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# Questioni di Economia e Finanza

(Occasional Papers)

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# THE CATALYTIC ROLE OF IMF PROGRAMS TO LOW INCOME COUNTRIES

by Alessandro Schiavone\* and Claudia Maurini\*\*

## Abstract

This paper investigates whether IMF programs have had a catalytic effect on flows of development aid to low-income countries (LICs) between 2002 and 2019. We use an entropy balancing methodology to obtain correct estimates, taking account of the characteristics of the countries assisted by the IMF. The findings suggest that IMF programs catalyze development aid to LICs and, according to our baseline estimates, for each year of program activity this catalytic effect amounts to 1.6 per cent of the GDP of assisted LICs. These findings apply to both multilateral and bilateral donors. However, the effect is significantly smaller for countries that fail to fulfil the IMF conditionality by not meeting the quantitative performance criteria subject to program review. Official donors, especially multilateral ones, adopt a selective approach, allocating more development aid to relatively poorer, more institutionally reliable, and more politically stable countries.

**JEL Classification:** F33, F35, F53, F63, O19.

**Keywords:** International Monetary Fund, catalysis, official development assistance (ODA).

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# 1 Introduction

This work investigates whether IMF programs help poor countries to attract development aid flows. While the primary goal of IMF programs is to resolve balance of payments crises, they may also foster development assistance, by restoring macroeconomic stability and improving growth prospects. There is a copious literature on the catalytic role of IMF programs on emerging economies, notably about the effects on private capital flows, while only a few works study the impact on official development assistance (ODA) for low-income countries. This work aims to bridge the gap between these two streams of the literature, taking into account two main aspects. First, the determinants of the investment decisions tend to be different across investors types; while private investors care essentially about risk-adjusted returns, and hence their willingness to invest in poor countries depends on the profitability and the safety of their investments, official donors may have non-pecuniary motives, including international cooperation commitments, humanitarian goals, and geopolitical interests. Second, low-income countries (LICs) feature low levels of economic and financial development, poor institutions and political uncertainty; these factors explain why these economies have little if no access to international financial markets.

The motivation of this paper is threefold. First, the size and the number of Poverty Reduction and Growth Trust (PRGT) programs have risen significantly after the COVID-19 crisis, increasing the IMF role vis-à-vis LICs. Second, following the 2021 General Allocation of Special Drawing Rights (SDR), bilateral donors have the opportunity to boost development assistance, by lending their SDR holdings to the IMF through the PRGT and the Resilience and Sustainability Trust (RST).<sup>1</sup> However, since LICs' financial needs overwhelm the IMF lending capacity, the ability of IMF programs to generate catalytic effects becomes crucial to enhance the impact of the SDR General allocation and materially help low-income countries addressing their vulnerabilities. This motivation is particularly relevant for bilateral donors and central banks, which envisage the option to lend their SDRs to the IMF for enhancing its lending capacity. Third, almost half of LICs have debt sustainability problems, which deter further official donors. Against this backdrop, IMF programs may help borrowing countries to adopt structural reforms and enhance the effectiveness of their macroeconomic policies, so to gain the trust of official donors.

Typically, LICs rely substantially on concessional finance, while the recourse to private creditors and financial markets is limited. Between 2002 and 2019, on average, ODA to LICs amounted to 11 percentage points of their GDP, while FDI and portfolio investments, which are typically non-concessional, amounted, respectively, to 3 and 0.3%.<sup>2</sup> IMF programs generate catalytic effects mainly through two channels (Cottarelli and Giannini, 2002): the first is a liquidity channel, as IMF loans prevent a liquidity crisis turning into a solvency one, by reducing rollover risks during phases of market stress (Zettelmeyer, 2000); the second channel is linked to the conditionality of IMF programs: With the IMF approval of an economic policy agenda, the borrowing country can persuade external investors about the country willingness to embark on the right path to resolve its balance of payments problems (Tirole, 2002). Moreover, since IMF disbursements are linked to the achievement of policy targets, countries are bounded to their commitments during the program implementation.

While both channels are at play when it comes to private investors, in the case of LICs, given their reliance on official aid, the liquidity channel is expected to play a less important role, relative to the conditionality channel (Bird and Rowlands, 2007). Note also that, before approving a program, the IMF requires that borrowers have

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<sup>1</sup> The RST is a trust established and managed by the IMF to help LICs to address long-term vulnerabilities (e.g. those related to climate change issues).

<sup>2</sup> We do not compare ODA to "other investments" since the two categories partially overlap. Indeed, in the Balance of Payments statistics (BPM6), the official loans are recorded among the other investments in the financial account, while investment grants are recorded separately in the capital account. By contrast, ODA includes only official loans with a concessional component not lower than 25%, while the Balance of Payment statistics record official loans regardless of whether they qualify to be considered as concessional.

no further external financial needs, implying that other creditors, typically official donors, commit to provide additional funds. From this perspective, the ability of IMF programs to catalyze development aid depends on the effective coordination between official creditors.

This paper builds on previous studies investigating whether IMF programs stimulate development aid. Bird and Rowlands (2007) find a positive association between bilateral aid and IMF involvement; however, they do not address the selection bias issue. Bal Gündüz and Crystallin (2014) use propensity score matching to deal with this aspect, and they show that IMF programs have a strong positive catalytic effect on multilateral ODA, while the effect on bilateral donor flows is weaker. Some studies look into other effects associated with IMF programs: Al-Sadiq (2019) uses propensity score matching (PSM) techniques and finds that IMF programs have a positive impact on FDIs; Balima and Sy (2019) use the entropy balancing method and show that IMF programs reduce the probability of sovereign debt crisis in LICs.

We contribute to this literature in several ways. First, while most papers mentioned above bundle emerging economies and low-income countries, we focus on the latter given that the channels through which IMF programs generate catalytic effects are different. This allows us to take into account specifically the economic and institutional factors that foster ODA flows in low-income countries. Second, relative to above mentioned papers, our study focuses on a more recent time-period (2002-2019) marked by the proliferation of international financial institutions like regional development banks, and the growing role of emerging economies in development cooperation. Finally, we use the entropy balancing methodology, which to our knowledge has not yet been applied to study the catalytic effects of IMF programs to LICs, allowing us to both address the selection bias and account for the drivers of ODA. In this work, we use the same methodology as in Maurini and Schiavone (2021) to investigate if IMF programs generate catalytic effects. However, the objects of the two works are different: while in the previous work, we study the effects of GRA programs on private capital flows for both emerging and advanced economies, in this paper our focus is on concessional finance for developing countries.

Our sample includes 69 PRGT-eligible countries between 2002 and 2019, covering 147 IMF programs adopted in this period. Data on annual flows are taken from the *OECD Official Development Assistance* (ODA) dataset, which allows us to take into account various types of aids, and to distinguish between multilateral and bilateral donors. In addition, to assess the relevance of the conditionality channel, we use IMF-MONA data on program reviews to construct an index of compliance with IMF conditionality at country level.

Apart from considering the determinants of IMF programs such as current account balance, reserves, debt, we take into account further factors driving bilateral and multilateral aid. In this regard, Alesina and Dollar (2000) argue that bilateral creditors attach more importance to their strategic interests than economic needs of recipient economies. There is also evidence of heterogeneity among donors since some of them pay more attention to institutional characteristics, such as rule of law and democracy, while others privilege countries with colonial or other geopolitical ties; moreover, not all bilateral donors seem to consider corruption level and the quality of policies in recipient economies (Alesina and Weder, 2002). Along these lines, Berthélemy (2006) finds that while poverty and democracy of recipient economies are important drivers of aid allocation, some donors are relatively more egoistic, attaching more importance to the intensity of their trade relations with recipient economies. Burnside and Dollar (2000) compare aid allocation patterns between bilateral and multilateral donors, and find that the latter attach relatively more importance to the quality of policies implemented by recipient economies and their needs, measured in terms of poverty rate. According to Dollar et al. (2006) multilateral assistance is more selective than bilateral aid, targeting countries with sound institutions and higher poverty rates. Birdsall et al. (2003) study the dynamics behind the development aids to Sub-Saharan African countries between 1978 and 1998, showing that donors tended to allocate more resources to countries with poor policies and that were relatively more indebted to prevent defaults on past loans. Claessens et al. (2009) partly contradicts this finding showing that after the fall of Berlin wall, also bilateral donors have become more



selective, paying attention to both the quality of the growth and poverty reduction policy and the institutional environment in the recipient countries.

Since we use data on ODA flows by recipient economy, we focus on borrowers' characteristics, while we do not account for bilateral relationships with donors. Though we acknowledge that such variables may explain some differences across donors' patterns of aid allocation, we prefer to stick to a two-dimension panel analysis, since the primary objective of this paper is to analyze the catalytic effect of IMF programs, rather than to pinpoint bilateral drivers in aid allocation. However, as mentioned above, given that aid drivers may vary between different donor types, we distinguish between multilateral and bilateral donors

We confirm the results in the existing literature regarding the positive effect of IMF programs in catalyzing development aid. According to our baseline estimate, in program countries annual ODA flows to LICs are on average higher than in the control group by 1.6% of GDP. As regards donor types, we find that IMF programs generate catalytic effects for both multilateral and bilateral aids. However, catalytic effects may dissipate if countries do not fulfill IMF conditionality. Indeed, for programs countries failing to fulfill 1 out of 4 policy targets embedded in the conditions of IMF programs, the catalytic effect on ODA decreases by almost half, suggesting that official donors, especially bilateral ones are reluctant to allocate aids towards countries experiencing problems in the implementation of IMF programs. With regard to the other drivers of development aid, we find that official donors, especially multilateral ones, adopt a selective approach, allocating more resources to relatively poorer countries, and those with sound institutions and more stable politically. Our results on the size of the catalytic effects are broadly in line with Bal Gündüz et al. (2014); however, our study differs for several aspects, in particular as regard the observation period and the methodology applied which allows us to take into account the drivers of ODA and get a more accurate estimate of the catalytic effects. Moreover, we find that IMF programs generate catalytic effects for both multilateral and bilateral donors, whereas according to Bal Gündüz et al. (2014), IMF program do not affect significantly bilateral aid. Finally, to our knowledge this study is the first to assess quantitatively the importance of the conditionality channel, using an index of compliance, based on the fraction of policy targets fulfilled by borrowing countries according to periodic program review. These policy targets, which are monitored by the IMF to assess whether programs are on track, refer to macroeconomic variables under the control of the authorities, including monetary and credit aggregates, international reserves, fiscal balances, and external borrowing.

Our results are relevant for three main reasons. First, since LICs' financial needs are far larger than IMF available resources, the ability of IMF program to catalyze other official resources is crucial to help these countries to restore their external viability. Second, following the SDR allocation made in 2021, the coordination between the IMF and other official creditors/donors acquires renewed importance: our paper suggests that IMF programs foster development aid, and that the compliance with IMF conditionality matters. The IMF plays a coordination role among official creditors: its role is more effective, the more borrowing countries comply with IMF conditionality. This may be an important lesson also for the ongoing work at the G20 on country-platforms as a donor coordination tool to support sustainable development.<sup>3</sup> Finally, with the dramatic boost in lending capacity of the PRGT after the pandemic and the establishment of the Resilience and Sustainability Trust (RST), the IMF role in LICs' development financing has increased markedly. Our findings hence shed light on the factors and channels that foster development aid in low-income countries under IMF programs.

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<sup>3</sup> The concept of Country Platforms was firstly introduced in 2018 by the G20 Eminent Persons Group on Global Financial Governance to provide a forum for development partners (mainly Multilateral Development Banks) to discuss, coordinate and align support to country priorities. In February 2020, the G20 endorsed the "G20 Reference Framework for effective Country Platforms", encouraging the implementation of existing Country Platforms and the development of new ones.

This paper is organized in the following way. Section 2 illustrates the dataset and describes stylized facts about official development assistance to LICs and IMF programs; the empirical strategy used to deal with the selection bias issue is explained in the section 3. In section 4 we show and discuss the main results of our analysis, while in section 5 we provide some robustness checks.

## 2 Data and stylized facts

Development aid is the main source of external financing for LICs. The core statistical source on development aid is the OECD ODA database covering both loans and grants by 49 donor countries and eligible multilateral institutions.<sup>4</sup> The definition of ODA employed by the OECD relies on three main elements: first, it covers only resources provided by either state entities or multilateral institutions; second, it excludes loans and donations that are not specifically related to development policies, such as military aids; third, it includes only concessional resources, namely grants and loans having a concessional component higher than 25%. There are two types of reporting countries: the first is made up of 29 countries taking part into the Development Assistance Committee (DAC countries), and includes advanced economies adhering to the OECD, sharing transparency and methodological principles; the second group refers to other 20 reporting economies (non-DAC countries), mostly emerging economies, which are non OECD members but whose development policies have gained importance in recent years and which decided to provide ODA data broken down by destination country to the OECD. According to the OECD estimates (2015), reporting countries accounted for 96 percent of global development co-operation flows in 2013. However, it should be noted that the share of non-reporting countries has been increasing in recent years, notably with China ranking 7th in the list of bilateral donors (Kitano et al., 2020).<sup>5</sup> However, in the case of China and other emerging economies not covered in this analysis, a large amount of development finance is supposed not to meet the OECD criteria to be qualified as ODA, notably in terms of concessionality of loans (Malik et al., 2021).<sup>6</sup>

Our study focuses on ODA to low-income countries from 2002 to 2019 (the last year for which ODA data are available at the time of writing); more precisely our sample consists of countries eligible to Poverty Reduction and Growth Trust (PRGT) loans. There are two main criteria for eligibility; the first is that the per-capita income of borrowing countries needs to be lower than the IDA cut-off;<sup>7</sup> the second requires that market access is neither relevant nor durable. Indeed, this latter criterion motivates our choice to focus on development aid rather than private capital flows. Our sample covers 69 countries, which were eligible to PRGT loans in the last year of our sample. Between 2002 and 2019, on average ODA gross disbursements to PRGT eligible countries amounted to 11% of GDP<sup>8</sup>. The comparison with FDI and portfolio inflows confirms that for poor countries development aid overwhelms private investment flows, especially portfolio investments.<sup>9</sup> This is a peculiarity of low-income countries, whereas for emerging economies private flows play a bigger role and ODA gross disbursements amount to only 2% of GDP (fig. 1).

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<sup>4</sup> We provide the list of reporting countries and multilateral institutions in the annex (table A1).

<sup>5</sup> Using OECD latest estimates on countries' bilateral aid and keeping constant the proportion of development assistance flows channeled through multilateral institutions at the level of 2013 (that is the latest year there are available ODA-like data for non-reporting countries), in 2020 ODA net flows from China would have amounted to US\$ 4.8 billion, a volume similar to that provided by Canada, which accounts for 3% of aggregate DAC countries net flows.

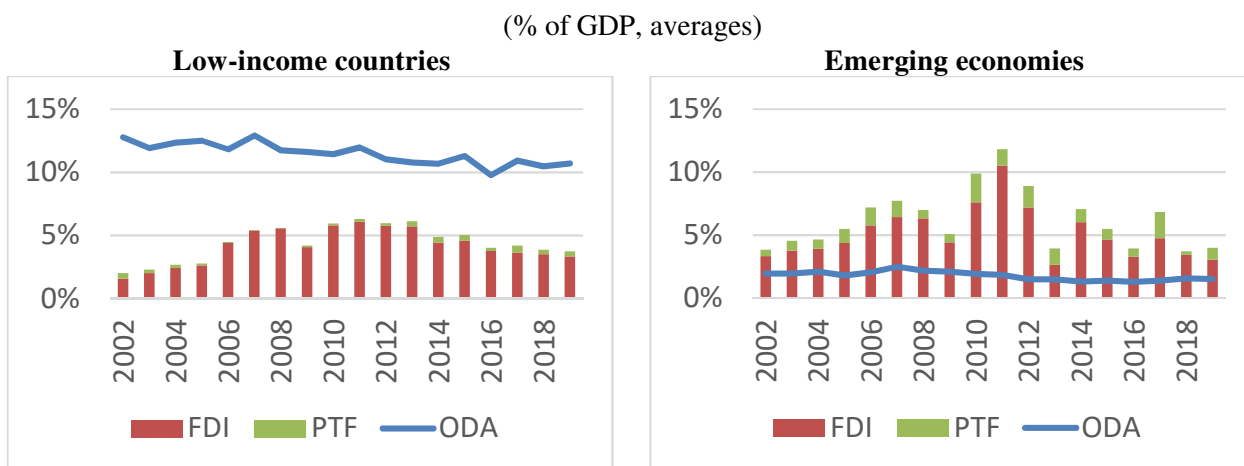
<sup>6</sup> According to these authors, only 12% of development finance provided by China between 2000 and 2017 met ODA criteria.

<sup>7</sup> Eligibility for IDA support depends on a country's relative poverty, defined as GNI per capita below an established threshold and updated annually (\$1,205 in the fiscal year 2022).

<sup>8</sup> Over the same period, on average net ODA disbursements, obtained deducting loan repayments, debt relief and other minor items, amounted to 10% of GDP.

<sup>9</sup> Note that the comparison at country level between aggregate ODA and other external financing sources is not straightforward since the classification of official development assistance in the international accounts varies across the specific components; for example, only loans are recorded in the financial account, while investment grants are included in the capital account. In this work, we do not take into consideration the other investments, since they include official loans, which to the extent they are qualified as concessional, are comprised in the official development assistance.

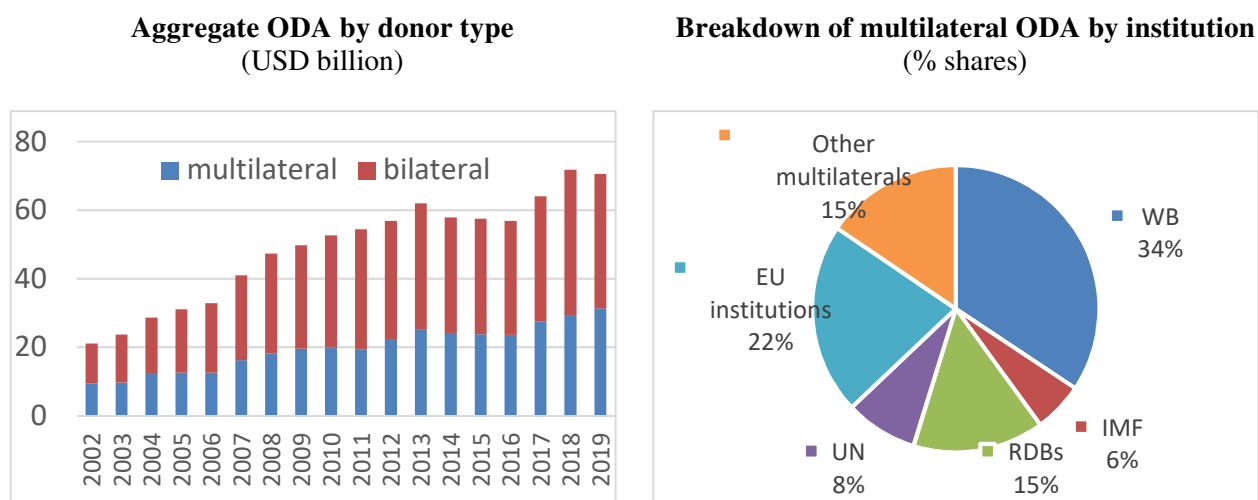
**Fig. 1 Official development assistance**



Source: Our calculations on OECD data, IMF database.

In aggregate terms, ODA gross disbursements to LICs amounted to about USD 70 billion in 2019 (fig. 2). On average throughout the observation period, bilateral aid account for about 60%, the remainder being represented by multilateral development assistance. The World Bank and the EU institutions stand out as the main international financial institutions, while the IMF's share is quite limited, given that the primary objective of IMF loans is to resolve balance of payment crises, rather than financing development policies. Among bilateral donors, DAC countries account on average for 95 percent; however, the weight of the other reporting countries has increased over the recent years (around 10% in 2019).

**Fig. 2 Official development assistance to LICs**



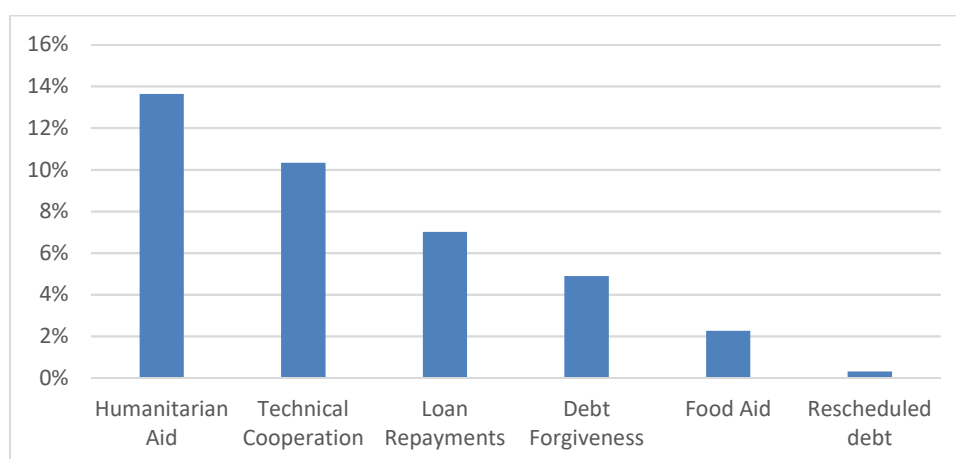
Source: Our calculations on OECD data.

Note: For more details on reporting countries and the classification of multilateral donors see Table A1 in the annex.

As regards the composition of official development assistance, generic aid account for 60% of the total, while specific items represent 40% overall; since some of these items (like technical cooperation,<sup>10</sup> food and humanitarian aid) are not directly aimed to the finance development policies, in the econometric analysis we use multiple definitions of total ODA flows, obtained by deducting the value of these items from the total gross disbursements (fig. 3).

<sup>10</sup> Technical cooperation aims to facilitate the implementation of a development projects and includes both (a) grants to recipient countries receiving education or training at home or abroad, and (b) payments to consultants, advisers and similar personnel as well as teachers and administrators serving in recipient countries (including the cost of associated equipment).

**Fig. 3 Specific ODA items**  
(% over total ODA gross disbursements, averages)



Source: Our calculations on OECD data.

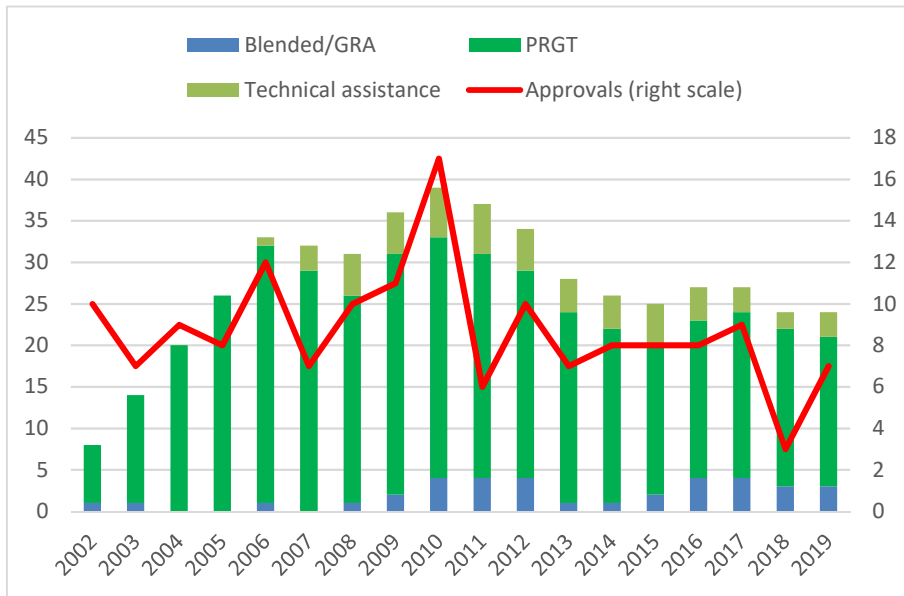
Since our main variable of interest in the econometric analysis is the IMF dummy, which identifies in each year the countries under IMF program, in order to focus on the behavior of the other donors, we also deduct from ODA inflows the value of IMF disbursements. Our analysis focuses on upper credit tranches and technical assistance programs, which are associated with ex-post conditionality, mainly Extended Credit Facilities (ECF), Standby Credit Facility (SCF) and Policy Support Instrument (PSI). As the conditionality channel is supposed to play a crucial role in stimulating development aid (Bird et al., 2002), in this study we do not consider emergency loans, such as the Rapid Credit Facility (RCF), which are not associated with adjustment programs, which only encompass ex ante conditionality.<sup>11</sup> Between 2002 and 2019, the IMF approved 147 programs, reaching a peak following the global financial crisis, with more than half countries in the sample being under IMF programs (fig. 4). In our sample 46 countries<sup>12</sup> out of 69 have resorted to the IMF at least once during the observation period; on average the ex-post probability for a country of being under program in a given year is 35%.

Considering the evolution over time and the distribution of ODA disbursement by countries conditional on being or not under an IMF program, no clear differences emerges between the two groups (fig. 5). As we explain in detail in section 4, in order to investigate properly whether IMF programs generate catalytic effects, that is if program countries receive more ODA than other countries, we address the selection bias and take into account the other determinants of ODA.

<sup>11</sup> Through emergency loans, the IMF provides low-access, rapid, and concessional financial assistance to LICs without ex post conditionality, when a full program is not deemed necessary or feasible and the need is urgent, typically following exogenous shocks such as natural disasters and health crises.

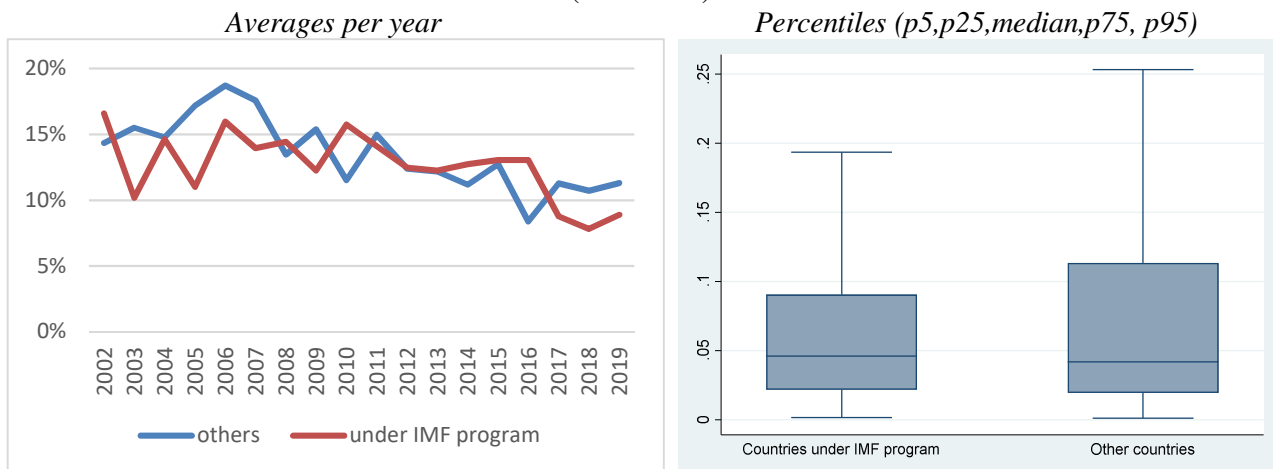
<sup>12</sup> See the table A2 in the annex. The other countries are Bhutan, Cambodia, Democratic Republic of Timor-Leste, Eritrea, Guyana, Kiribati, Lao P.D.R., Marshall Islands, Micronesia, Myanmar, Papua New Guinea, Samoa, Somalia, South Sudan, St. Lucia, St. Vincent and the Grenadines, Sudan, Tonga, Tuvalu, Uzbekistan, Vanuatu, Yemen and Zimbabwe.

**Fig. 4 IMF programs to LICs**  
(number of programs per year)



Source: IMF, MONA database.

**Fig. 5 ODA disbursements to LICs**  
(% of GDP)



Source: Our calculations on IMF data.

The explanatory variables in the econometric analysis (fig. 6) include both potential determinants of IMF programs and ODA drivers. We expect that the probability that countries call for IMF assistance is negatively correlated with income, FX reserves and CA balance.

**Fig. 6 Explanatory variables**



Source: IMF, International Financial Statistics.

Note: Dashed/solid/dot lines represent respectively the lower quartiles, averages and upper quartiles of each variable.

As regards the effects on ODA, in line with the literature we expect that official donors tend to allocate more development aid to relatively poorer countries, while we are agnostic about the sign of the other variables. The charts show the averages, lower and upper quartiles of the macroeconomic variables for the whole sample. With regard to income levels per capita, we note a significant variability within the sample, with relative poorer countries diverging over time from the average. The stock of FX reserves over GDP rose over time but remained limited. Most low-income countries feature current account deficits, but levels look rather erratic over time and disperse across countries. Growth rates are volatile with a negative trend across all the distribution. Finally, both the level of external debt and debt service, which had decreased in the first half of the observation period thanks to the efforts of the international financial community to provide debt relief to Heavily Indebted Poor Countries, have resumed to increase since 2010. We also use a set of indices on the quality of institutions from the World Bank: rule of Law, political stability, control of corruption (Kaufmann et al, 2010), which range between -2.5 and +2.5, allowing to rank countries along some institutional criteria (see table A4 in the annex).<sup>13</sup> In line with the literature, we expect that donors, in particular multilateral institutions, tend to privilege countries with good institutions, adopting a selective approach, while we are agnostic on the other two variables. In the next section, we explain how estimate the impact of IMF programs on ODA, using these data to build a counterfactual.

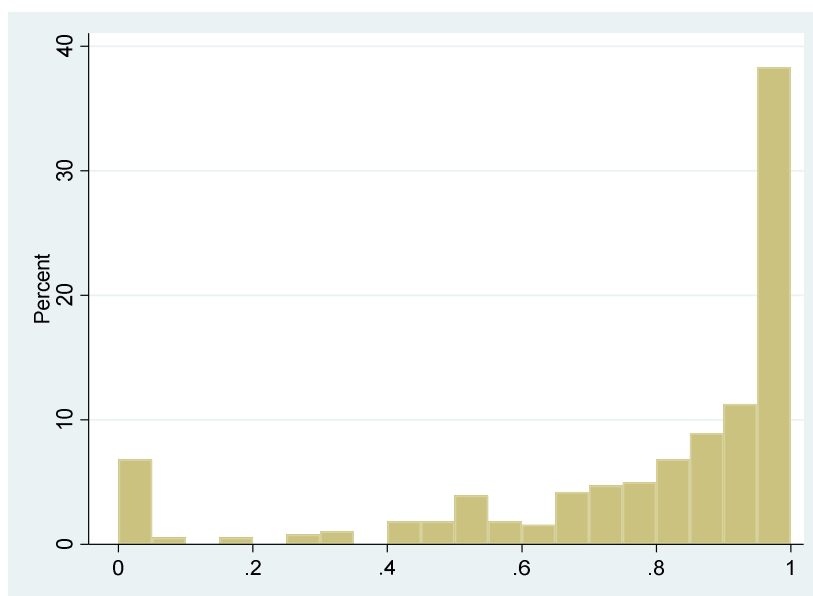
As argued in section 1, IMF conditionality is supposed to play an important role with regard to catalytic effects. To explore this aspect we look into the IMF assessment of *quantitative performance criteria* (QPC) in the

<sup>13</sup> Since these indices are re-proportionated each year, they do not provide indications about absolute changes over time, and hence we omit to provide a graphical representation of them.

program review. These criteria refer to policy targets in terms of macroeconomic variables under the control of the borrowing country authorities such as external debt, fiscal balance, level of reserve assets, domestic credit. We compute an index of degree of compliance, as the fraction of QPCs that have been met during the review period (fig. 7). We note that compliance issues are not uncommon among countries under IMF programs, as the first quartile of this indicator in the country-year distribution stands at 0.7, indicating that the respective countries fail to meet at least 3 out of 10 QPCs.

We will exploit the heterogeneity in terms of compliance with IMF conditionality, to help explain why catalytic effects may vary across countries. In line with Bird and Rowlands (2002), who argue that the catalytic effect of PRGT programs lies mainly in the conditionality channel, we posit that the degree of compliance associated with a borrowing country in a given year, may be perceived by official donors as an index of the strength of the authorities' commitment to pursue economic reforms and restore macroeconomic stability.

**Fig. 7 The degree of compliance to IMF conditionality**  
(% of quantitative performance criteria)



Source: Our calculations on IMF data taken from the MONA database. Note: the x-axis denotes the fraction of quantitative performance criteria met by each program country in a given year. The y-axis denotes the frequencies associated with any degree of compliance.

### 3 Empirical strategy

The issue of selection bias in our context arises because countries signing an IMF program may receive more (or less) development finance not in response to the IMF program, but due to other characteristics that influence both the IMF assistance and the aid allocation. Therefore, the mere difference between aid to supported and not supported countries does not capture just the impact of the IMF program, but also the intrinsic pre-program differences between the two groups.

In the literature on the effects of IMF programs, the issue of selection bias has been addressed mainly through instrumental variables or through techniques borrowed from the literature evaluating the impact of public policies. In this paper, as in Maurini & Schiavone (2021), we use the latter approach and employ the entropy balancing method, developed by Hainmueller (2012) and Hainmueller & Xu (2013).

Entropy balancing is a data pre-processing method, which allows for the creation of a comparable control group against which it is possible to evaluate the performance of the group of the treated. In particular, it calculates a weighting scheme, which satisfies pre-specified balance constraints on the sample moments of the



distribution of observable characteristics, under the constraint of minimum loss of information. The weighting vector can then be used in a conventional weighted regression analysis, where the outcome variable (ODA flows over the GDP of the receiving country in our case) is the dependent variable and the coefficient of treatment indicator (i.e. the presence of an IMF program) is the variable of interest representing the estimation of the causal effect.<sup>14</sup>

Like in every impact study, we are interested in estimating the Average Treatment Effect on the Treated (ATET), given a set of covariates  $X$  used for balancing the sample, which can be written as:

where  $X$  is a vector of observables covariates that may affect the probability of receiving an IMF program,  $Y$  is the ODA flows and  $D$  is the dummy indicating whether the country-year unit of observation has an active IMF program. Therefore,  $E(Y1|D = 1, X = x)$  is the expected value of ODA flows for program units and  $E(Y0|D = 0, X = x)$  is the expected value of ODA flows for the (synthetic) control units. We use a unique set of covariates, since most of them are relevant for both the balancing procedure and the subsequent panel regressions. The covariates cover both macroeconomic variables (such as per capita income, GDP growth, current account balance, FX reserves, external debt, debt service) and institutional factors (such as political stability, rule-of-law and the control of corruption).

We use a probit model to identify the determinants of IMF programs, which will be used in the balancing procedure to build the counterfactual. As expected we find that income, current account balance and reserves are all negatively correlated with the probability of obtaining an IMF program, while debt service and political stability are positively correlated (table 1).

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<sup>14</sup> In Maurini and Schiavone (2020) we discuss the advantages of this method with respect to the propensity score matching and its performance in terms of estimation bias.

**Table 1. Probit model on the determinants of IMF programs to low-income countries**

VARIABLES	All IMF programs
income	-0.665*** (0.076)
inflation	0.005 (0.006)
growth	0.020* (0.012)
ext_debt	-0.151 (0.130)
debt_service	3.902*** (0.965)
CA_balance	-1.377*** (0.503)
reserves	-1.697*** (0.486)
pol_stab	-0.032 (0.083)
ctrl_corruption	0.228 (0.167)
rule_of_law	0.419** (0.189)
Observations	946
Year FE	YES
Country FE	NO

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. See table A3 for the definition of each variable.

Interestingly we find that the debt service increases the probability of a country receiving IMF assistance, while the coefficient of the stock of external debt is negative but not significant. This apparent contradiction may be explained considering that debt sustainability is a prerequisite for IMF financial assistance. Following Neuenkirch & Neumeier (2016), we choose the balance weights that ensure covariate means and variances are not statistically different between program and non-program observations. Table 2 shows the means and variances in the two groups before and after the balancing procedure. As expected, it results that - before applying the balancing algorithm - the country-year observations under an IMF program have a lower per capita income, but a higher growth rate; wider current account balance and lower reserves; a lower external debt, a higher debt service and a higher score in terms of political stability.

**Table 2. Group statistics before and after the balancing****Before**

	<b>Treat</b>		<b>Control</b>	
	<b>mean</b>	<b>variance</b>	<b>mean</b>	<b>variance</b>
income	7.697	0.390	8.013	0.532
inflation	4.468	87.870	3.981	97.450
growth	4.994	10.970	4.303	19.270
ext_debt	0.478	0.135	0.550	0.212
debt_service	0.040	0.004	0.036	0.002
CA_balance	-0.077	0.008	-0.048	0.011
reserves	0.127	0.006	0.149	0.013
pol_stab	-0.527	0.506	-0.589	0.808
ctrl_corruption	-0.649	0.230	-0.759	0.303
rule_of_law	-0.680	0.198	-0.783	0.318

**After**

	<b>Treat</b>		<b>Control</b>	
	<b>mean</b>	<b>variance</b>	<b>mean</b>	<b>variance</b>
income	7.697	0.390	7.697	0.390
inflation	4.468	87.870	4.468	87.870
growth	4.994	10.970	4.992	11.000
ext_debt	0.478	0.135	0.478	0.135
debt_service	0.040	0.004	0.040	0.004
CA_balance	-0.077	0.008	-0.077	0.008
reserves	0.127	0.006	0.127	0.006
pol_stab	-0.527	0.506	-0.527	0.506
ctrl_corruption	-0.649	0.230	-0.649	0.230
rule_of_law	-0.680	0.198	-0.680	0.198

In the second step, the weights resulting from the balancing exercise are used in a weighted least square regression where the relevant measure of official development assistance scaled on the GDP of the receiving country is the dependent variable ( $ODA_{it}$ ) and the IMF program dummy ( $D_{it-1}$ ) is the main explanatory variable. We also add country ( $\alpha_i$ ) and time fixed effects ( $\delta_t$ ), to take into account the panel dimension of the dataset and increase the efficiency of the estimates and all the covariates used in the first step ( $x_{kit-1}$ ), following the approach of Balima (2017) and Balima and Sy (2019). The covariates are lagged one period and all (dependent and independent) variables are winsorized at 1 percent to deal with outliers.

Therefore, the most general representation of the model we estimate is:

Where the parameter of main interest is  $\beta$ , since it reflects the impact of the IMF program dummy on the ODA flows variable. The results are discussed in the next section.

## 4 Results

In our baseline analysis, after sample balancing, we use four models, which include different types of controls. As for the computation of the dependent variable, following Claessens et al. (2009), we deduct debt forgiven and rescheduled from ODA gross disbursements, since debt relief transactions are rather peculiar within development finance and are the outcome of a long negotiation process; in addition, along the lines of Bal Gündüz et al. (2014), in our baseline specification, we subtract also humanitarian aid, technical cooperation grants, and food aid from gross disbursements.<sup>15</sup>

As shown in table 3, program countries receive higher annual ODA flows relative to the control group; the size of the catalytic effects varies between 1.3 and 2.6 percent of GDP. Comparing the estimates of the different specifications, we note that the estimated effect decreases sizably when we add country fixed effects, suggesting that some program countries receive more ODA independently from the catalytic effects, reflecting country specific factors we do not account explicitly for. For most of the analyses of this paper, we use the model 4, which includes both time and country fixed effects, as well as some relevant covariates for cross-country aid allocation in the literature on development assistance (for example Dollar et al. (2006), Claessens et al. (2009)). In this regard, we note that ODA flows are negatively correlated with income and positively with *rule of law*, suggesting that donors adopt a selective approach giving more resources to poorer countries and with sounder institutions (Alesina and Dollar, 2000). We also find that donors tend to take into account the political stability of receiving countries and their level of external debt; a potential explanation is that donors prefer to allocate more resources to countries with higher debt burden so to prevent these become insolvent (Birdsall et al. 2003).

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<sup>15</sup> We also exclude the flows coming from the IMF from total ODA.

**Table 3. Impact of IMF programs on ODA for low-income countries (in percent of GDP)**

VARIABLES	model 1	model 2	model 3	model 4
IMF	0.0255*** (0.0054)	0.0257*** (0.0049)	0.0135*** (0.0041)	0.0163*** (0.0036)
income				-0.0619*** (0.0141)
inflation				-0.0003 (0.0002)
growth				0.0008 (0.0005)
ext_debt				0.0630*** (0.0119)
debt_service				0.0420 (0.0522)
CA_balance				-0.0248 (0.0209)
reserves				0.0682 (0.0471)
pol_stab				0.0150*** (0.0051)
ctrl_corruption				-0.0018 (0.0155)
rule_of_law				0.0320** (0.0136)
Observations	892	892	892	892
R-squared	0.04	0.16	0.57	0.64
Year FE	NO	YES	YES	YES
Country FE	NO	NO	YES	YES
Controls	NO	NO	NO	YES

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
See table A3 for the definition of each variable.

In order to assess to what extent our methodology allows to address the selection bias, we compare the results obtained using the entropy balancing method (table 3) with those from a panel model without balancing (table 3b). In the panel model, the coefficient of our variable of interest is higher, suggesting that the selection bias is positive. In particular if we compare the estimates related to the specification with country and time fixed effects (model 3) with and without balancing, it turns out that the selection bias accounts for 0.5% of GDP, while it decreases to 0.2% of GDP when we consider also the other ODA drivers (model 4). This finding indicates that a fraction of the higher development aid to program countries has not to do with the catalytic effects generated by IMF programs. A positive selection bias could be explained by considering that the IMF before approving a program for a LIC requires assurances from other creditors that they would contribute to finance the needs of borrowing country (Bird et al. 2002).

**Table 3.b Baseline regressions without balancing**

VARIABLES	model 3	model 4
IMF	0.0183*** (0.0044)	0.0181*** (0.0043)
Observations	892	892
R-squared	0.18	0.27
Number of country_code	56	56
Year FE	YES	YES
Country FE	YES	YES
Controls	NO	YES

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

See table A3 for the definition of each variable.

We run separate regressions for different types of donors to explore if the catalytic effects vary across groups. In table 4, we show that the catalytic effect is significant for both multilateral and bilateral DAC donors, but not so for other bilateral donors (see table A1). This indicates some heterogeneity across bilateral donors, in particular between DAC countries and the others. Given the different composition of these two country groups (see table A1), this finding points to asymmetric catalytic effects between donor countries; indeed, IMF involvement is found to boost bilateral aid provided by advanced economies adhering to the OECD Committee Development, while the impact on aid from other countries represented mainly by emerging economies is not significant. Looking at the role of the other covariates, evidence suggests that multilateral donors tend to be relatively more selective, allocating more resources to relative poorer countries and those with better institutions (as captured by the *rule of law* variable), in line with Dollar et al. (2006).

In order to investigate a potential channel for the catalytic effect, we look at the role of conditionality, which according to Bird et al. (2002) plays a very important role, whereas the liquidity channels is deemed to be less relevant. In particular, we add to our baseline analysis a dummy variable (*non\_comp*) which is equal to 1 if a program country does not fulfill one over four quantitative performance criteria in a given year as the fraction of country-year observations with *non\_comp*=1 (those having a degree of compliance lower than 0.75) is 22%. As shown in table 5, the catalytic effect tends to decrease significantly for countries, which do not comply with IMF conditionality, especially when it comes to bilateral aid. Therefore, we infer that the conditionality of IMF programs for low-income countries plays an important role in generating catalytic effects.

**Table 4. Regressions by type of donors**

VARIABLES	multilateral donors	bilateral donors	DAC donors	nonDAC donors
IMF	0.0076*** (0.0023)	0.0076*** (0.0020)	0.0077*** (0.0020)	-0.0002 (0.0002)
income	-0.0380*** (0.0102)	-0.0203*** (0.0065)	-0.0156** (0.0061)	-0.0048*** (0.0015)
inflation	-0.0001 (0.0001)	-0.0002* (0.0001)	-0.0002 (0.0001)	-0.0000 (0.0000)
growth	0.0003 (0.0003)	0.0003 (0.0004)	0.0002 (0.0004)	0.0000 (0.0000)
ext_debt	0.0199** (0.0078)	0.0332*** (0.0100)	0.0329*** (0.0100)	0.0003 (0.0002)
debt_service	0.0201 (0.0292)	0.0328 (0.0343)	0.0311 (0.0344)	0.0015 (0.0015)
CA_balance	-0.0241** (0.0122)	0.0010 (0.0159)	0.0041 (0.0157)	-0.0024** (0.0011)
reserves	0.0702*** (0.0247)	0.0038 (0.0330)	0.0029 (0.0330)	0.0018 (0.0016)
pol_stab	0.0067** (0.0032)	0.0068** (0.0029)	0.0066** (0.0029)	0.0002 (0.0003)
ctrl_corruption	-0.0058 (0.0085)	0.0081 (0.0063)	0.0074 (0.0062)	0.0008 (0.0005)
rule_of_law	0.0184** (0.0091)	0.0101 (0.0064)	0.0105* (0.0063)	-0.0005 (0.0008)
Observations	892	892	892	892
R-squared	0.62	0.61	0.62	0.69
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Controls	YES	YES	YES	YES

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

See table A3 for the definition of each variable.



**Table 5. The role of compliance to conditionality**

VARIABLES	official donors	multilateral donors	bilateral donors
IMF	0.0177*** (0.0038)	0.0078*** (0.0024)	0.0088*** (0.0021)
IMF*non_comp	-0.0090* (0.0053)	-0.0012 (0.0030)	-0.0083*** (0.0027)
Observations	892	892	892
R-squared	0.64	0.62	0.61
Year FE	YES	YES	YES
Country FE	YES	YES	YES
Controls	YES	YES	YES

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.  
See table A3 for the definition of each variable.

## 5 Robustness checks

In this section, we check whether our results hold across different definitions of ODA and if restricting our definition of IMF programs to PRGT programs significantly affects the results. Finally, we apply alternative techniques to address selection bias.

Tables 6 shows that, when using our preferred specification (see model 4 in table 3), the result on a positive catalytic effect holds when considering “total” gross ODA disbursements (that is including humanitarian aid, technical cooperation grants, and food aid) and net disbursements (which are obtained after deducting loan repayments gross disbursements).

**Table 6. Robustness. Different ODA definitions**

VARIABLES	gross disbursements	gross disbursements 'untied'	net disbursements
IMF	0.0173*** (0.0044)	0.0163*** (0.0036)	0.0098*** (0.0037)
Observations	892	892	892
R-squared	0.74	0.64	0.79
Year FE	YES	YES	YES
Country FE	YES	YES	YES
Controls	YES	YES	YES

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

In this table we report only the coefficient of the variable of interest; we omit the coefficients of the other covariates (see model 4 in table 3)

Finally, we focus our attention only on PRGT programs as treatment, also excluding from the balancing procedure country-year observations with other types of program (namely GRA, blended and technical assistance programs). Table 7 repeats the regressions shown in table 3, using only PRGT programs as treatment variable and the result on the existence of positive catalytic effects continue to hold across specifications.

**Table 7. Regressions focusing on PRGT programs**

VARIABLES	model 1	model 2	model 3	model 4
PRGT	0.0285*** (0.0054)	0.0270*** (0.0049)	0.0173*** (0.0039)	0.0182*** (0.0036)
income				-0.0729*** (0.0141)
inflation				-0.0002 (0.0002)
growth				0.0011** (0.0005)
ext_debt				0.0610*** (0.0124)
debt_service				0.0163 (0.0511)
CA_balance				-0.0222 (0.0221)
reserves				0.0633 (0.0429)
pol_stab				0.0170*** (0.0050)
ctrl_corruption				0.0074 (0.0147)
rule_of_law				0.0269** (0.0128)
Observations	839	839	839	839
R-squared	0.04	0.17	0.57	0.64
Year FE	NO	YES	YES	YES
Country FE	NO	NO	YES	YES
Controls	NO	NO	NO	YES

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.  
See table A3 for the definition of each variable.

In order to check further the robustness of our results, we repeat our baseline analysis, conducted with the entropy balance method, employing alternative techniques to address the issue of selection bias, namely propensity score matching and inverse propensity score weighting. The propensity score matching (PSM) procedure estimates for each variable their probability of receiving the treatment (i.e. the propensity score) and pairs treated variables with untreated ones that have a similar propensity score. In our case, we estimate a logit to model the participation to an IMF program (using the same covariates as in the entropy balancing) and match the treated observations with 5 nearest neighbors (within a 0.01 standard deviation points radius), with replacement (one control unit can be used as match for multiple treated units). The difference between the means of our outcome variable (gross ODA disbursement) in the treated and control groups give us the estimation of the effect of the IMF program. In our case, this estimate is equal to 2.8 percent of GDP and is significant.<sup>16</sup> The inverse-probability-weighted regression-adjustment (IPWRA) uses weighted regression coefficients to compute averages of treatment-level predicted outcomes, where the weights are the estimated

<sup>16</sup> The significance is calculated with bootstrapped errors. The underlying result is not sensitive to changes in the number of matched units, width of the caliper or matching method. The covariates balance check after the matching is satisfactory, but for sake of brevity, we do not report the underlying statistics.

inverse probabilities of treatment. In this case, the estimated ATET is equal to 2.7 percent of GDP and significant. Both the PSM and IPWRA results resonate with the one in model 1 of table 1, when no other controls are included in the regression, since these alternative procedures do not allow of the inclusion of further controls.

## 6 Conclusions

This paper investigates whether IMF programs generate a catalytic effect, stimulating official development aid for LICs. In order to do so we looked at OECD ODA data and used the entropy balancing method to address the selection bias issue. We estimate that catalytic effects are worth between 1.3 and 2.6 percent of recipient countries' GDP; according to our baseline estimate, in program countries, annual ODA flows are higher than in the control group by 1.6% of GDP; this catalytic effect is about one fifth of development aid that low-income countries receive on average. Moreover, our findings suggest that for each dollar lent by the IMF, low-income countries receive almost 3 dollars of additional ODA.<sup>17</sup> As regards donor types, we find that IMF generates catalytic effects for both multilateral and bilateral aid. However catalytic effects tend to dissipate if countries do not fulfill IMF conditionality; indeed, for programs countries failing to meet 1 out of 4 quantitative performance criteria, the impact of IMF programs on ODA decreases significantly, suggesting that official donors, especially bilateral ones are reluctant to allocate development aid towards countries experiencing problems in the implementation of IMF programs. With regard to the other drivers of development assistance, we find that donors, especially multilateral ones, adopt a selective approach, allocating more resources to poor countries and those with sound institutions.

Our results may be interesting for two main aspects. First, since LICs' financial needs are far larger than IMF available resources, catalyzing other resources is crucial to help these countries to restore external viability. Our findings are particularly relevant for bilateral donors and central banks, which envisage the option to channel their SDRs to expand the IMF lending capacity. Second, our paper suggests that IMF programs stimulate development aid, and that this effect is linked to the conditionality channel; this implies that IMF plays a coordination role among official creditors, and that this role is the more effective, the more borrowing countries comply with IMF conditionality. This may be an important lesson also for the ongoing work at the G20 on country-platforms as a donor coordination tool to support sustainable development. In addition, the paper provides some insights on the determinants of ODA to low-income countries, such as rule of law, political stability, which may be relevant with the view to enhance the catalytic effects of PRGT and upcoming RST programs.

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<sup>17</sup> On average IMF disbursements to assisted low-income countries between 2002 and 2019 amounted to 0.61% of GDP.

## Annex

**Table A1 List of ODA donors by group.**

Bilateral donors		Multilateral donors	
DAC countries	non-DAC countries	Group	Institution
Australia	Azerbaijan	EU Institutions	
Austria	Bulgaria	International Monetary Fund	
Belgium	Chinese Taipei	Regional Development Banks	
Canada	Croatia		African Development Bank
Czech Republic	Cyprus		Asian Development Bank
Denmark	Estonia		Inter-American Development Bank
Finland	Israel		Asian Infrastructure Investment Bank
France	Kazakhstan		Central American Bank for Economic Integration
Germany	Kuwait		Caribbean Development Bank
Greece	Latvia		Council of Europe Development Bank
Hungary	Liechtenstein		Development Bank of Latin America
Iceland	Lithuania		European Bank for Reconstruction and Development
Ireland	Malta		International Investment Bank
Italy	Qatar		Islamic Development Bank
Japan	Romania		North American Development Bank
Korea	Russia	United Nations	
Luxembourg	Saudi Arabia	World Bank Group	
Netherlands	Thailand		International Bank for Reconstruction and Development
New Zealand	Turkey		International Development Association
Norway	United Arab Emirates		International Finance Corporation
Poland		Other Multilateral	
Portugal			Adaptation Fund
Slovak Republic			Arab Bank for Economic Development in Africa
Slovenia			Arab Fund
Spain			Black Sea Trade & Development Bank
Sweden			Center of Excellence in Finance
Switzerland			Central Emergency Response Fund
United Kingdom			Climate Investment Funds
United States			Eurasian Fund for Stabilization and Development
			Global Alliance for Vaccines and Immunization
			Global Environment Facility
			Global Fund
			Global Green Growth Institute
			Green Climate Fund
			Nordic Development Fund
			OPEC Fund for International Development
			OSCE
			United Nations Conference on Trade and Development
			United Nations Industrial Development Organization
			WTO - International Trade Centre

**Table A2 List of IMF program countries in the sample.**

<b>Country</b>	<b>Program (approval year)</b>
Afghanistan	PRGF (2006); ECF (2011; 2016)
Bangladesh	PRGF (2003); ECF (2012)
Benin	PRGF (2005); ECF (2010; 2017)
Burkina Faso	PRGF (2003; 2007); ECF (2010; 2013; 2018)
Burundi	PRGF (2004; 2008); ECF (2016)
Cabo Verde	PRGF (2002); PSI (2006; 2010; 2019)
Cameroon	PRGF (2005); ECF (2017)
Central African Republic	PRGF (2006); ECF (2016; 2019)
Chad	ECF (2014; 2017)
Congo, Democratic Republic of the	PRGF (2004; 2008)
Côte d'Ivoire	PRGF (2009); ECF (2011); ECF-EFF (2015)
Djibouti	PRGF (2008)
Dominica	SBA (2002); PRGF (2003)
Ethiopia	ESF (2009)
Ghana	PRGF (2003; 2009); ECF (2015)
Grenada	PRGF (2006); ECF (2010; 2014)
Guinea	PRGF (2007); ECF (2012; 2017)
Guinea-Bissau	ECF (2010; 2015)
Haiti	PRGF (2006); ECF (2010)
Honduras	PRGF (2004); SBA-SCF (2010; 2014; 2019)
Kenya	PRGF (2013); ECF (2011); SBA-SCF (2015; 2016)
Kyrgyz Republic	PRGF (2005); ESF (2008); ECF (2011; 2015)
Lesotho	ECF (2010)
Liberia	PRGF-EFF (2008); ECF (2012; 2019)
Madagascar	PRGF (2006); ECF (2016)
Malawi	PRGF (2005); ECF (2010; 2012; 2018)
Maldives	SBA-ESF (2009)
Mali	PRGF (2004; 2008); ECF (2013; 2019)
Mauritania	PRGF (2006); ECF (2010; 2018)
Moldova	PRGF (2009); ECF-EFF (2013; 2020)
Mozambique	PRGF (2004); PSI (2007; 2010; 2014)
Nepal	PRGF (2003)
Nicaragua	PRGF (2002; 2007)
Niger	PRGF (2005; 2008); ECF (2012; 2017)
Republic of Congo	PRGF (2004; 2008)
Rwanda	PRGF (2002; 2006); PSI (2010; 2013); SCF (2016); PCI (2019)
São Tomé and Príncipe	PRGF (2005; 2009); ECF (2012; 2015; 2019)
Senegal	PRGF (2003); PSI (2007; 2010; 2015)
Sierra Leone	PRGF (2001; 2006); ECF (2010; 2013; 2018)
Solomon Islands	SCF (2010; 2011; 2012)
Tajikistan	PRGF (2002; 2009)
Tanzania	PRGF (2000; 2003); PSI (2007; 2010; 2014); SCF (2014)
The Gambia	PRGF (2007); ECF (2012)
Togo	PRGF (2008); ECF (2017)
Uganda	PRGF (2002); PSI (2006; 2010; 2013)
Zambia	PRGF (2004; 2008)

Note: The list does not include 11 programs approved between 2002 and 2019, which had been cancelled before the first review. PRGF/ECF/PSI/EFF/SBA/SCF/ESF are the acronyms of the IMF program facilities.

**Table A3 Data description and sources**

Variable	Definition	Source	Unit
ODA flows	Aid disbursements by government to promote the economic development and welfare of developing countries.	OECD	% of recipient economy GDP
income	GDP per capita, current prices (Purchasing power parity; international dollars per capita)	IMF - WEO	Log of dollars
growth	Real GDP growth (Annual percent change)	IMF - WEO	Percentage
inflation	Annual percent change of the consumer price index	IMF - WEO	Percentage
CA balance	Current account balance	IMF - WEO	% of recipient economy GDP
reserves	Stock of FX reserves at the end of the year	IMF - WEO	% of recipient economy GDP
external debt	Total debt held by foreign investors	IMF – WEO	% of recipient economy GDP
debt service	Debt service payments made during the year	World Bank	% of recipient economy GDP
political stability	Perceived likelihood of political instability and/or politically-motivated violence, including terrorism.	WB-WGI	Index (-2.5; 2.5)
rule of law	Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement and property rights,	WB-WGI	Index (-2.5; 2.5)
control of corruption	Perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	WB-WGI	Index (-2.5; 2.5)
Non-comp	Dummy equal to 1 if the assisted country in a given year fails to fulfil 1 out of 4 Performance Quantitative Criteria, and equal to 0 otherwise.	Our calculations based on data taken from the IMF –MONA database	Dummy variable (0/1)

**Table A4 Summary statistics of dependent variables (as percentages of GDP)**

Variable	mean	sd	min	p25	p50	p75	max
gross ODA	12.1	12.3	0.8	4.2	7.8	14.6	61.2
gross ODA <i>untied</i> (*), of which	8.7	9.4	0.5	3.1	5.5	10.6	49.8
Multilateral	3.7	4.3	0.1	1.2	2.5	4.8	27.0
bilateral, of which	4.9	7.3	0.1	1.2	2.4	5.1	41.4
DAC donors	4.6	7.3	0.1	1.0	2.3	4.7	41.3
Other donors	0.2	0.5	0.0	0.0	0.0	0.1	3.2
net ODA	11.1	11.7	0.6	3.8	7.1	13.3	59.0

Note: (\*) Gross ODA minus specific items such as humanitarian aid, technical cooperation grants, food aid, debt relief transactions.

**Table A5 Summary statistics of the covariates**

<b>Variable</b>	<b>mean</b>	<b>sd</b>	<b>min</b>	<b>p25</b>	<b>p50</b>	<b>p75</b>	<b>max</b>
income	7.872	0.732	6.277	7.364	7.831	8.311	9.676
inflation	3.620	9.047	-23.616	-1.171	3.012	8.604	27.586
growth	3.839	4.605	-13.800	1.700	4.400	6.600	16.300
CA_balance	- 0.050	0.123	- 0.390	- 0.099	- 0.055	- 0.012	0.536
reserves	0.151	0.133	0.003	0.067	0.115	0.186	0.688
ext_debt	0.558	0.435	0.018	0.267	0.436	0.717	2.654
debt_service	0.038	0.054	0.001	0.009	0.020	0.044	0.317
pol_stab	- 0.424	0.996	- 2.759	- 1.095	- 0.387	0.260	1.349
rule_of_law	- 0.625	0.703	- 2.606	- 1.123	- 0.677	- 0.213	1.372
ctrl_corruption	- 0.604	0.653	- 1.905	- 1.088	- 0.710	- 0.259	1.648
non_comp	0.078	0.268	0	0	0	0	1



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