, 2013).

The second possibility of observing a ‘spillover’ of stigma is that investors may form expectations about economic policies in neighbouring countries (e.g. Forbes et al., 2016, for the case of capital controls). In sum, stigma may ‘spill over’ both to trade partners and neighbours through economic channels as well as to neighbours through a perception channel. We therefore consider it important to investigate the existence of conditionality stigma stemming from neighbours based both on the intensity of trade relations and on regional proximity.



We extend Hypotheses 1 and 2 as follows:

**Hypothesis 3** *If other than regarding their neighbours' past exposure to IMF conditionality similar countries differ in their likelihood of agreeing on an IMF programme, and the country with more neighbours' exposure to IMF conditionality is less likely to agree on an IMF programme, this phenomenon may be driven by conditionality stigma.*

**Hypothesis 4** *If other than regarding their neighbours' past exposure to particularly tough IMF conditionality similar countries differ in their likelihood of agreeing on an IMF programme, and the country with more neighbours' exposure to IMF conditionality is less likely to agree on an IMF programme, this phenomenon may be driven by conditionality stigma related to the perception of conditionality being excessively tough.*

#### 4.1.2 Identifying assumptions

In our attempt at shedding light on the relation between previous IMF experience with conditionality and a country's probability of seeking IMF support, we are in addition faced with the endogeneity of own IMF exposure. To the econometrician, an ideal experiment would allow prior experience with IMF arrangements to be randomly assigned across two groups of countries, each with similar macroeconomic fundamentals and facing similar potential needs for IMF support. Evidently, such an experiment is unfeasible.

Our main challenge thus relates to creating a setting in which we can compare otherwise very similar countries. Our approach is twofold. First, we use a linear model to investigate whether past conditionality matters for the decision to ask for an IMF programme during a crisis. Since current economic conditions may be affected by past IMF conditionality, we use several covariates to ensure that we sufficiently control for such effects. The key identifying assumption is that we fully capture other determinants of an IMF programme with our specification.

Second, we use a non-parametric estimator to match countries on economic charac-

teristics, including the past effectiveness of conditionality, and hence our key identifying assumption is that the variables we select for matching are sufficient to capture between-country differences.

Moreover, we have to make sure that the conditionality we are measuring is capturing a country's exposure to IMF conditionality such that another important identifying assumption is that – all else equal – our measure of conditionality and our measure of tough conditionality are reliable measures of exposure to conditionality.

### 4.1.3 Measuring exposure to conditionality

Similar to previous work evaluating the effectiveness of IMF conditionality we count the number of conditions associated with each arrangement (e.g. Caraway et al., 2012; Dreher et al., 2015).<sup>8</sup> We also follow the literature (e.g. Caraway et al., 2012) in classifying programme conditionality as 'hard', and thus easier to be perceived as intrusive or excessive, if it is more difficult to implement or more binding. Specifically, we consider so-called Prior Actions (PAs), together with Performance Criteria (PCs), as 'hardest'. PAs describe steps that a country needs to take before an arrangement may start, a review may be completed or a tranche of financing may be disbursed, while PCs – Quantitative Performance Criteria (QPCs) and Structural Performance Criteria (SPCs) – need to be met for the continuation of an arrangement bar cases when the IMF issues a waiver.<sup>9</sup> By contrast, Structural Benchmarks (SBs) and Indicative Targets (ITs) are conditions that the IMF expects a country to meet, but failure to do so does not bring an arrangement to a halt.

Based on the sum of total conditions and total hard conditions, we calculate two indices of conditionality.

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<sup>8</sup>Supplementary Appendix B gives a detailed account of how we have summed the conditions.

<sup>9</sup>Note that SPCs were discontinued in 2009.

The first index  $COND_1$ , is defined as

$$COND_1 = \frac{\frac{\sum_{1992}^{l-1} COND_{i,t}}{\sum_{1992}^{l-1} PROG_{i,t}}}{\frac{\sum_{1992}^{l-1} \sum_{j=1}^z COND_{j,t}}{\sum_{1992}^{l-1} \sum_{j=1}^z PROG_{j,t}}} \quad (1)$$

with  $COND_{i,t} = \sum_{i=1}^l cond_{l,t}$ ,  $d$  denoting the number of conditions, and  $COND_{j,t} = \sum_{x=1}^d cond_{j,t}$ ,  $j \neq i$ , and  $PROG_{i,t}$  denoting the number for country  $i$  and  $PROG_{j,t}$  denoting the number for country  $j \neq i$ . In other words, we divide the total number of conditions for country  $i$  between years 1992 and  $t - 1$  relative to its total number of programmes by the total sample number of conditions relative to total sample number of programmes between years 1992 and  $t - 1$ .

Our second measure focuses on hard conditionality. We calculate the index  $COND_2$  in the same manner as  $COND_1$ , except for only considering the total number of PAs and PCs, i.e. the subset of conditions deemed as essential for the start and continuation of IMF arrangements. Caraway et al. (2012) similarly consider PAs and PCs to be more intrusive, but weigh them more heavily than ITs and SBs in the construction of their conditionality measure.<sup>10</sup>

Finally, one of our innovations in this paper is to also construct measures of conditionality for a country's neighbours, defined both geographically and as trade partners. For the conditionality indices for neighbours we calculate  $COND_{1,n}$  and  $COND_{2,n}$  as

$$COND_n = \frac{\sum_{l=1}^{n \neq i} \sum_{x=1}^h \frac{cond_{j,t}}{d_{i,j}}}{n \neq i} \quad (2)$$

with  $d_{i,j}$  denoting the inverse distance of capitals of  $i$  and  $j$  if we look at geographical neighbours<sup>11</sup> or the trade shares according to IMF DOTS. In other words, we calculate

<sup>10</sup>The approach used by Caraway et al. (2012) weighs PAs and PCs by a factor of 4, while SBs and ITs are weighted by a factor of 3.

<sup>11</sup>Kelejian and Prucha (2001)'s modified Moran-I test for spatial autocorrelation in discrete choice models rejects the null of no spatial autocorrelation in IMF programme participation, suggesting that there might exist regional clustering.

index  $COND_1$  and index  $COND_2$  for each neighbour, then divide it by the measure of distance or trade, sum these measures for country  $i$ 's neighbours, and divide it by the number  $j \neq i$  of neighbours. For  $COND_{2,n}$  we also only consider PAs and PCs as above.

## 4.2 Econometric approach

Similar to Barro and Lee (2005) we assume a latent decision process of agreeing to an IMF financial support programme. This underlying, latent decision-process of entering an IMF programme is described in Equation 3.

$$I_{i,t}^* = f(\mathbf{X}_{i,t-1}, \mathbf{J}_{i,t-1}, Z_{i,t-1}, COND_1, COND_2, COND_{1,n}, COND_{2,n}) \quad (3)$$

where  $I_{i,t}^*$  describes the likelihood of country  $i$  agreeing on a programme in year  $t$ , of which only the binary choice  $I_{i,t}$  is observed. The latent process is influenced by a set of macroeconomic conditions  $\mathbf{X}_{i,t-1}$  in the previous period which determine the current financing need, a set of political variables  $\mathbf{J}_{i,t-1}$  in the previous period such as support for a country in the IMF board, and regional macroeconomic conditions in the previous period  $Z_{i,t-1} = \sum_{j=1}^{n \neq i} \mathbf{X}_{j,t-1}$ ,  $j \neq i$ .

The key conjecture in this paper is that also own total conditionality relative to sample to date,  $COND_1$ , as well as own total hard conditionality relative to sample to date,  $COND_2$  will influence the decision. Moreover, we assume that also neighbours total conditionality relative to sample to date,  $COND_{1,n}$ , as well as neighbours' total hard conditionality relative to sample to date,  $COND_{2,n}$  influence the decision. We try to capture this latent process with two different models as detailed below.

### 4.2.1 Linear model

In the linear model our main dependent variable is a dichotomous measure of whether a country starts an IMF programme during a given year.<sup>12</sup> Similar to the majority of models used in the literature (e.g. Barro and Lee, 2005; Moser and Sturm, 2011), we use a simple fixed effects OLS model:<sup>13</sup>

$$IMF_{i,t} = \beta_0 + \gamma \mathbf{Z}_{i,t-1} + \phi CRISIS_{i,t} + \delta \mathbf{Z}_{i,t-1} CRISIS_{i,t} + \beta \mathbf{X}_{i,t-1} + \theta \mathbf{J}_{i,t-1} + T_t + \alpha_i + u_{i,t} \quad (4)$$

with  $IMF_{i,t}$  denoting whether country  $i$  starts a programme in year  $t$ ,  $T_t$  denoting time fixed effects,  $\alpha_i$  the country fixed effects and  $u_{i,t}$  the idiosyncratic error term.

$\mathbf{Z}_{i,t-1}$  contains measures  $COND_1$  and  $COND_2$  and in some specifications also  $COND_{1,n}$  and  $COND_{2,n}$ . As the key question in this paper is whether countries in crisis have a different likelihood of agreeing on an IMF programme when they experienced a crisis in the past, we include a crisis dummy  $CRISIS_{i,t}$  which includes currency crises (Laeven and Valencia, 2012) as well as sudden stops based on the adapted definition of the Forbes and Warnock (2012) classification used in Scheubel and Stracca (2016). This crisis dummy, interacted with the set of conditionality indices,  $\mathbf{Z}_{i,t-1} CRISIS_{i,t}$ , should give us an indication on whether past conditionality matters in crises.

$\mathbf{X}_{i,t-1}$  denotes a set of control variables which have been found important determinants of IMF programmes in the literature (e.g. Knight and Santaella, 1997; Barro and Lee, 2005; Moser and Sturm, 2011). In particular,  $\mathbf{X}_{i,t-1}$  includes the following variables in the baseline specification: current account (% of GDP,  $t - 1$ ), inflation (% ,  $t - 1$ ), gross government debt (% of GDP,  $t - 1$ ), and real GDP growth (% ,  $t - 1$ ).

As one of the goals of this paper is also to differentiate between (i) low use of IMF

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<sup>12</sup>Given the importance of the timing of events when interpreting the results, we follow Knight and Santaella (1997) and construct an alternative dependent dichotomous variable, which equals unity for country  $i$  in year  $t$  if a country starts an IMF programme in quarters 1 and 2 of year  $t$  or quarters 3 and 4 of year  $t - 1$ . Results are available upon request.

<sup>13</sup>Fixed effects logit results do not differ qualitatively.

programmes due to past conditionality being effective, (ii) low use of IMF programmes due to past conditionality being ineffective and (iii) low use of IMF programmes because of the *perception* of IMF conditionality being ineffective, one of the main challenges for identification is to control for the effectiveness of past programmes. We use the PRS Group ICRG economic, financial and political risk ratings as well as the growth forecasts provided in the IMF World Economic Outlook (WEO) to do so.

All ICRG indices are forward looking in that they represent *expectations* about a country's economic, financial market or political stability prospects. This means that they can better help us to control for macroeconomic prospects rather than just macroeconomic conditions.

Therefore, we add the PRS Group's ICRG economic and financial risk rating ( $t - 1$ ) as well as the World Economic Outlook growth forecast ( $t - 1$ ) in some specifications to capture economic *prospects* in the previous period in addition to the macroeconomic variables which we use to control for economic conditions.

In addition, the ICRG risk ratings can also help us to capture the effectiveness of previous conditionality for two main reasons. First, if a higher number of conditions is typically associated with more reforms and hence should lead to economic improvements, the ICRG economic risk rating should capture this. As shown in Figure 1, the ICRG economic risk rating is positively correlated with the number of conditions. Moreover, this holds even for the number of hard conditions, as shown in Figure 2.

**[Figure 1 about here.]**

**[Figure 2 about here.]**

Second, if the ICRG indices capture the outlook rather than current conditions, they should adjust as soon as programme design becomes known at the onset of a programme. Figure 3 illustrates that this is indeed the case. The ICRG economic risk rating adjusts immediately after a country has agreed on a programme, implying that

the potential success of conditionality is priced in immediately. In addition, it improves exactly over the course of a programme, which typically is between 2 years for a Stand-By Arrangement, the IMF's workhorse facility, and 4 years for an Extended Fund Facility, to stay at a higher level thereafter.

[Figure 3 about here.]

Therefore, we use the ICRG economic risk rating in the year of the last programme to control for the success of the last programme. Additional specifications to test hypotheses 1-4 include the ICRG economic and financial risk rating at the onset of the last programme to capture the effectiveness of the last programme beyond pure economic prospects.

$J_{i,t-1}$  includes the ICRG political risk rating ( $t - 1$ ), which captures the political situation before a possible new programme, the number of past concessional and non-concessional IMF programmes to date to capture repeated use, and in some specifications we add a measure of how much country's voting at the UN General Assembly is aligned with the G7, i.e. the main IMF shareholders, to capture in more detail the political determinants of agreeing on an IMF programme (Dreher et al., 2009; Moser and Sturm, 2011; Dreher and Sturm, 2012). We also use some of the measures provided in Scheubel and Stracca (2016) to control for available sources of external financial support from the GFSN.

#### 4.2.2 Propensity score matching model

A second approach to capture the latent process of agreeing on an IMF programme is to estimate the likelihood of having experienced particularly high levels of IMF conditionality in the past, given a set of observed characteristics. Then the decision to have a programme can be compared with those observations which have a very similar likelihood of having experienced high levels of conditionality, but de facto have not had a

programme. In other words, we define a treatment group based on observed levels of conditionality in the past, then estimate a propensity score and, based on this estimate, the effect of treatment. As in all models for estimating treatment effects, to identify a causal treatment effect it is essential that systematic differences in outcome are related only to the set of observed characteristics.<sup>14</sup> While this is similar to the literature on natural experiments, we face the caveat that in our case the treatment is not randomly assigned as IMF programmes are not agreed randomly. Therefore, the propensity score matching allows us to construct a counterfactual using a set of matching variables that creates a setting as close as possible to a random assignment.

We define the treatment so as to test hypotheses 1-4. The first treatment,  $T1$ , is defined as having in the past experienced a higher number of conditions than average plus one standard deviation, i.e.:

$$T1 = 1 \text{ iff } COND_1 > (av(COND_1) + sd(COND_1)) \quad (5)$$

with  $av(COND_1)$  denoting the average of conditionality index  $COND_1$  and  $sd(COND_1)$  denoting the standard deviation of conditionality index  $COND_1$ . We define the corresponding control group as

$$C1 = 1 \text{ iff } COND_1 < (av(COND_1)). \quad (6)$$

The second treatment,  $T2$ , is defined similarly, using  $COND_2$ :

$$T2 = 1 \text{ iff } COND_2 > (av(COND_2) + sd(COND_2)). \quad (7)$$

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<sup>14</sup>Caliendo and Kopeinig (2008) provide an overview of the framework and required identifying assumptions with a particular emphasis on propensity score matching.



We define the second control group as

$$C2a = 1 \text{ iff } COND_2 < (av(COND_2)). \quad (8)$$

Comparing  $T1$  and  $C1$  as well as  $T2$  and  $C2a$  will give us an average effect of the ‘treatment’, i.e. above-average conditionality, on the treated among the group of previous users of IMF programmes. Arguably, this will give us a quantification of how likely countries facing a higher number of conditions are to agree on an IMF programme in the future, but it will not give a causal interpretation. Therefore, we construct three additional pairs of treatment and control group.

For the first one, we compare  $T2$  to an alternative control group,  $C2b$ , which we define as

$$C2b = 1 \text{ iff } \sum_{r=1992}^{t-1} P_{i,r} = 0 \quad (9)$$

where  $P_{i,r}$  is an indicator variable indicating an IMF programme in country  $i$  in year  $r$ . In other words, we look for countries with similar characteristics both currently and in the past, which did not experience IMF conditionality in the past, but may be in similar need of a programme currently.

In addition, we make use of the notion that countries may learn from their peers. By comparing countries whose neighbours have experienced a relatively high number of conditions with countries whose neighbours have experienced a relatively low number of conditions, we can further investigate the learning channel. We define

$$T3 = 1 \text{ iff } COND_{1,n} > (av(COND_{1,n}) + sd(COND_{1,n})) \quad (10)$$

and

$$C3 = 1 \text{ iff } COND_{1,n} < (av(COND_{1,n})). \quad (11)$$

and

$$T4 = 1 \text{ iff } COND_{2,n} > (av(COND_{2,n}) + sd(COND_{2,n})) \quad (12)$$

and

$$C4 = 1 \text{ iff } COND_{2,n} < (av(COND_{2,n})). \quad (13)$$

Finally, for testing whether a potential effect of hard conditionality is due to the structural nature of many of the conditions which we classify as hard, we make use of the fact that the IMF discontinued using SPCs after 2009 after a review of conditionality by its Independent Evaluation Office (IEO) (e.g. Bird, 2009). This discontinuation is not a true natural experiment since the IEO recommended the discontinuation because SPCs were deemed not macrocritical enough while not effective and at the same time far-reaching (Independent Evaluation Office, 2007). However, this discontinuation allows us to evaluate whether the discontinuation led to countries being more or less likely to agree on an IMF programme. We thus define

$$T5 = 1 \text{ iff } t \leq 2009 \quad (14)$$

and

$$C5 = 1 \text{ iff } t > 2009. \quad (15)$$

Having defined possible treatment and control groups, consider the following non-parametric model in which agreeing on an IMF programme is a function of treatment conditional on a set of matching variables:

$$IMF_{i,t} = f(T|\mathbf{X}_{t-1}) + \epsilon_{i,t} \quad (16)$$

with  $IMF_{i,t}$  being an indicator variable which is equal to 1 if country  $i$  agrees on an IMF programme in year  $t$ ,  $T$  denoting a dummy variable which identifies one of the

treatment groups defined above, and  $\mathbf{X}_{t-1}$  denotes a set of matching variables in year  $t-1$ .  $\mathbf{X}_{t-1}$  includes the following variables: current account (% of GDP,  $t-1$ ), inflation (% ,  $t-1$ ), gross government debt (% of GDP, L1) and real GDP growth (% ,  $t-1$ ). In some specifications we also match on a country's voting alignment with the G7, as well as the ICRG economic, financial and political risk rating.

Since one may argue that economic prospects cannot fully control for structural differences and needs between e.g. advanced, emerging and developing countries, we take several precautions to make sure that the matching approach works. One common issue with IMF programmes is that they differ in their set-up between concessional and non-concessional programmes. Therefore we include among the matching variables a variable indicating the number of concessional and non-concessional programmes in the past.<sup>15</sup> Moreover, we also condition on whether a country experiences a crisis in  $t$  as crises which may raise a country's need for external financing.

## 5 Empirical results

### 5.1 Descriptive results

Table 2 presents summary statistics of the variables used in the baseline estimation. On average, 21% of the country-year observations in the sample pertain to arrangement start years. There is significant variance in the conditionality indices, with a maximum number of past conditions above 4 times the sample average and a maximum number of past hard conditions of almost 8 times the sample average. Trade partners' past conditionality indices indicate a maximum deviation from sample average which is higher for past hard conditions.

[Table 2 about here.]

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<sup>15</sup>Splitting the sample into past concessional versus non-concessional programmes would not allow conditioning e.g. on crises as then the sample size would be too small.

To see whether these variables are associated with the likelihood of an arrangement starting in  $t$ , we present the correlation between the share of countries starting an arrangement in  $t$  and the respective conditionality indices in a series of figures.

**[Figure 4 about here.]**

Figure 4 depicts the share of countries starting a programme in  $t$  and own past conditionality as well as own past hard conditionality. There seems to be hardly any correlation between own past conditionality or own past hard conditionality and the share of countries starting a programme in  $t$ .

**[Figure 5 about here.]**

Figure 5 then only presents the share of countries starting a programme during a year when there is a crisis. Again, we do not see a significant correlation between own past conditionality and the share of countries starting a programme in  $t$  or own past hard conditionality and the share of countries starting a programme in  $t$  if  $t$  is a crisis year.

**[Figure 6 about here.]**

Evidence for trade-weighted neighbour conditionality looks different. Figure 6 suggests a clear negative relationship between the total number of trade-weighted neighbour conditions and the share of countries starting a programme in  $t$ , but a clear positive relationship between the total number of trade-weighted neighbour hard conditions and the share of countries starting a programme in  $t$ . Obviously, a lower number of programmes being associated with higher number of neighbour conditions could point to conditionality being effective in addressing economic problems and thus in reducing negative economic spillovers, which is something we control for in the multivariate analysis.

**[Figure 7 about here.]**

Figure 7 presents the same evidence, only for the crisis start years. The correlation is negative, albeit not significant.

## 5.2 Multivariate linear results

We present multivariate results from a linear probability model in Table 3.<sup>16</sup>

[Table 3 about here.]

The baseline specification in Column (1) tests for an influence of the index of past conditionality ( $COND_1$ ), the index of past hard conditionality ( $COND_2$ ) and whether these matter during a crisis episode. We define a crisis episode as either the first year of a currency crisis as in Laeven and Valencia (2012) with data extended by us until 2014 or as a sudden stop as defined in Scheubel and Stracca (2016), which is in turn based on Forbes and Warnock (2012). We select these types of crisis as they are more likely to be crises that affect the balance of payments, which is a prerequisite for an IMF programme. The baseline specification in Column (1) does not suggest any impact of past conditionality.

In Column (2) we add information on the number of concessional and non-concessional programmes a country has had in the past. Not surprisingly and in line with the literature on IMF recidivism, if a country has a history with the IMF, it is more likely to agree on an IMF programme.

However, as we have argued in Section 4, it is crucial to control for a country's economic fundamentals *before* the crisis or the point in time when it might have to ask for an IMF programme. Column (3) adds real GDP growth, inflation, the current account balance and gross government debt in the previous period to control for these economic fundamentals. When doing so, the index of hard conditionality appears to significantly reduce the likelihood of entering a subsequent IMF programme outside crisis episodes.

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<sup>16</sup> Results do not differ qualitatively if we use a fixed effects logit estimator instead.

Column (4) presents an alternative specification with the ICRG economic and financial risk ratings and with the WEO Spring and Autumn Forecasts, all at the previous period. In this specification, the index of hard conditionality does not significantly affect the likelihood of entering an IMF programme. Column (5) confirms that this result is not due to the reduced sample size: when adding the macroeconomic fundamentals included in Column (3) as well as the weighted growth outlook of neighbours to control for possible economic spillovers, the negative effect of past hard conditionality persists.

When defining a country's neighbours based on capitals' distance or shared border, results are virtually unchanged as shown in Column (6), except for the coefficient on the weighted growth outlook of neighbours (measured by the weighted composite ICRG index) which is positive and significant when defining a country's neighbours based on capitals' distance. As a higher ICRG composite risk index indicates lower risk, the results in column (6) imply lower risk among geographical neighbours raises the likelihood of a country agreeing on a programme while there is no impact of the overall risk rating of trade partners.

Table 4 presents further robustness checks. Note that the number of observations is lower than in Table 3 since we include control variables which aim to capture characteristics or effects of past programmes. This effectively excludes countries without any previous programmes.

**[Table 4 about here.]**

The first issue, which we check in Column (1) of Table 4 is whether a successful past programme is behind hard past conditionality lowering the likelihood of a programme. To do so we add the ICRG economic and financial risk ratings at the onset of the last programme to capture how a country's economic outlook changed in response to a programme. As a higher index indicates lower risk, Column (1) suggests that a better financial risk at the onset of the last programme is associated with a lower likelihood of

agreeing on an IMF programme later on. This is not surprising as it is in line with e.g. Papi et al. (2015) who show that the occurrence of a crisis is endogenous to past IMF programmes. However, when adding this proxy for the success of past programmes, the negative impact on the likelihood of entering an IMF programme outside crisis periods persists.

Another determinant which we need to consider and which affects both the likelihood of agreeing on an IMF programme and the type of conditionality a country can negotiate is its political closeness to the IMF's main shareholders as discussed in Section 4. We add this information in Column (2). In addition, the political dimension of agreeing on an IMF programme should also take into account the country's political stability and ability to implement the programme. To capture these, we also include in Column (2) the ICRG political risk rating in the previous period and at the onset of the last programme. While the alignment with the IMF's main shareholders at the UN General Assembly has a positive effect on the likelihood of an IMF programme, there is no additional effect of the ICRG political risk rating.

Column (3) investigates whether the availability of other elements of the GFSN affects results. We use a count index from Scheubel and Stracca (2016) as this captures best the *potential* availability of the different elements of the GFSN. However, we do not find a significant impact of this variable.

Column (4) adds measures  $COND_{1,n}$  and  $COND_{2,n}$  to capture possible effects of observing peer conditionality. This is not significant. Since the possibility of IMF stigma emerging from observing a country's peers is mentioned often in the context of the Asian crisis, we look at a subsample in which we include Asia and Oceania as defined by the IMF. The results for this small sample are presented in Column (5). It suggests some role of neighbour hard conditionality in reducing the likelihood of agreeing on a programme for Asia and Oceania.

Finally, we also investigate in Columns (6) and (7) whether peers' experience matters particularly during a crisis. Column (6) presents results for neighbours defined as trade partners while Column (7) presents results for geographical neighbours. Column (6) suggests that if peers experienced a high level of hard conditionality in the past, countries are less likely during a crisis to ask for IMF support. When using geographical neighbours, in Column (7) these results are virtually unchanged. Results for Asia and Oceania in Column (8) are inconclusive, which however is most likely related to the small sample size.

### 5.3 Propensity score matching results

Table 5 presents our propensity score matching results. We add matching variables subsequently to mirror the linear approach. This also gives an idea of how sensitive the results are to improved matching.

[Table 5 about here.]

Column (1) of table 5 presents results for nearest neighbour matching when countries are matched only on whether they are experiencing a currency crisis or a sudden stop. We find that countries with a high number of past conditions are more likely than countries with a below-average past number of conditions to agree on an IMF programme (T1:C1). Countries with a higher number of past hard conditions are more likely than countries with no previous programme to agree on an IMF programme (T2:C2b), but not different from countries with a below-average number of past hard conditions (T2:C2a). At the same time, countries with trade partners who experienced a high number of past conditions are *less* likely to agree on an IMF programme (T3:C3). Finally, countries which experienced more structural conditionality (i.e. before 2010) are more likely to agree on an IMF programme (T5:C5).



In Column (2) we also match on the past number of concessional and non-concessional programmes. Results are largely comparable to Column (1) except for the comparison between countries which experienced high levels of hard conditionality in the past and countries which never had an IMF programme in the past (T2:C2b). For this comparison the sign has changed, indicating that the ‘treatment’ of past hard conditionality has a significant negative effect on the likelihood of agreeing on an IMF programme in  $t$  when compared to a control group which has never been exposed to some form of treatment.

In Column (3), we add a country’s macroeconomic conditions in  $t - 1$  to the set of matching variables. Results are largely unchanged, indicating that high levels of own past conditionality are associated with a *higher* likelihood of agreeing on a programme, except for the comparison with countries that had no previous programme.

In Column (4) we test whether macroeconomic variables in  $t - 1$  sufficiently capture the macroeconomic outlook by adding to the set of matching variables not only the ICRG economic and financial risk ratings in  $t - 1$ , but also the WEO Spring and Autumn Forecasts in  $t - 1$ . While also adding the economic outlook renders the positive effect of past conditionality insignificant, the negative effect compared to countries with no previous programme and also the negative effect of high levels of peer conditionality persist.

Obviously, the negative effect of peer conditionality could just signal the lower risk of negative spillovers if past conditionality has improved peers’ economic outlook. Therefore, in Column (5) we add as a matching variable the weighted neighbour ICRG composite risk rating in  $t - 1$ . This renders the effect of past neighbour conditionality indeed insignificant.

However, we have not yet tested how matching also based on the success of own past conditionality affects results. We do so in Columns (6)-(9), but since this takes into account past programmes, countries with no past programme are by definition excluded. Column (6) adds as matching variables the ICRG economic and financial index at the

onset of the last programme. In this specification, the neighbour past conditionality index again becomes significant as remains the positive effect of higher levels of structural conditionality.

In Column (7) we also add a country's voting alignment with the G7 in the UN General Assembly as well as ICRG political risk rating in  $t - 1$  and the ICRG political risk rating at the onset of the last programme. This only leaves the positive impact of high levels of structural conditionality significant. This effect however does not persist either if we control for potential access to the GFSN in Column (8).

Finally, Column (9) adds neighbour conditionality  $COND_{1,n}$  and  $COND_{2,n}$  to the set of matching variables. Only the positive effect of high levels of structural conditionality remains significant in this column (T5:C5).

#### 5.4 Synthesis of the results

Both the linear model and the propensity score matching model suggest that own experience with hard conditionality reduces the likelihood of agreeing on an IMF programme later on. However, this result only holds in the linear model only outside crisis episodes and only when countries with no previous programmes are included in the sample. The result only appears in the propensity score matching model when countries with previous hard conditionality are compared to countries with no previous programme. Nevertheless, this result is robust to controlling for macroeconomic conditions in the previous period and economic prospects.

While the negative effect of past hard conditionality outside crisis episodes also persists in the linear model when controlling for the success of past programmes, it is not significant in the matching model when including the success of past programmes among the matching variables. This may be because the matching model also matches on the occurrence of a crisis. We conclude that conditionality stigma is not an issue when a country is in real need of a programme, but may be in cases when the country is still in

a position to postpone the decision.

We find some limited evidence that observing peers' hard conditionality matters for countries in Asia and Oceania, but this result has to be considered also taking into account the small sample size.

Finally, we also test whether countries which were in the past subject to more structural conditionality, i.e. country-year observations before 2010 when the IMF discontinued a large share of its structural conditions, are less likely to agree on an IMF programme compared to countries which only experienced programmes after 2010. However, we find that countries which experienced more structural conditionality are *more* likely to agree on an IMF programme later on. We interpret this result as supporting the IEO's conclusion that structural conditionality has not been very effective. This effect persists even when we also match on the economic outlook at the onset of the last programme and the current macroeconomic conditions and outlook. However, it is not fully robust to also matching on GFSN availability.

## 6 Conclusion

*While a certain amount of stigma may be inevitable for an institution that helps members when they get into trouble, too much can interfere with the Fund's effectiveness if it keeps members from approaching the Fund until a crisis is well underway. Stigma also makes it harder for the Fund to play a role in crisis prevention. [...] It is difficult for the IMF to tackle stigma directly, but the problem can be alleviated (or partly offset) by tailoring instruments better to the needs of members.*

IMF (2008) *Review of the IMF's Financing Role in Member Countries*

IMF stigma, or the question why some countries ask the IMF for financial assistance in a crisis while others do not, has long been debated by policy circles in the context

of global crisis insurance. If a country which needs financial support does not ask for it, crises may be left unaddressed and potential contagion might pose risks to global financial stability. Yet, the understanding of the term ‘stigma’ seems to differ widely and therefore also the understanding whether, and if so to which extent, it may constitute a problem.

The academic literature often mentions stigma in the context of analyses of conditionality as the inevitable other side of the coin and as part of the conditionality-related cost of IMF financial support. According to this understanding, ‘stigma’ only measures the cost of conditionality and should not be worrisome from an economic point of view. However, the literature also recognises that IMF conditionality may not always be effective and may even have (unintended) negative consequences. If the IMF’s ‘medicine’ is not perceived as helpful, or even as detrimental, IMF conditionality may contribute to stigmatising the IMF.

In this paper, we take a closer look at how learning from past experience with IMF conditionality can shape the reluctance of entering an IMF arrangement. We do not look at potential financial market reactions to IMF programmes or how the expectation of such reactions might shape the reputation of policy makers in the countries which ask for IMF financial assistance, which is done in Scheubel et al. (2018).

This paper’s contribution is twofold. First, we contribute to the academic debate on how conditionality affects the likelihood of asking for IMF financial support by including the possibility of learning from own and peers’ past experience with IMF conditionality. Second, we contribute to the policy debate by providing to our knowledge the first analysis of how stigma related to IMF conditionality affects the likelihood of agreeing on an IMF programme.

In particular, we look at IMF conditionality recorded in the IMF MONA data base, calculating indices of the extent of past overall conditionality relative to sample and past ‘hard’ conditionality relative to sample. ‘Hard’ conditions we understand to be essential

for disbursements and which have to be met for a programme to start or to continue. Using both a linear probability model and a propensity score matching model we show that past experience with an above sample average share of hard conditionality is associated with a lower likelihood of agreeing on a subsequent programme, even if we control for how successful past conditionality has been as well as for other key determinants of agreeing on an IMF programme. However, this effect seems to be particular to the decision of starting a programme in non-crisis years; there is no significant effect of past IMF conditionality on the decision to start an IMF programme in a year with a currency crisis or a sudden stop.

Our results are not driven by strong structural conditionality, some of which has been discontinued by the IMF in 2010. On the contrary, we find that higher levels of structural conditionality are associated with a higher likelihood of agreeing on a subsequent IMF programme. This effect is somewhat less significant when also matching on the success of past conditionality, thereby indicating that the underlying mechanism may be recidivism on account of ineffective structural conditionality.

In addition, we do not only look at a country's own experience, but also consider the level of past 'hard' conditionality of a country's geographical neighbours and trading partners. As it is often claimed in policy circles that no South-East Asian country has agreed on an IMF programme since the Asian crisis because Asian countries observed 'hard' conditions among their neighbours, we also test whether a country's neighbours' experience with hard conditionality changes the likelihood of agreeing on a programme. We only find very limited evidence for such learning from peers according to which peers' experience with past hard conditionality reduces the likelihood of agreeing on a programme during a crisis episode. Moreover, we find some evidence for peers' past hard conditionality also reducing the likelihood of agreeing on a programme outside a crisis episode for Asian countries. Our findings on other determinants of entering an IMF programme are in line with the literature.

Overall, our results indicate that the prospect of IMF conditionality does not deter countries from asking for an IMF programme when they are in an acute need of one, such as during a currency crisis or sudden stop. However, outside crisis episodes, a country which has in the past experienced particularly high levels of hard conditionality is less likely to ask for an IMF programme again. As this result is robust to controlling for how the macroeconomic outlook has changed as a result of the last programme, it points to some stigmatising effect of IMF conditionality when conditionality is particularly extensive and focused on those conditions which we classify as hard.

The policy implications are twofold. First, IMF conditionality should not be considered stigmatising as such since we do not find a stigmatising effect during crisis episodes, or for normal levels of conditionality, or for conditionality which we do not consider as hard. Therefore, providing loans against conditionality should not be put into question generally. As already pointed out in the literature, conditionality can be considered as part of the cost of a loan.

However, second, our results show that the *type* of conditionality used in macroeconomic adjustment programmes may have a significant effect on its relation with the IMF when a country is not in an immediate need of a programme. It is thus possible that negative experiences will also spill over into perceptions about precautionary lending instruments. This can be problematic when it deters a country to seek a loan before a crisis hits and thus raises the likelihood of economic spillovers. As we find negative evidence only for very high levels of hard conditionality, our results suggest that conditionality may affect future relations with the IMF particularly when conditionality is considered inappropriate. As a consequence, the success of IMF surveillance and of its precautionary instruments may not only be determined by the implementation of surveillance and the design of its precautionary instruments, but also by how the IMF treats countries in macroeconomic adjustment programmes. Importantly, it also seems to matter, albeit to a much lesser extent, how the IMF treats a country's peers.

It is clear that the existence of conditionality stigma also depends on the specific areas of conditionality, for example those areas which are considered essential to national sovereignty or those areas which have important social implications. We leave a more detailed analysis of these to future research.

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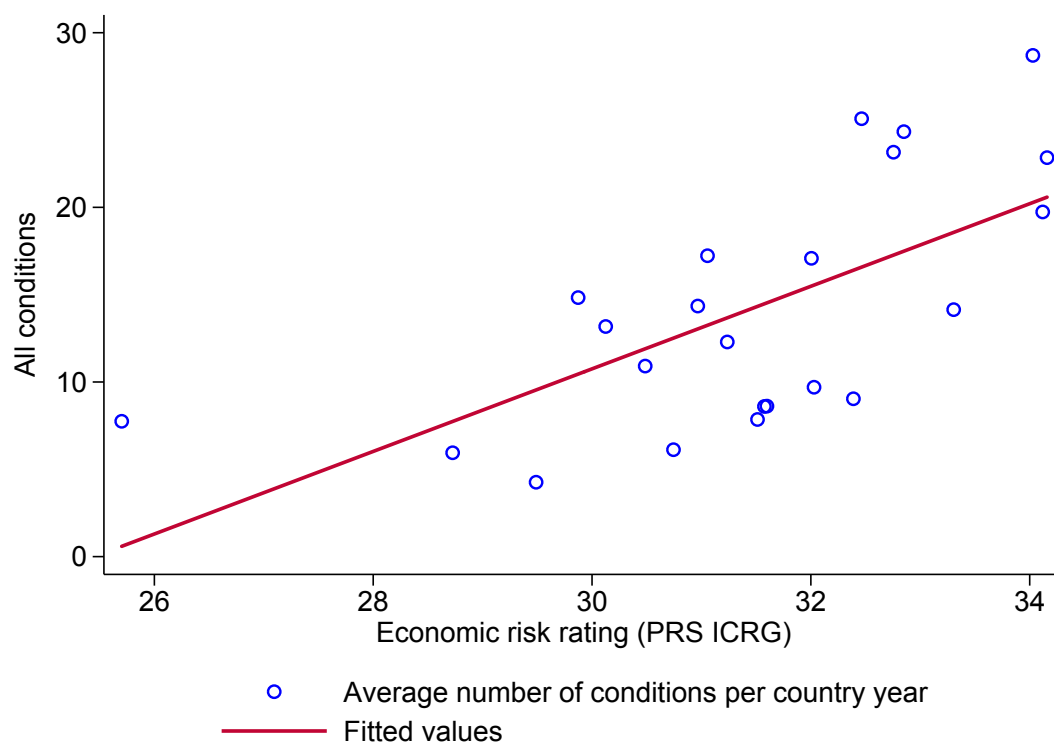
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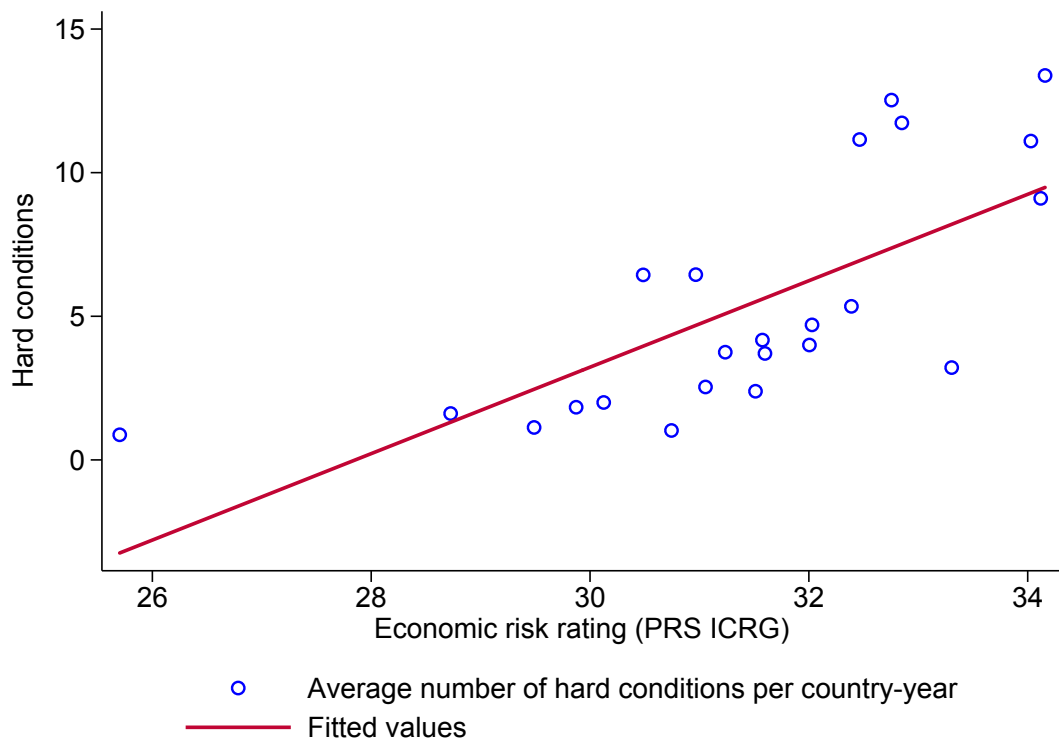
## Figures and Tables

Figure 1: Correlation between total number of conditions and ICRG economic risk rating



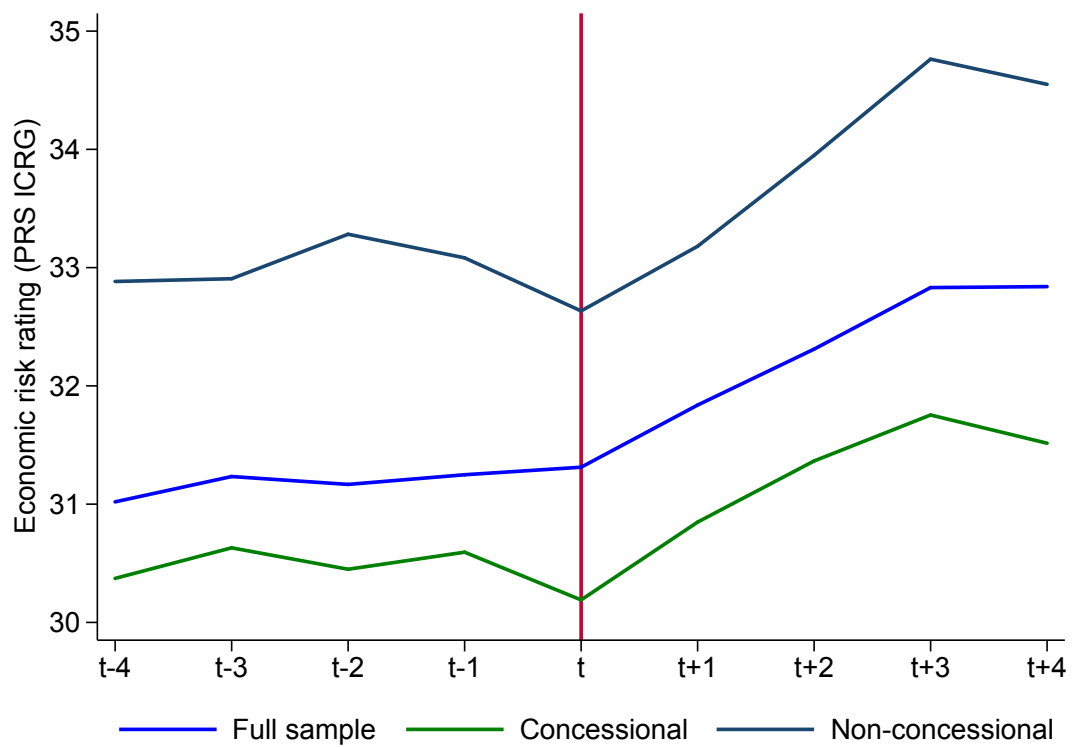
Source: IMF MONA database, PRS Group, own calculations.

Figure 2: Correlation between total number of conditions and ICRG economic risk rating



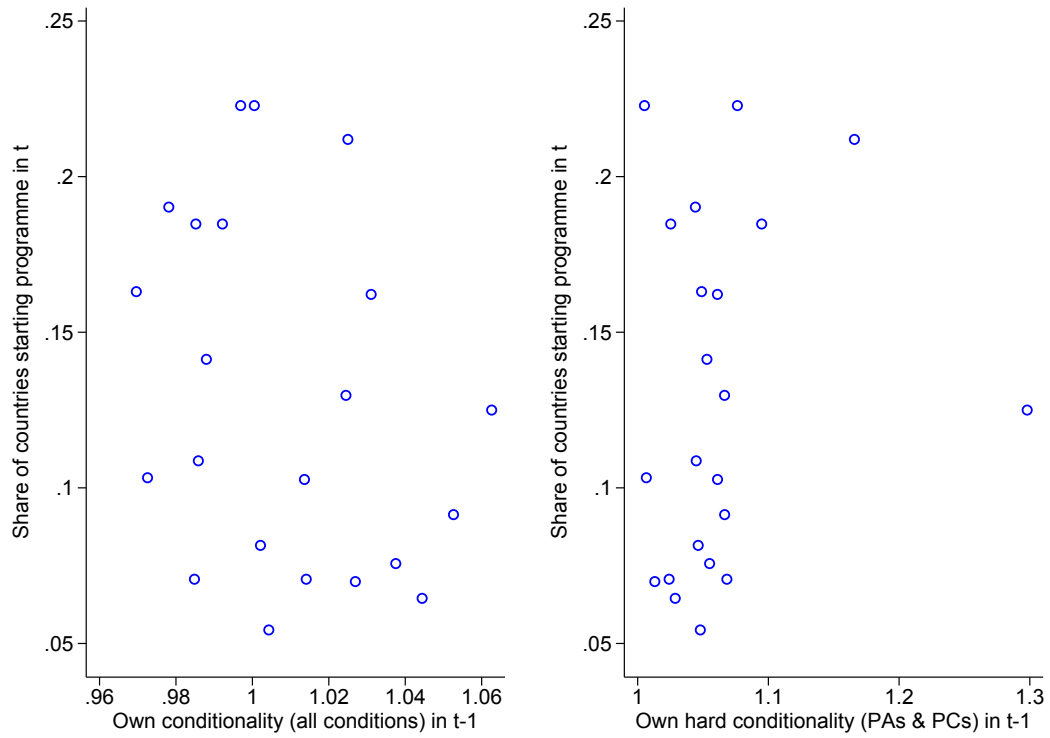
Source: IMF MONA database, PRS Group, own calculations.

Figure 3: ICRG economic risk rating before and after the agreement of an IMF programme



Source: IMF MONA database, PRS Group, own calculations.

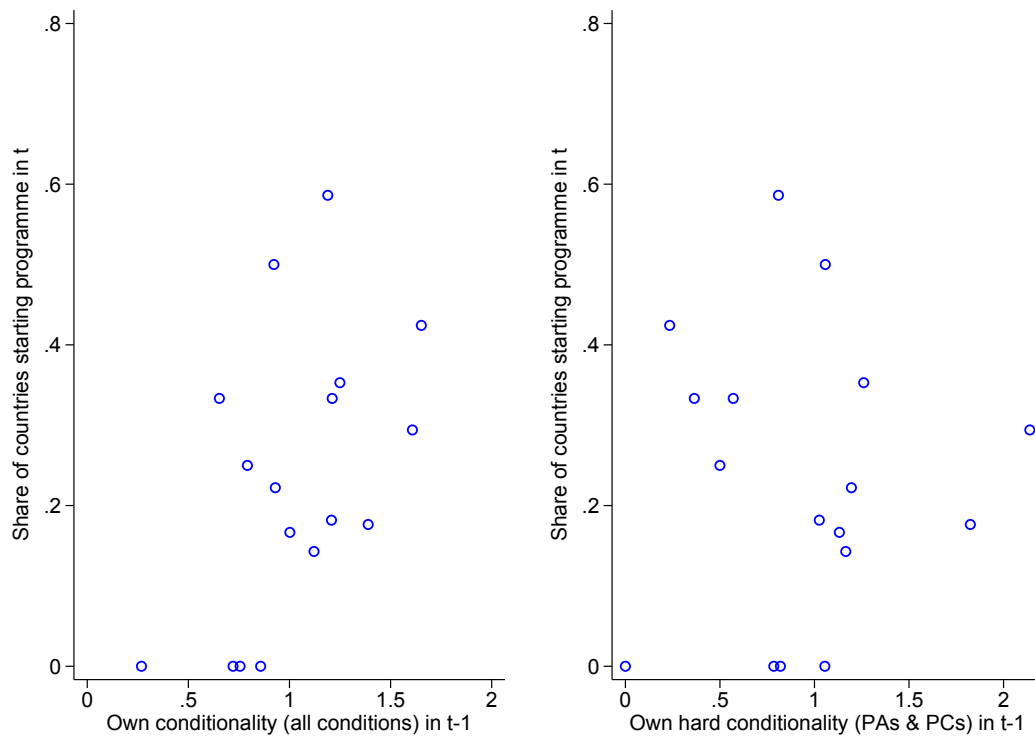
Figure 4: Correlation between the share of countries starting arrangement in year  $t$  and conditionality indices  $COND_1$  and  $COND_2$



*Source:* IMF MONA database, own calculations. Correlation between share countries starting arrangement in year  $t$  and the conditionality indices: all condition types (left), hard conditions, i.e. prior actions and performance criteria (right).

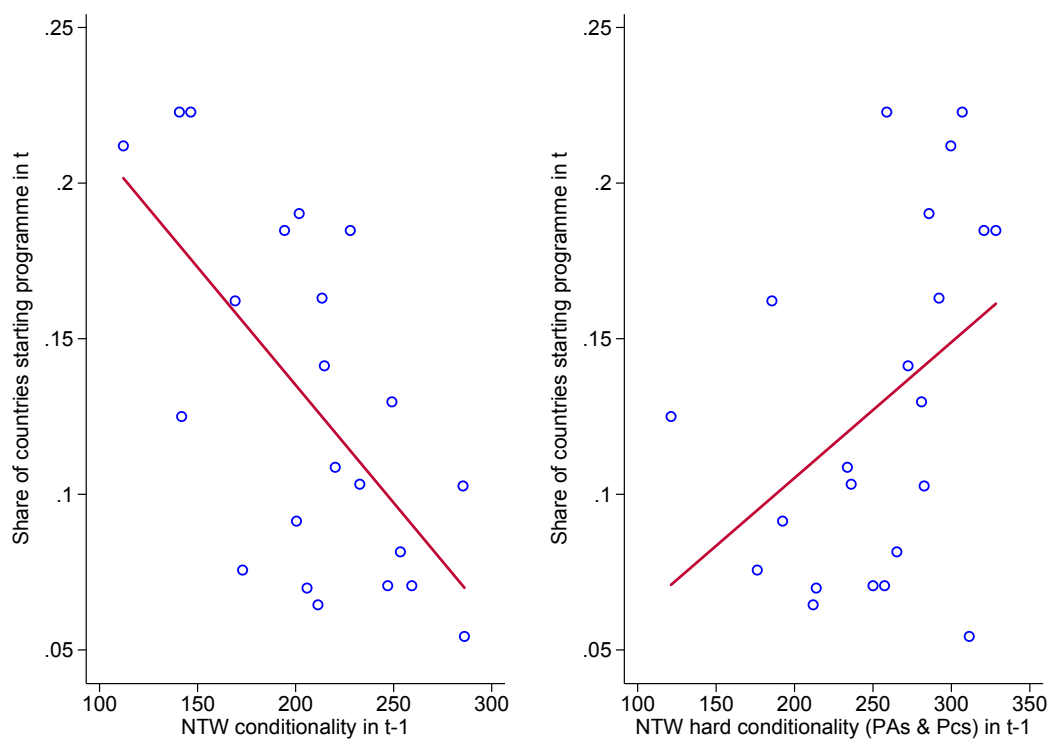


Figure 5: Correlation between the share of countries starting arrangement in year  $t$  and conditionality indices  $COND_1$  and  $COND_2$ : only crisis years



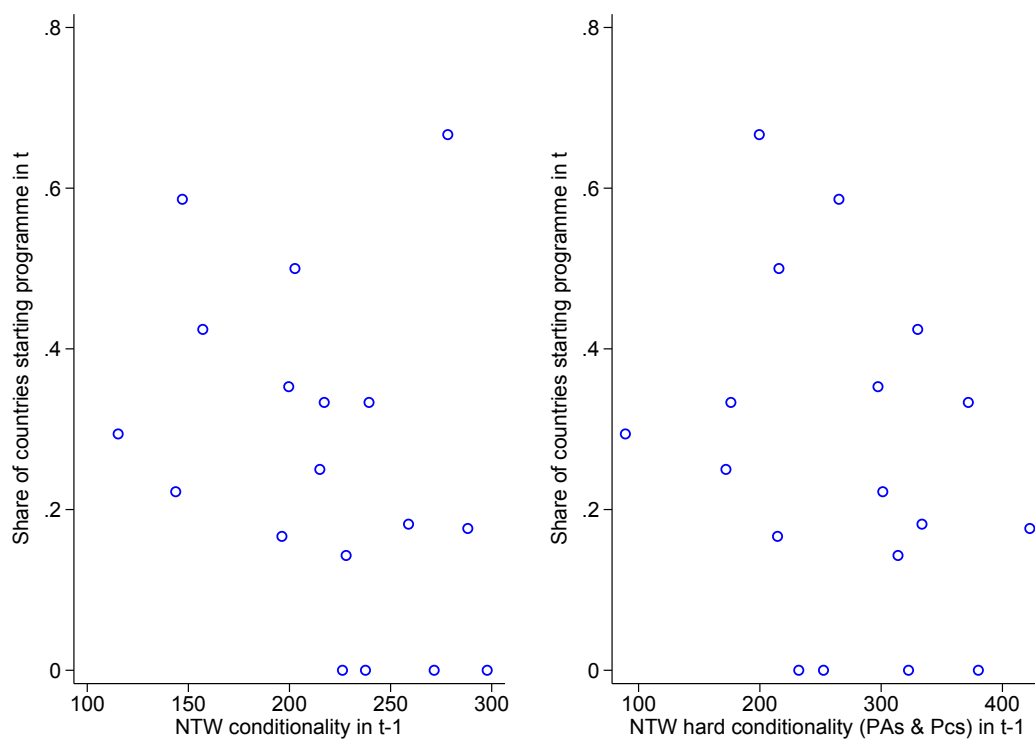
*Source:* IMF MONA database, own calculations. Correlation between share countries starting arrangement in year  $t$  and the conditionality indices: all condition types (left), hard conditions, i.e. prior actions and performance criteria (right).

Figure 6: Correlation between the share of countries starting arrangement in year  $t$  and conditionality indices  $COND_{1,n}$  and  $COND_{2,n}$



*Source:* IMF MONA database, own calculations. Correlation between share countries starting arrangement in year  $t$  and neighbour trade-weighted conditionality indices: all condition types (left), hard conditions, i.e. prior actions and performance criteria (right).

Figure 7: Correlation between the share of countries starting arrangement in year  $t$  and conditionality indices  $COND_{1,n}$  and  $COND_{2,n}$ , only crisis years



*Source:* IMF MONA database, own calculations. Correlation between share countries starting arrangement in year  $t$  and neighbour trade-weighted conditionality indices: all condition types (left), hard conditions, i.e. prior actions and performance criteria (right).

Table 1: Definitions of variables used in this study

Variable Name	Definition	Type	Source	Range
Arrangement start	1 if arrangement signed in year $t$	Dummy	MONA	1992-2014
Own past (hard) conditionality	Country $i$ 's total number of (hard) conditions divided by number of programmes divided by sample number of (hard) conditions (excl. country $i$ ) relative to number of sample programmes (excl. country $i$ ) for the same period.	Integer	MONA	1992-2014
Arrangements to date	Number of concessional or non-concessional programmes that country $i$ has entered in the period between 1992 and year $t$ .	Integer	MONA	1992-2014
Real GDP growth	Gross domestic product, constant prices, National Currency	% change	World Bank	1992-2014
Current Account	Current account balance	% of GDP	World Bank	1992-2014
Government debt	Gross government debt	% of GDP	World Bank	1992 -2014
Inflation	CPI inflation	%	World Bank	1992-2014
Risk ratings	Economic, financial, political and composite risk rating indicators	Integer	PRS-ICRG	1992-2014
WEO forecast	Same year spring and fall forecast for real GDP growth	%	Historical WEO	1992-2014
GFSN access	Global Financial Safety Net index: potential access, ordinal (GFSN_POT_COUNT1)	Index	Scheubel and Stracca (2016)	1992-2014
Affinity index G7	Percentage of UN General Assembly votes in which the country agrees with the G7	%	Bailey et al. (2017)	1992-2014
Stop episodes	Private capital inflows and outflow	Dummy	Scheubel and Stracca (2016)	1992-2014
Banking/currency crises	Banking or currency crisis indicators	Dummy	Laeven and Valencia (2012)	1992-2014

Table 2: Summary statistics for variables used in baseline estimation

VARIABLES	Obs.	Mean	Std. Dev.	Min	Max
Arrangement start	1976	.21	.41	0	1
Own past conditionality	1976	1.02	.68	0	4.56
Own past hard conditionality	1976	1.05	1.05	0	7.89
Arrs. to $t - 1$ : concessional	1976	2.07	2.37	0	10
Arrs. to $t - 1$ : non-concessional	1976	1.6	1.71	0	8
Real GDP growth (%)	1968	4.57	6.07	-36.7	149.97
Inflation (%)	1974	.8	9.93	-8.53	329.64
Current account balance (% GDP)	1952	-5.04	9.65	-124.56	36.77
Government debt (% GDP)	1718	54.83	41.39	0	572.64
ICRG economic risk rating	1509	33.09	4.9	9.75	46.25
ICRG financial risk rating	1507	35.2	5.84	11.96	49
ICRG political risk rating	1525	62.03	9.92	23.04	86.58
ICRG comp. risk rating, TP-weighted	1965	64.88	4.53	39.19	81.01
Spring WEO forecast	1968	4.42	4.38	-17.03	98.43
Fall WEO forecast	1970	4.17	4.82	-18.5	99.95
ICRG economic risk rating at last prog.	1478	32.08	4.98	13.17	45
ICRG financial risk rating at last prog.	1472	33.27	5.67	15.67	47.88
ICRG political risk rating at last prog.	1490	62.15	9.91	21.75	88.83
UNGA Affinity Index G7	1939	.13	.22	-.5	.96
Pot. GFSN access (count measure)	1976	1.91	.79	0	4
Trade partners' past conditionality	1965	223.7	88.23	2.34	667.69
Trade partners' hard conditionality	1965	253.89	137.58	0	1064.45

Table 1 provides an overview of variable definitions.

Table 3: Linear model: baseline results

Dep. var.: prog. in $t$	(1)	(2)	(3)	(4)	(5)	(6)
$COND_1$	0.055 (0.035)	0.032 (0.037)	0.078 (0.050)	0.009 (0.040)	0.061 (0.059)	0.050 (0.058)
$COND_2$	-0.018 (0.020)	-0.033 (0.021)	-0.077** (0.032)	-0.028 (0.022)	-0.081** (0.035)	-0.069* (0.035)
Currency crisis or sudden stop (D)	0.064 (0.088)	0.022 (0.091)	-0.109 (0.118)	-0.034 (0.101)	-0.178 (0.119)	-0.147 (0.118)
$COND_1$ * Currency crisis or sudden stop (D)	-0.055 (0.077)	0.001 (0.078)	0.135 (0.141)	0.066 (0.079)	0.172 (0.136)	0.216 (0.142)
$COND_2$ * Currency crisis or sudden stop (D)	0.060 (0.039)	0.038 (0.041)	-0.006 (0.069)	0.025 (0.046)	0.003 (0.064)	-0.037 (0.070)
No. of conc. arr. 1992- $t-1$		0.079*** (0.017)	0.141*** (0.026)	0.089*** (0.019)	0.145*** (0.031)	0.142*** (0.030)
No. of nonconc. arr. 1992- $t-1$		0.129*** (0.019)	0.175*** (0.021)	0.145*** (0.022)	0.166*** (0.023)	0.175*** (0.022)
Real GDP growth ( $t-1$ )			-0.004*** (0.001)		-0.004 (0.005)	-0.004 (0.005)
Inflation ( $t-1$ )			0.004 (0.006)		0.000 (0.005)	0.000 (0.005)
Current account balance ( $t-1$ )			-0.000 (0.001)		-0.002 (0.001)	-0.002 (0.002)
Gross gov't debt ( $t-1$ )			0.000 (0.000)		0.001 (0.001)	0.001 (0.001)
ICRG economic risk rating ( $t-1$ )				0.003 (0.003)	0.004 (0.004)	0.003 (0.004)
ICRG financial risk rating ( $t-1$ )				-0.010*** (0.004)	-0.005 (0.004)	-0.004 (0.003)
WEO Spring Forecast ( $t-1$ )				0.005 (0.009)	0.008 (0.009)	0.010 (0.009)
WEO Autumn Forecast ( $t-1$ )				-0.007 (0.007)	-0.006 (0.010)	-0.007 (0.010)
ICRG comp. risk rating neighbours ( $t-1$ )					0.000 (0.003)	0.008** (0.004)
Observations	1,976	1,976	1,641	1,471	1,237	1,239
R-squared	0.089	0.126	0.134	0.133	0.141	0.145
Number of countries	118	118	116	87	85	85

Notes: Results from a linear probability model including country and time fixed effects. Results do not differ qualitatively when using a fixed effects logit estimator. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table 4: Linear model: robustness

Dep. var.: prog. in $t$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$COND_1$	0.075 (0.060)	0.057 (0.059)	0.058 (0.059)	0.055 (0.061)	-0.006 (0.213)	0.063 (0.063)	0.054 (0.063)	-0.030 (0.203)
$COND_2$	-0.077** (0.037)	-0.068** (0.034)	-0.066* (0.034)	-0.063* (0.035)	-0.017 (0.119)	-0.068* (0.036)	-0.060* (0.036)	-0.003 (0.113)
Currency crisis or sudden stop (D)	-0.179 (0.120)	-0.179 (0.120)	-0.160 (0.120)	-0.153 (0.119)	-0.935* (0.452)	0.217 (0.314)	0.221 (0.318)	0.564 (1.013)
$COND_1$ * Currency crisis or sudden stop (D)	0.132 (0.138)	0.130 (0.149)	0.117 (0.149)	0.108 (0.149)	0.194 (0.582)	-0.036 (0.159)	-0.014 (0.163)	1.059** (0.427)
$COND_2$ * Currency crisis or sudden stop (D)	0.025 (0.062)	0.027 (0.068)	0.030 (0.068)	0.034 (0.068)	0.395* (0.193)	0.120 (0.076)	0.104 (0.077)	0.043 (0.168)
No. of conc. arr. 1992- $t-1$	0.165*** (0.035)	0.162*** (0.035)	0.163*** (0.035)	0.167*** (0.034)	0.130 (0.103)	0.168*** (0.034)	0.168*** (0.034)	0.122 (0.112)
No. of nonconc. arr. 1992- $t-1$	0.178*** (0.028)	0.178*** (0.027)	0.179*** (0.027)	0.181*** (0.027)	0.370*** (0.090)	0.180*** (0.027)	0.184*** (0.027)	0.372*** (0.081)
Real GDP growth ( $t-1$ )	-0.004 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.003 (0.005)	0.009 (0.011)	-0.003 (0.005)	-0.002 (0.005)	0.008 (0.011)
Inflation ( $t-1$ )	0.003 (0.005)	0.003 (0.005)	0.003 (0.005)	0.003 (0.005)	-0.002 (0.005)	0.001 (0.005)	0.002 (0.005)	-0.001 (0.005)
Current account balance ( $t-1$ )	-0.002 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.001)	-0.003 (0.004)	-0.001 (0.001)	-0.001 (0.001)	-0.003 (0.004)
Gross gov't debt ( $t-1$ )	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.003)	0.000 (0.001)	0.000 (0.001)	-0.001 (0.003)
ICRG economic risk rating ( $t-1$ )	0.006 (0.004)	0.009** (0.004)	0.009** (0.004)	0.009** (0.004)	0.004 (0.010)	0.008** (0.004)	0.008* (0.004)	0.001 (0.010)
ICRG financial risk rating ( $t-1$ )	-0.001 (0.004)	0.000 (0.004)	0.000 (0.004)	0.000 (0.004)	0.030 (0.017)	0.000 (0.004)	0.001 (0.004)	0.030* (0.016)
WEO Spring Forecast ( $t-1$ )	0.008 (0.009)	0.007 (0.009)	0.006 (0.009)	0.007 (0.009)	0.018 (0.023)	0.006 (0.009)	0.006 (0.009)	0.011 (0.025)
WEO Autumn Forecast ( $t-1$ )	-0.006 (0.010)	-0.006 (0.010)	-0.006 (0.010)	-0.007 (0.010)	-0.019 (0.019)	-0.007 (0.010)	-0.006 (0.010)	-0.021 (0.018)
ICRG comp. risk rating neighbours ( $t-1$ )	0.000 (0.004)	-0.000 (0.004)	-0.000 (0.004)	-0.000 (0.004)	0.006 (0.008)	-0.000 (0.004)	0.006 (0.004)	0.006 (0.007)
ICRG econ. risk rating at last prog.	-0.006 (0.006)	-0.007 (0.006)	-0.007 (0.006)	-0.008 (0.006)	-0.013 (0.014)	-0.008 (0.006)	-0.008 (0.006)	-0.011 (0.012)
ICRG fin. risk rating at last prog.	-0.016*** (0.006)	-0.017*** (0.006)	-0.016*** (0.006)	-0.016*** (0.006)	-0.058*** (0.012)	-0.016*** (0.006)	-0.016*** (0.006)	-0.063*** (0.011)
ICRG pol. risk rating ( $t-1$ )		-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.006 (0.006)	-0.004 (0.004)	-0.003 (0.004)	-0.006 (0.006)
Voting alignment at UNGA with G7		0.462* (0.235)	0.465* (0.240)	0.422* (0.235)	0.932 (0.643)	0.385 (0.237)	0.334 (0.237)	1.058 (0.609)
ICRG pol. risk rating at last prog.		0.006 (0.006)	0.006 (0.006)	0.006 (0.006)	0.013 (0.010)	0.006 (0.006)	0.006 (0.006)	0.015 (0.011)
Pot. access to GFSN ( $t-1$ )			0.027 (0.029)	0.027 (0.029)	0.113 (0.072)	0.025 (0.028)	0.023 (0.027)	0.102 (0.073)
$COND_{1,n}$				0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
$COND_{2,n}$				-0.000 (0.000)	-0.001* (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.001 (0.000)
$COND_{1,n}$ * Currency crisis or sudden stop (D)						0.001 (0.001)	0.000 (0.001)	-0.001 (0.001)
$COND_{2,n}$ * Currency crisis or sudden stop (D)						-0.002** (0.001)	-0.002** (0.001)	-0.004 (0.002)
Observations	1,219	1,208	1,208	1,208	200	1,208	1,208	200
R-squared	0.156	0.162	0.163	0.164	0.416	0.170	0.172	0.443
Number of countries	85	84	84	84	13	84	84	13

Notes: Results from a linear probability model including country and time fixed effects. Results do not differ qualitatively when using a fixed effects logit estimator. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table 5: Propensity score matching model

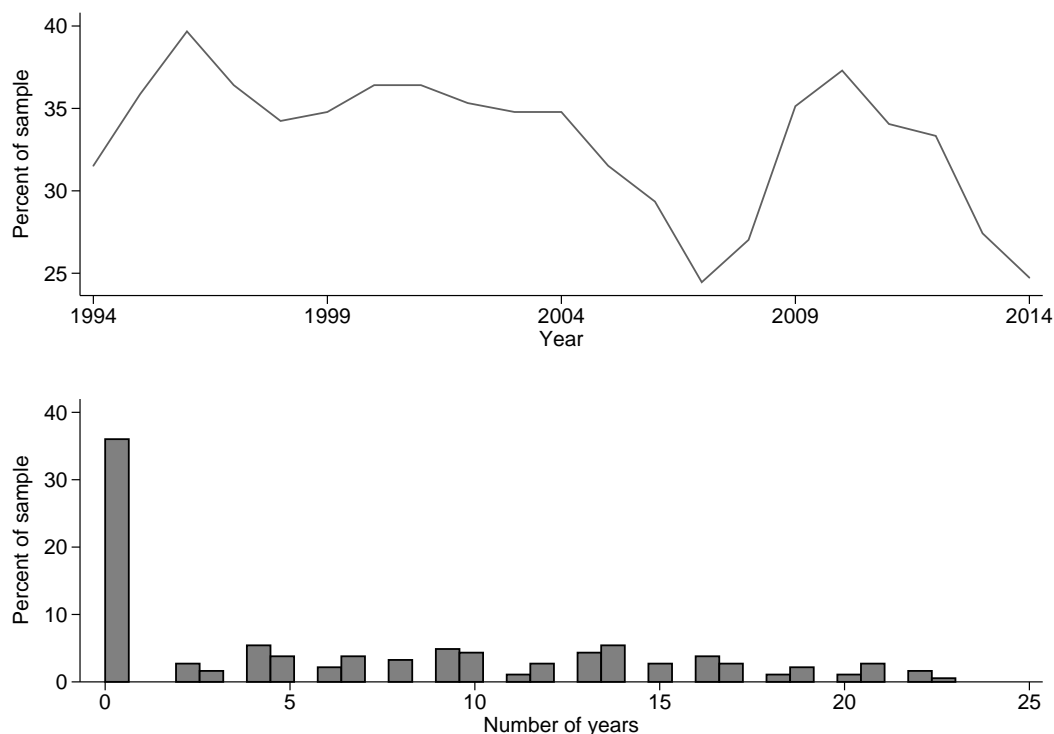
Dep. var.: prog. in $t$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
T1:C1	0.048*	0.008	0.090***	-0.006	0.006	0.020	0.026	0.026	0.020	0.013
	(0.028)	(0.032)	(0.034)	(0.045)	(0.044)	(0.049)	(0.051)	(0.050)	(0.054)	-0.052
N	1372	1372	1140	851	850	835	825	825	825	825
T2:C2a	0.030	0.053	0.105***	0.045	0.052	0.047	0.024	-0.008	0.063	0.024
	(0.031)	(0.034)	(0.035)	(0.042)	(0.038)	(0.046)	(0.046)	(0.061)	(0.043)	-0.046
N	1253	1253	1042	787	787	772	762	762	762	762
T2:C2b	0.177***	-0.791***	-0.846***	-0.880***	-0.900***	-	-	-	-	-
	(0.029)	(0.039)	(0.051)	(0.056)	(0.055)					
N	2299	2190	1588	1119	1108					
T3:C3	-0.031*	-0.050***	-0.032	-0.061**	-0.050	-0.109**	-0.068	-0.014	-	-
	(0.016)	(0.017)	(0.023)	(0.030)	(0.031)	(0.051)	(0.052)	(0.037)		
N	2560	2506	1899	1346	1344	740	736	736		
T4:C4	0.003	0.021	-0.023	-0.011	-0.034	-0.051	-0.034	-0.034	-	-
	(0.020)	(0.018)	(0.029)	(0.027)	(0.029)	(0.069)	(0.066)	(0.078)		
N	2550	2495	1938	1417	1415	792	788	788		
T5:C5	0.039***	0.081***	0.057***	0.058***	0.066***	0.112*	0.081*	-0.040	0.090***	0.008
	(0.014)	(0.009)	(0.012)	(0.011)	(0.010)	(0.062)	(0.047)	(0.057)	(0.022)	-0.13
N	4242	4133	3048	2213	2200	1218	1208	1208	1205	1204

Notes: Results from a propensity score matching model. The propensity score is calculated with a probit model. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Matching variables (subsequently added): (1) currency crisis or sudden stop in  $t$ , (2) add number of past concessional and non-concessional programmes, (3) add current account (% of GDP,  $t - 1$ ), inflation (% ,  $t - 1$ ), gross government debt (% of GDP,  $t - 1$ ) and real GDP growth (% ,  $t - 1$ ), (4) add ICRG economic risk rating ( $t - 1$ ), ICRG financial risk rating ( $t - 1$ ), WEO Spring forecast  $t - 1$ , WEO Autumn Forecast  $t - 1$ , (5) add trade-weighted neighbour composite ICRG risk rating  $t - 1$ , (6) add ICRG economic risk rating at onset of last programme and ICRG financial risk rating at onset of last programme, (7) add ICRG political risk rating ( $t - 1$ ), ICRG political risk rating at onset of last programme and voting alignment with G7 at UN General Assembly, (8) add potential access to GFSN count measure, (9) add  $COND_{1,n}$  and  $COND_{2,n}$ . Dropped observations: (2) T2:C2b: 109 obs dropped, (3) T2:C2b: 107 obs dropped, T5:C5: 9 obs dropped, (4) T2:C2b: 84 obs dropped, T3/C3: 1 obs dropped, T5:C5: 10 obs dropped, (5) T2:C2b: 84 obs dropped, T3/C3: 1 obs dropped, T5:C5: 10 obs dropped, (6) T5:C5: 1 obs dropped, (7) T5:C5: 1 obs dropped, (8) T4:C4: 1 obs dropped, (9) T5:C5: 4 obs dropped.



## A Supplementary appendix on coverage of MONA data

Figure A.1: IMF lending: participation of sample countries by calendar year



*Source:* IMF MONA database. The top graph depicts the share of sample countries participating in IMF arrangements over time. The bottom graph shows the distribution of countries by the number of years spent under an IMF-supported programme.

Of the 188 sample countries, 119 have had at least one IMF program in the 23-year period.<sup>17</sup> Panel (a) of Figure A.1 shows the share of sample countries participating in IMF loans over time. The proportion of participating sample countries peaked in 1996 and in 2010, when 72 and 70 countries respectively had on-going programmes with the IMF. On average, 30 percent, or 57 of the 119 sample countries, are in a IMF-supported arrangement during any given year. Panel (b) of Figure A.1 presents the distribution of the sample countries by the number of years during which they were part of an

<sup>17</sup>For a list of countries and the number of IMF-supported arrangements signed by each country during the sample period, see Table A.1.

active IMF programme. While one country (Mali) was involved in IMF arrangements during the entire sample period, an average country spends approximately 6 years and 11 months in a program, while median participation is 5 years.

Table A.2 gives a concise depiction of the main attributes of all types of arrangements offered by the IMF during the sample period, including the access limits, lengths and repayment periods of the various programmes. It indicates which of the loans are granted under concessional terms and which can be seen as precautionary. Table A.2 also lists the sample of active years for each type of arrangement and explains the transformation of several arrangements over the years.<sup>18</sup>

It is important to note that the MONA database contains a cumulative history of nearly all arrangements with the IMF since 1992, both concessional and non-concessional. For an overview of the database, Table A.3 summarises the total number of arrangements in sample by type.

The bulk of non-concessional lending is given in the form of Stand-By Agreement (SBA) and Extended IMF Facility (EFF) loans, with 181 and 43 programs in the sample, respectively, while concessional lending to Low-Income Countries most often takes the form of an Enhanced Structural Adjustment Facility (ESAF) or a Poverty Reduction and Growth Facility (PRGF), each with a total of 145 and 102 arrangements in the sample.

## **B Supplementary appendix on conditionality in annualised MONA**

With regard to treating conditionality in MONA, this section briefly describes how we extract the data for constructing our conditionality indices. To that end, we used the

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<sup>18</sup>For instance, the Structural Adjustment Facility (SAF) preceded the Enhanced Structural Adjustment Facility (ESAF), which was in turn replaced by the PRGF in November 1999 “to include policies more clearly focused on growth and poverty reduction”.

Table A.1: Countries and number of IMF arrangements, 1992 - 2015

Afghanistan	2	Costa Rica	3	Guyana	6	Mauritania	9	Seychelles	3
Albania	7	Croatia	5	Haiti	5	Mexico	7	Sierra Leone	8
Algeria	3	Cyprus	1	Honduras	7	Moldova	6	Slovak Rep.	1
Angola	1	Czech Republic	1	Hungary	3	Mongolia	6	Solomon Islands	3
Antigua & Barbuda	1	Côte d'Ivoire	7	Iceland	1	Morocco	2	Sri Lanka	3
Argentina	6	Democratic Rep.	2	Indonesia	3	Mozambique	10	St. Kitts & Nevis	1
Armenia	10	Djibouti	3	Iraq	3	Nepal	3	Sao Tome & Principe	5
Azerbaijan	6	Dominica	2	Ireland	1	Nicaragua	5	Tajikistan	5
Bangladesh	2	Dominican Rep.	4	Jamaica	3	Niger	8	Tanzania	9
Belarus	2	Ecuador	3	Jordan	5	Nigeria	2	Thailand	1
Benin	8	Egypt	2	Kazakhstan	4	Pakistan	11	The Gambia	6
Bolivia	7	El Salvador	6	Kenya	6	Panama	3	Togo	3
Bosnia & Herzegovina	4	Equatorial Guinea	2	Korea	1	Papua New Guinea	2	Tunisia	1
Brazil	3	Estonia	5	Kosovo	3	Paraguay	2	Turkey	4
Bulgaria	6	Ethiopia	7	Kyrgyz Republic	11	Peru	7	Uganda	11
Burkina Faso	11	FYR Macedonia	8	Lao P.D.R.	4	Philippines	2	Ukraine	9
Burundi	3	Gabon	5	Latvia	7	Poland	7	Uruguay	7
Cabo Verde	4	Georgia	9	Lesotho	5	Portugal	1	Uzbekistan	1
Cambodia	3	Ghana	6	Liberia	2	Rep. of Cong	4	Venezuela	1
Cameroon	7	Greece	2	Lithuania	4	Romania	8	Vietnam	4
Central African Rep.	5	Grenada	3	Madagascar	4	Russia	3	Yemen	7
Chad	7	Guatemala	3	Malawi	9	Rwanda	7	Zambia	7
Colombia	8	Guinea	6	Maldives	1	Senegal	11	Zimbabwe	5
Comoros	1	Guinea-Bissau	6	Mali	11	Serbia	6	<b>Total</b>	<b>564</b>

Table A.2: Brief description of arrangement types

Arr. Type	Timeline	Concess.	Access (% quota)	Length	Repayment	Precautionary
SAF*	1992-1995	Yes	Preceded ESAF, similar			
ESAF1*	1992-1999	Yes	140-185	3 years	5 1/2 - 10 years	
EFF	1992-2015	No	435 (145/year)	3 years	4 1/2 - 10 years	No
SBA	1993-2015	No	435 (140/year)	12-24 months	3 1/4-5 years	Both
PRGF*	1999-2009	Yes	280-370	3 years	5 1/2 - 10 years	No
PSI <sup>2</sup>	2005-2015	Yes	IMF support			Both
ESF*	2008-2009	No	75	12-24 months	5 1/2 - 10 years	No
FCL <sup>3</sup>	2009-2015	No	No limit	1-2 years	3 1/4-5 years	Yes
ECF	2010-2015	Yes	225 (75/year)	3-4 years (max 5)	5 1/2 - 10 years	No
SCF	2010-2015	Yes	225 (75/year)	12-24 months	4-8 years	Both
PCL <sup>5*</sup>	2011	No	1000/500	12-24 months	3 1/4-5 years	Yes
PLL <sup>4</sup>	2012, 2014	No	500 (250/year, 125/6-month)	6-24 months		Yes

Source: IMF website and IMF MONA database.

Note: The timeline appears as reported in the MONA database. Refer to Table A.3 for a clarification of the acronyms associated with each arrangement type. A star (\*) indicates that an arrangement type has been discontinued. The limits in % of quota refer to limits before the 14th Review of Quotas coming into effect at the end of 2015, which not only triggered a change in quotas, but also in access limits.

1. ESAF was the successor of SAF and was in turn followed by the PGRF and the ECF.
2. IMF advice and support without an arrangement.
3. No defined cap, need assessed case by case; review for qualification after 1st year.
4. Level- and time-based surcharges are designed to discourage large and prolonged use of IMF resources.
5. Access limit: 1000 percent of quota after 1 year, 500 at approval.

Table A.3: Sample arrangements by type, 1992 - 2015

SBA	Stand-By Arrangement	181
ESAF	Enhanced Structural Adjustment Facility	145
PRGF	Poverty Reduction and Growth Facility	102
EFF	Extended IMF Facility	43
ECF	Extended Credit Facility	36
PSI	Policy Support Instrument	18
FCL	Flexible Credit Line	15
SAF	Structural Adjustment Facility	5
SBA-SCF	Stand-By Arrangement – Standby Credit Facility	4
SCF	Standby Credit Facility	4
ESF	Exogenous Shocks Facility (High Access Component)	3
ECF-EFF	Extended Credit Facility – Extended IMF Facility	2
PLL	Precautionary and Liquidity Line	2
PRGF-EFF	Poverty Reduction and Growth Facility – Extended IMF Facility	2
PCL	Precautionary Credit Line	1
<b>Total</b>		<b>563</b>

*Source:* IMF MONA database.

KeyCode variable in the original excel files to generate a host of other six variables (IT, PA, QPC, SAC, SB and SPC) for each of the condition types listed in the KeyCode variable. Next, for each of these, we create a new variable which gives the total number of conditions of that type by review (for example, looking at arrangement SBA-600 at the second review, if the sum of SB is equal to 7, that means that there are 7 structural benchmarks set forth to be completed at the time of the programme approval).

To calculate total conditionality, we first replicate the “Other criteria - Indicative Targets” table at the IMF website. We then use the MONA files containing QPCs and ITs, as well as the “Combine” conditionality file to create a row-identifier, based on all variables that define a condition. This exploits, in particular, the Description variables in each file. The idea is to exploit the repetitive structure of the data for deleting duplicates: if a condition has all the same identifiers that condition is considered repeated from one review to the next. In particular, the Description variable allows us to identify each of

the unique conditions. The Archived MONA "archspcpasb" file is treated in the same manner, after a bit more homogenising to fit the current MONA.

After removing duplicates, we sum the number of conditions on several dimensions: by arrangement, per arrangement and year, per country and year, and so on for conditionality type. Similarly, we sum QPCs, SPCs and PAs to get hard conditionality at the desired level.

In this study, we make use of conditionality at the country-year level. This will be identical to conditionality at the arrangement-year level for countries which have only one programme running in a given year, but not for those countries which have two active IMF arrangements in a given year.

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