

# A firm level approach on the redistributive effects of IMF programs

Pietro Bompreszi

University of Milano Bicocca and CefES

Silvia Marchesi

University of Milano Bicocca, CefES and Centro Studi Luca D'Agliano

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Abstract: This paper evaluates the effects of IMF loans on growth of firm sales and the labor income share at the firm level, using a panel of about 130,000 firms in 139 developing countries, over the period 2003-2018. Our identification strategy exploits the differential effect of changes in IMF liquidity on loan allocation (Lang 2016). We find that, on average, IMF loans do not increase firms' sales growth. The outcome changes, however, when we differentiate across geographic regions and industrial sectors. Only African and Eastern European firms, and firms operating in the manufacturing sector, gain from an IMF program. When considering the variation in the labor income share, controlling for firm fixed effects, we find that one standard deviation increase in an IMF loan size (to GDP) reduces the labour income by about 2.6 percentage points. Overall, our findings lead to the conclusion that firms' sales benefit from IMF loans but at the cost of the workers.

*Keywords:* IMF conditionality, IMF, Firm growth, Labor Income Share

*JEL Classification:* F33, O19, E24

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E-mail addresses: p.bompreszi@campus.unimib.it; silvia.marchesi@unimib.it

# 1 Introduction

The Covid 19 crisis has triggered an unprecedented withdrawal of non-resident portfolio flows from emerging markets. As documented by Horn, Reinhart and Trebesch (2020), official lending is much larger than commonly known, often surpassing total private cross-border capital flows, especially in times of global turmoil (such as financial crisis, wars or natural disasters), when private flows generally shrink. In the wake of the pandemic, over one hundred countries have already approached the IMF for short-term emergency assistance (around double the number that requested the Fund’s assistance in the aftermath of the 2008 financial crisis, Krahnke 2020).<sup>1</sup> Therefore, following a period of relative calm, the IMF is most likely to be under scrutiny again.<sup>2</sup>

This paper takes a new approach to an old debate on the effects of IMF imposed conditionality schemes. Rather than drawing conclusions at the country level, we take advantage of micro-level data to explore the effects of IMF conditional lending on firm performance considering changes in the firm sales and the distributional conflict in IMF programs. More specifically, this study combines firm level data and an IMF conditionality dataset data to evaluate the effect of the IMF intervention on firm growth. Data on firm sales are extracted from the World Bank Enterprise Survey (WBES) which provides data on almost 130,000 firms spread across 139 countries, spanning the years 2003-2018. For information on IMF conditionality, we incorporate the dataset of Kentikelenis et al. (2016) which includes arrangement dates, program type, commitment amount, condition type, and relevant policy areas, resulting in a dataset with over 32,000 unique conditions for any of the 189 countries potentially under IMF schemes, over the 1980-2014 period.

This methodology is part of a growing field of studies utilizing a macro-micro approach to revisit orthodox results from policy impact analyses (e.g., the emerging strand of literature evaluating aid-effectiveness at the subnational level).<sup>3</sup> Looking at firm level outcomes not only allows us to make conclusions on the country level effects, but also allows us to exploit firm heterogeneity and identify potential channels of interest. Furthermore, the availability of detailed data on IMF conditionality schemes allows us to disaggregate IMF lending and potentially observe the channels

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<sup>1</sup>The IMF has introduced a set of measures aimed to help developing economies tackling both liquidity and solvency problems. In particular, for countries which are highly indebted and face solvency problems, the IMF, together with the World Bank, announced that they have already granted debt relief to 25 of the world’s poorest countries, by cancelling repayments owed to the fund for the next six months.

<sup>2</sup>In 2013, then IMF chief economist Olivier Blanchard authored a paper acknowledging the unintended effects of the IMF’s austerity-based conditionality schemes. While this admission of fault may have surprised a few, it was just another voice in the chorus calling for the revision of these schemes, pointing to a history of dubious efficiency.

<sup>3</sup>The availability of geo-coded aid data has produced an emerging strand of literature evaluating aid-effectiveness at the subnational level (Bluhm et al. 2020; Chauvet and Ehrhart 2018; Del Prete et al. 2019; Gehring et al. 2019; Dreher and Lohman 2015; Dreher et al. 2020).

through which IMF programs impact firm-level indicators. In particular, we look at how conditions targeting different policy areas have differential effects on firm sales and the labor income share. This paper then contributes to the literature on the IMF effectiveness contingent on the types of program and, to the best of our knowledge, this is the first study that evaluates the effect of the IMF programs on growth at the firm level.

The scope of the paper, using the outlined methodology, is to highlight the channels and transmission mechanisms through which IMF conditional lending may affect the real economy. As described by Chauvet and Ehrhart (2018), there are two ways through which aid (or more generally, concessional financial flows) may influence firm performance: demand (increased demand, financed by IMF loans, is met by firms' production), and supply (IMF loans may affect the productive capacity of firms). More generally, the literature on firm performance points up three main kinds of constraints on firm growth in developing countries: the financing constraint (Beck et al. 2005; Harrison et al. 2004), lack of infrastructure, such as transport, energy, telecommunications, and water (see among others Bluhm et al. 2020; Jedwab and Moradi 2016); the institutional environment (e.g., Fisman and Svensson 2007).

We then focus on two main mechanisms for transmission: factors affecting demand for firm goods and factors affecting the borrowing capacity of firms. As demand is concerned, for example, firms that are linked to government contracts or benefit from government schemes, projects, or public guarantees of any kind could be affected by conditionality clauses in the IMF contracts. Considering supply factors, first, we expect that IMF lending could affect firm borrowing capacity, as lending institutions in the home country are typically most exposed to the debt of their sovereign, and hence their balance sheets suffer from the deterioration of such assets, negatively impacting lending.<sup>4</sup> Secondly, some firms may have been subject to reduced production because of institutional or political factors, hence IMF policy interventions could shift the institutional framework the firms operate in, and subsequently release them from their constraints. Finally, from a macroeconomic point of view, loans might also adversely impact firm growth if they induce Dutch disease, that is an appreciation of the real exchange rate detrimental to outward-looking firms (Rajan and Subramanian 2011).<sup>5</sup>

Our main identification strategy is based on an instrumental variable (IV) that combines temporal variation in the IMF's liquidity with cross-sectional variation in a country's prior probability of

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<sup>4</sup>In a similar vein, IMF lending could signal to the international markets renewed confidence in the country and increase demand from importers abroad. Foreign-currency borrowing is important for many firms in developing countries, and therefore they may benefit from renewed sovereign credibility.

<sup>5</sup>Specifically, we refer to the apparent causal relationship between the increase of foreign loans and the decline of a country's export. After the inflow of foreign loans, the country's exchange rate may appreciate, hence depressing its terms of trade.

participating in an IMF program (see also Lang 2016 and Gehring and Lang 2020). The IMF’s liquidity varies primarily because of an institutional rule that requires the IMF to review the financial contributions of its members (“quotas”) every five years, and as a consequence of large individual loan repayments. For identification, we exploit the fact that the IMF tends to expand its regular clientele in years in which its liquidity is higher, so that countries with an initially lower participation probability are more likely to receive a program in these years. The identifying assumption underlying this approach, which we explain in more detail in section 3, thus follows a difference-in-differences logic.

Using data on almost 130,000 firms, spread across 139 countries, over the period 2003-2018, we find that, on average, IMF loans do not increase firms’ sales growth. The outcome changes, however, when we differentiate across geographic regions and industrial sectors. Only African and Eastern European firms, and firms operating in the manufacturing sector, gain from an IMF program. When considering the variation in labor income share, however, controlling for firm fixed effects, we find that one standard deviation increase in an IMF loan size (to GDP) reduces the labour income by about 2.6 percentage points. Overall, the findings lead to the conclusion that firms’ sales benefit from the IMF loans but at the cost of the workers. Furthermore, as the channels are concerned, we find that IMF intervention is associated to a sales’ increase for firms that are financially constrained, which suggests that loans could improve firm performance through the alleviation of financing constraints in developing countries. Moreover it favours bank-financed firms over those operating in the informal sector. Finally, using a detailed information on the number and scope of conditionality in each country’s loan, we find that financial conditionality improves firm sales while redistributive conditionality is associated to an increase in labor income share.

Our contribution is then twofold. First, we contribute to the recent advances in the use of firm level data by considering IMF intervention. Second, to the best of our knowledge, this is the first study that evaluates the effect of the IMF intervention on the labor income share at the firm level.

We organize the rest of the paper as follows. In Section 2, we briefly review the related literature. Section 3 discusses data sources and descriptive evidence on the firm sales and firm level labor income share. Section 4 presents the empirical model, while Section 5 illustrates the identification strategy. The explanation of the empirical results then follow in Section 6 and 7, and finally Section 8 concludes.

## 2 Existing Literature

This paper is related to several strands of literature. The first one broadly looks at IMF effectiveness, by considering the wide range of dimensions related to an IMF intervention. While some studies find a positive (Bas and Stone 2014) or insignificant (Atoyan and Conway 2006) relationship between IMF programs and growth, the majority of empirical studies suggest immediate negative effects (Barro and Lee 2005; Dreher 2006; Easterly 2005; Marchesi and Sirtori 2011; Przeworski and Vreeland 2000). Beyond growth, monetary stability, debt management and the containment of external arrears are key goals of IMF programs (Kentikelenis, Stubbs, and King 2016). IMF programs are associated to reduced inflation and monetary growth, less risk of currency crises and banking crises, and improved market performance of banks (Dreher and Walter 2010; Papi, Presbitero, and Zazzaro 2015; Steinwand and Stone 2008). The success of any IMF programme hinges largely on its catalytic effect, namely the propensity of private investors to finance a country under an IMF program. The signalling role of an IMF adoption and its catalytic effects have both been extensively analyzed in the literature with mixed results (among others Marchesi and Thomas 1999; Marchesi 2003; Mody and Saravia 2006; Morris and Shin 2006; Gehring and Lang 2020; Krahnke 2020).

What is more, several contributions have considered in more details the varied conditions attached to IMF financing, finding that conditions are a key mechanism linking IMF lending to policy outcomes. For example, Reinsberg et al. (2018) and Forster, Kentikelenis, Reinsberg (2019) have focused their attention to structural conditions, Reinsberg et al. (2019) focused on labor conditionality, while Rickard and Caraway (2014, 2019) have focused on public sector conditions.<sup>6</sup>

In addition to these economic effects, IMF programs also appear to affect political outcomes.<sup>7</sup> Several scholars link IMF programs to political instability and suggest that they increase the risk of civil war onset (Hartzell et al. 2010), coup d'états (Casper 2017), and government crises (Dreher and Gassebner 2012). One explanation for these politically destabilizing effects of IMF programs is that the burdens of economic adjustments under IMF programs are often distributed unequally

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<sup>6</sup>More specifically, Reinsberg et al. (2019), analyzing 70 developing countries from 1980 to 2014, find that IMF labor market policy reforms significantly reduce both individual and collective labor rights. Rickard and Caraway (2019), find that public sector conditionality is a key mechanism linking IMF lending to policy outcomes. In particular, they find that IMF loans with public sector conditions generate cuts in wages in the short-term, but these cuts do not persist in the longer-term (due to internal political pressure).

<sup>7</sup>In turn, there is a vast literature that considers IMF decision-making, focusing instead on the geopolitical determinants of IMF programs. These contributions link a country's geopolitical proximity to the IMF major shareholders (especially to the U.S.) with a variety of types of preferential treatment (e.g., Copelovitch 2010; Dreher Marchesi Vreeland 2008; Dreher Sturm and Vreeland 2009; Dreher et al. 2018; Stone 2008; Lang and Presbitero 2018) For a recent survey, see Dreher and Lang (2019).

(Vreeland 2002). In sum, the existing evidence suggests some positive adjustment effects regarding financial and monetary indicators are present, but also points to mostly negative adjustment effects regarding reduced growth and political instability (Gehring and Lang 2020).

More recently greater attention has been given in the literature to the distributional conflicts associated to IMF programs. More generally, Furceri et al. (2018) study the aggregate and distributional effects of policies to liberalize international capital flows (or financial globalization) finding both country-level and industry-level results suggest that capital account liberalization has led, on average, to limited output gains while contributing to significant increases in inequality. By looking more specifically to the IMF programs, Vreeland (2002) examines the labor share of income from manufacturing finding that IMF programs have a negative effects on income distribution. More recently, Lang (2020) shows that IMF programs substantially increase income inequality and this increase is driven by income losses for the poor. The effect is strongest for IMF programs in democracies, when conditionality is extensive, and when societal actors have little influence on IMF decision-making.

This paper is related to a growing body of literature, which focuses on the effects of concessional financial flows on the subnational-level (rather than country-level). Indeed some advances have been made in the directions of using outcome variables indicating economic prosperity at more disaggregated levels (Chauvet and Ehrhart 2018; Del Prete et al. 2019; Bluhm et al. 2018; Dreher and Lohman 2015; Dreher et al. 2020; Gehring et al. 2019; Marchesi, Masi and Paul 2020).

Given that in this paper we look at evidence at the firm level, the most obvious measure of inequality that we could use is the labor income share, that is total compensation of employees divided by total sales. Hence, this paper also relates to the analysis of labor income share.<sup>8</sup> Between 1994 and 2014, the labor income share dropped in 29 out of 50 countries (Dao, Das, Koczan, and Lian, 2017). A decline in the labor income share indicates a slower growth rate of product wages than the growth in the average productivity of labor. To this extent, micro-level studies provide insightful knowledge on the drivers of the labor income share. Studies at the firm or sectoral level could potentially explain the rising gap between the rate of growth in labor productivity and that of wages using financial aid, globalization, labor market regulations, and other institutional factors. A study by Böckerman and Maliranta (2012) using longitudinal plant-level data on Finland show that micro-level restructuring could explain a significant part of the differences between the declining labor income share and increasing labor productivity. They also show that a growing level of international trade catalyzes this process. Aghion and Howitt (2006), in an earlier paper, argued that micro-level restructuring is an important factor in understanding

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<sup>8</sup>Accounting for almost two-thirds of the world's GDP.

the industrial productivity growth. A similar concern is echoed in the trade and international finance literature (Melitz 2003; Bernard and Jensen 2004, Furceri et al. 2018). It argues that in the presence of heightened competitiveness due to globalization, resources are reallocated from the less efficient to the more efficient firms.

At the firm level, the labor income share can be defined as the portion of the firm's sale that goes to the workers. Firm-level restructuring can lower the labor income share in various ways. Böckerman and Maliranta (2012) find that productive firms are less likely to hire more employees at least in the short run because they use the existing set of inputs more efficiently. Consequently, a hiring freeze could restrict the growth rate of the total wage bill, anticipating that wages do not change in the short run. At the same time, a higher productivity growth resulting from the efficient allocation of resources increases the return to capital per unit of labor. Furthermore, complementarity between skilled labor and capital can induce firms to replace unskilled workers with capital if the latter becomes relatively cheaper. All these mechanisms could potentially lead to a lower share of income for labor.

## **3 Background and Data Description**

### **3.1 IMF disbursements**

The paper exploits two primary datasets. First, data on IMF commitments and associated conditionality is taken from the dataset compiled by Kentikelenis, Stubbs, and King (2016). The authors use exclusively IMF executive board documents, which are therefore of greater reliability and more comprehensive with respect to similar projects that publish this data. The result is a dataset with disaggregated data on IMF conditionality, providing information on 32,261 unique conditions for 135 different countries over the period 1980-2014. These conditions are then separated into their types and relevant policy areas as directly specified on the Memorandum of Economic and Financial Policies from IMF documents. This paper utilizes the information on conditionality for programs in a subsample of countries present in the other primary dataset, merging it with our data on yearly IMF disbursements.

IMF conditionality is developed along several dimensions in this database. Broadly, the general arrangement type can be broadly divided into concessional and non-concessional loans. Concessional loans are reserved for low-income countries and are those loans that carry very low interest rates (0–0.5%). For example, starting in 1986, concessional financing was provided first under the Structural Adjustment Facility–SAF, then under the Enhanced Structural Adjustment

Facility–ESAF, which was replaced in 1999 by the Poverty Reduction and Growth Facility–PRGF. In 2009, the PRGF was replaced by the Extended Credit Facility–ECF. The lending conditions for these type of loans are such that the repayment period starts at  $5\frac{1}{2}$  years and ends 10 years after the loan disbursement. Non-low income countries instead typically borrow through non-concessional lending facilities. These can also be of a precautionary character, i.e. a country agrees on a program and associated conditionality but only intends to borrow if economic conditions deteriorate. Most loans under this category take the form of Stand-By Arrangements (SBA) or Extended Fund Facility (EFF). To give a brief overview of these non-concessional lending facilities, we can say that SBAs are typically designed to deal with short-term balance of payment problems, and usually last 12-24 months, with repayment period of  $3\frac{1}{4}$ –5 years. EFFs instead are usually extended to countries dealing with long-term imbalances, and last 36-48 months, with repayment periods between  $4\frac{1}{2}$ –5 years.

The novelty of this dataset is that it disaggregates the lending arrangements into all its respective conditionality categories and policy areas.<sup>9</sup> Table A3, in the Appendix, details all the arrangements, the associated categories of conditionality, and the respective lending conditions, as well as a brief summary. It should be noted that we only report this information for the arrangements present in our final dataset and therefore relevant to our analysis. There are many additional categories of IMF arrangements, but the bulk of the arrangements from 1986 onwards are SBAs, EFFs or ESAF/PRGFs. Table A2, in the Appendix, and its associated panels present some summary statistics at conditionality-level for our final dataset. We again report these summary statistics by region. Panels (a) through (c) represent the frequencies with which the categories of conditionality, the affected policy areas, and the IMF lending facilities are observed in our final dataset. The final panel shows the average SDR commitment by region and by lending facility. Our primary exploited source of heterogeneity remains the different policy areas affected by IMF programs’ conditionality clauses. Table A1 in the Appendix provides summary statistics of our main variable of interest, IMF disbursements, across impacted policy areas. We can then use these classifications to explore the channels through which IMF programs impact firms.

The main outcome variables on firm performance come from the World Bank Enterprise Survey dataset. It provides an unbalanced panel of 146,666 firms spread across 139 countries and spanning a period of 16 years, from 2003 to 2018. The survey collects information on a broad range of topics, including access to finance, corruption, infrastructure, crime, competition, labor, obstacles to growth, and performance measures. Roughly 12% of the firms were successfully observed more

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<sup>9</sup>The categories of IMF programs included in our sample according to the Kentikelenis et al. (2016) classification are: Indicative Benchmarks, Prior Actions, Quantitative Performance Criteria, Structural Benchmarks, Structural Performance Criteria and Performance Criteria.

than once, meaning that they participated in 2 or more iterations of the surveys carried out over the years. In our version of the WBES, certain countries participated in up to 4 surveys. Detailed information on the number of surveys per country and firms per survey can be found in the online Appendix. We match the commitment and conditionality data by country and year to the data from the WBES, creating a macro-micro dataset which includes country-level variables including IMF data and firm-level variables for each country and year. We plot this information in the figure below.

INSERT FIGURE 1

Figure 1 displays the share of the years from 1980 to 2018 for which a given country was under an IMF conditionality-based program, based upon the signing of an agreement with the IMF with resulting SDR commitments. Overlaid to this are the countries represented in the WBES, where it can be clearly seen that the overlap is strong, with some notable exceptions such as Namibia which participated in the WBES but did not sign any conditionality-based IMF agreements. Figure 2 presents IMF loan distribution by macro regions.

INSERT FIGURE 2

Data on firm sales in the WBES is provided under two separate survey questions: the reported sales in the last fiscal year, as well as the reported sales 3 years ago. We utilize these values to calculate the growth rate of sales over 3 years, from  $t-1$  to  $t-3$ . We also log transform the values of sales because of large differences in the values of sales, both within countries across the size of firms, as well as across countries. Figure 3 reports the distribution of these log sales for each of the World Bank defined macro region, as well as average firm sales by region and firm size. Similarly, the WBES provides information on 51 stratified sectors of operation for the firms, which we group into the 9 macro-sectors. Table 1 below reports the distribution of firms within these sectors.

INSERT TABLE 1

INSERT FIGURE 3

The categorization of firms by region of operation, size, and industry are relevant as they comprise the main distinctions across firms which we utilize in our analysis. While the baseline model is a fixed effect model with the firms as the panel identifiers, we also incorporate industry-year dummies based on this industry categorization. Finally, we also run separate regressions as a

robustness check and for the purpose of providing advanced descriptive statistics based on these World Bank defined regions. Aside from these principle characteristics, the WBES also provides us with categorical information on the firm size, based on the number of reported employees, as well as a series of firm-level characteristics including if a firm is export oriented, if it is financially constrained, what its primary sources of financing are, and its principle ownership structure.

As mentioned before, our analysis is restricted into a feasible set. The WBES follows a period from 2003 to 2018, and since our dependent variable derives from here, we are restricted to information within and in close proximity to this period. In the model we rely on country level regressors that are first averaged and then lagged, such that if our dependent is measured as an average from  $t-1$  to  $t-3$ , the main country-level variables are from  $t-2$  to  $t-4$ . This, aside from its primary purpose of tackling endogeneity concerns, allows us to utilize some observations that are slightly out of the strict time frame of the WBES. The firm-level characteristics are measured at the reported time  $t$ .

Furthermore, as explained in greater detail in the section regarding the instrumentation technique, we use SDR commitment and IMF program information from the Kentikelenis, Stubbs, and King (2016) dataset to compute a proxy for the probability a country receives an IMF program. In our final dataset, we have an unbalanced panel with firm-level information spanning from 2003 to 2018, but also country-level information spanning potentially from 1980-2018.<sup>10</sup>

## 3.2 Conditionality

We consider dimensions of conditionality from the dataset by Kentikelenis et al. (2016). Combined with the WBES and our country level data, we obtain a nested dataset which allows for the construction of more complex multilevel models. In this section, we will detail the construction of this new dataset, presenting some initial results and summary statistics, as well as guides for further research.

The construction of the dataset consisted in merging a micro panel (WBES) with a nested macro panel (IMF commitments and disbursements, by country, year, arrangements, type, and policy areas). The resulting nested macro-micro panel links firm annual sales to IMF flows and commitments, sorted by typology of intervention. Table A2 in the appendix provides a qualitative summarization of the different lending arrangements contained in the dataset. Aside from giving a short description on the technical aspects of the different arrangements, it indicates the cate-

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<sup>10</sup>We drop the years 1978 and 1979 from the IMF conditionality dataset for practical purposes, because it comprised only one useful observation (Burma) and was irrelevant to the sample as a whole.

gories of conditionality. The dataset by Kentikelenis et al. (2016) further specifies the policy areas affected by the arrangement. We take this as our main source of heterogeneity, in order to study the effects on firms of IMF intervention in different policy areas.

The decomposition of IMF intervention into policy areas allows for some interesting theoretical considerations. Much is said of the negative effects of IMF austerity measures, and this dataset allows us to measure these effects for programs that specifically target policy areas regarding revenues, taxes, and generic fiscal issues. Table A1, reported in the online Appendix, provides descriptive statistics of the different policy areas affected by IMF arrangements, measured by disbursements over GDP, over the different regions. At a glance, macroeconomic policy areas are the ones that command the most attention of IMF programs. On average across regions, IMF interventions that include policy reforms in matters of fiscal, monetary, or external sector issues are associated to IMF disbursements of 2-3% of GDP, as opposed to State Owned Enterprise policy reforms which are associated to flows of less than 2% of GDP. Clearly, this table disaggregates the data excessively; many of these policy reforms are imposed simultaneously and thus stem from the same arrangement and disbursement.

In order to visualize the relationship between these variables, Figure 4 below provides some descriptive statistics on IMF disbursements and the different policy areas affected by the arrangements associated to these flows.

INSERT FIGURE 4

### **3.3 The labour income share at the firm level**

As a final part to our analysis, we employ a novel firm-level dataset on the labor income share compiled by Isaka and Paul (2019). Using the World Bank Enterprise Survey data, Isaka and Paul (2019) put together an unbalanced panel of 130,000 firms from 139 countries, spanning a period of 15 years (2002 to 2017). The survey includes firms spread across 139 countries and collects information on a broad range of topics, including access to finance, corruption, infrastructure, crime, competition, labor, obstacles to growth, and performance measures. Roughly 10% of the firms were successfully re-contacted so that they have more than one year of information, which makes this dataset an unbalanced panel.

The labor income share is essentially a macroeconomic concept, defined as the share of national income allocated to labor, and is generally computed from aggregate data by dividing total labor compensation by national income (GDP). The labor compensation should encompass not only

wages and salaries but also bonuses and social payments, which are considered non-wage compensation, for the accuracy of calculation. However, even this computation does not give us the labor income share that we seek to obtain because it overlooks contributions from self-employment (Krueger, 1998; Gollin, 2002). If the earnings of the self-employed are taken as capital income as in the conventional method, then it may underestimate the true value of labor income share and bias international comparisons (Guerriero, 2012). Thus, in the macro framework, researchers suffer from the limitation of how to take self-employment into account to gain a less biased labor income share.

In this paper, we use the information on compensation at the firm level, which is less susceptible to problems related to the mixed income that arises from self-employment. The Enterprise Survey (ES) asks the same set of questions of enterprises that have employer–employee relationships, so we are not concerned about the comparison within our dataset. Following Zhou (2016), we define the labor income share (LIS) at the firm level as:

$$LIS_{i,t} = \frac{\textit{Compensation of employee}_{i,t}}{\textit{Total sales}_{i,t}}$$

Using this definition, we can use almost all observations in our dataset, including services and other sectors. Compensation of employees is the total annual cost of labor (including wages, bonuses, and social payments). Figure 5 illustrates the average of the LIS by macro region and firm size in our sample.

INSERT FIGURE 5

Before scrutinizing labor income share, some observations are found far beyond its expected range. These values may bias our estimation, so we attempted to detect outliers as follows: First, the LIS values are transformed into log (LIS). Then we apply the three-standard-deviation rule: observations that are more than three standard deviations away from the mean are then marked as outliers and turned into missing. We use these values to run separate regressions following our methodology for firm sales to analyze the impact of an IMF program on the labor income share, and therefore on a micro measure of inequality.

## 4 Empirical strategy

We investigate the impact of IMF disbursements on firm performance using the following general specification:

$$g_{i,k,j,(t,t-2)} = \alpha + \beta X_{i,k,j,t} + \gamma Z_{j,t-1} + \tau_{k,t} + \mu_{j/i} + \varepsilon_{i,k,j,t} \quad (1)$$

where  $g$  is our outcome variable for firm  $i$ , in industry  $k$ , and country  $j$ .  $X$  is a set of time varying firm-level characteristics, while  $Z$  is a set of (time variant) country-level variables including IMF disbursements. We then include industry-year dummies  $\tau_{k,t}$ , in order to control for industry time-varying heterogeneity and  $\varepsilon_{i,k,j,t}$  is the error term. Finally, we include either country or firm fixed effects according to the specification (with standard errors clustered at the country level).

As an outcome variable we first consider the average difference in log sales between  $t$  and  $t-2$ ; then, in Section 7, we evaluate the effect of Labor income share, defined as in Section 3.1.<sup>11</sup>

At the firm level, we control for the lagged value of *sales*, in logarithm, which is measured at one lag with respect to the dependent. We also control for the following characteristics. Firm *size*, which takes the value one for firms with fewer than 20 employees, the value two for firms with between 20 and 100 employees, and three for firms with more than 100 employees. We also control for the characteristics of firm ownership using two variables, *state* and *foreign*. *State* is a dummy variable which is equal to one when part of (or all) the firm is owned by the state, while *foreign* is a dummy variable which is equal to one when part of (or all) the firm is owned by a foreign individual or company. Finally, we include information on whether the firm is outward looking using *export*, which is a dummy variable equal to one when the firm exports part of or all its sales, either directly or indirectly (as a supplier to exporting firms). The firm-level characteristics are measured in year  $t$  since we do not have their pre-determined value at year  $t-2$ .

At the country level, we control for a country's *GDP per capita* and *GDP growth rate*. Both variables are averaged over a three-year period, but lagged one period to avoid endogeneity concerns. We also control for the size of the country using the logarithm of the *population*. The source of all these data are the World Development Indicators. Finally we consider the quality of institutions using the ICRG index of *corruption*, where a higher value of this variable refers to a higher quality of economic institutions.

Table 2a and 2b presents variable description and basic summary statistics for our sample of firms. To avoid extremely fast-growing firms driving the results, we excluded the top ten percent of the growth distribution from the sample. Table 2b illustrates clearly that we are working on a panel of rather large formal firms: almost 30% are outward looking (exporting either directly or indirectly), 13% are owned or partly owned by a foreign entity, and the average size is about

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<sup>11</sup>More precisely, since in the WBES all data on sales are reported on the last fiscal year, our outcome variable would consider the average difference in log sales between the last fiscal year ( $t-1$ ) and the reported sales from 3 years ago ( $t-3$ ).

1.9. Around one-third of the sample is composed of firms with fewer than 20 employees, another third are firms with between 20 and 100 employees, and a third are firms with more than 100 employees.

INSERT TABLE 2

## 4.1 Endogenous Selection into IMF Program

Our framework accounts for part of the observable heterogeneity -using a large set of control variables both at the firm and country level - and for the unobservable heterogeneity - using firm fixed effects and industry-year dummies. However, the estimated correlation between IMF loans and firm growth could still be biased by two remaining endogeneity channels: reverse causality and the existence of time varying unobservable heterogeneity. Strategies to deal with the endogeneity of loans (and aid) at the macroeconomic level have evolved and improved over time. In the next sub-section we will explain our choice.

A new strand is currently emerging in the aid effectiveness literature based on quasi-experiments, i.e. specific situations that can be taken to identify the impact of aid on growth. Early work in this area focuses on shocks affecting donor countries such as the variation in oil prices to instrument aid from Arab countries (Werker et al. 2009). Similarly, Nunn and Qian exploit temporal variation in US wheat production, which they interact with the aid recipient’s probability to receive US food aid. In essence, this strategy is similar to Bartik instruments used, e.g., in the labor economics literature (Autor et al. 2013) or the shift-share instruments common in the migration literature (Altonji and Card 1991). In contrast to most Bartik and shift-share instruments, where cross-sectional units differ in many dimensions, e.g., different industry shares or immigrant enclave sizes, the units in our approach differ only along one dimension, the probability to receive aid (Gehring et al. 2017).

Specifically, following Lang (2016), we use the interaction of the lender’s budget, computed as the total sum of IMF commitments in a given year, with the recipient-specific probability of receiving a loan from the IMF as instrument for IMF lending, as follows:

$$IV_{j,t-1}^{IMF} = IMF\ resources_{t-1} * probability_j^{IMF} \quad (2)$$

where  $probability_j^{IMF}$  is the share of years between 1980 and 2018 that country  $j$  received an IMF loan (i.e.,  $\frac{1}{39} \sum_{t=1}^{39} A_{j,t}^{IMF}$ , where  $A$  is a binary indicator variable that switches to one if country  $j$  received an IMF loan in year  $t$ ) and  $IMF\ resources_{t-1}$  is the temporal variation of IMF liquidity.

Our main identification strategy is then based on an instrumental variable (IV) that combines temporal variation in the IMF’s liquidity with cross-sectional variation in a country’s prior probability of participating in an IMF program (see also Lang 2016 and Gehring and Lang 2020). The IMF’s liquidity varies primarily because of an institutional rule that requires the IMF to review the financial contributions of its members (“quotas”) every five years, and as a consequence of large individual loan repayments. For identification, we exploit the fact that the IMF tends to expand its regular clientele in years in which its liquidity is higher, so that countries with an initially lower participation probability are more likely to receive a program in these years (as displayed in Figure 6 below). Controlling for fixed effects, the identifying assumption underlying this approach thus follows a difference-in-differences logic. Therefore, we investigate the differential effect of IMF’s liquidity on the amount of IMF loans to countries with a high compared to a low probability of receiving IMF loans. The identifying assumption is that growth in regions with differing probabilities of receiving IMF loans will not be affected differently by changes in IMF’s liquidity, other than via the impact of loans, controlling for country and industry-year fixed effects.

INSERT FIGURE 6

## 5 Baseline results

This section presents our baseline results considering sales. Specifically, we consider as dependent variable the difference of the amount of firm sales (in log). In column 1 of Table 3, we estimate a pooled OLS considering the full sample of firms, hence we do not need to restrict ourselves to the 6164 firms for which we have panel data. Columns 2 show the results when IMF loans are instrumented. In columns 3 we use a fixed effects OLS estimator, restricting our sample only to firms observed twice in time in order to control for firm-level time-invariant heterogeneity. In the last column 4, results are presented for the same sample when IMF loans are instrumented.

INSERT TABLE 3

The coefficients of *foreign* and *exports* are both have positive and significant, suggesting that outward-looking firms and firms which are foreign-owned tend to have higher growth rates. *Size* is positive and significant suggesting that larger firms also tend to have a positive growth of sales, while the coefficient of *state* is generally positive but never significant.

Countries with lower *corruption* are more likely to have firms with positive growth rate, while the coefficients of both *population* and *GDP growth* are not significant. The coefficient of *GDP per capita* and *sales* suggests a catching-up effect: countries with lower level of development and firms with lower sales in the period before tend to have a higher probability of having a positive growth of sales than firms that already had high sales.

Turning to the relationship between loans and firm growth, all columns do not shows any significant coefficient for IMF disbursements to GDP, suggesting that they are, on average, not effective in increasing firms sales.

As a robustness check, we restrict the sample to only treated countries, i.e., countries that received an IMF loan. In this case, every country in the sample is a recipient of IMF loans and it reduces the possible selection bias arising from firms placed in countries that do not receive any loan. Hence, we now evaluate the differential effect of IMF disbursements to GDP on firms' sales, conditional on firm and country characteristics. Results are reported in Table 4. Expectedly, the number of observations drops to 22,367 (in column 1). The estimated coefficients for the IMF disbursements to GDP are in line with the baseline outcomes presented in Table 3. When we instrument for IMF disbursements, in a fixed effects model (in column 4), we find that a one percent increase in IMF disbursements to GDP increases firm average growth by about ten percent. The coefficient is significant at the ten percent level. Among the firms that are exposed to IMF lending at the country level, sales can increase significantly as disbursements come in.

INSERT TABLE 4

## 5.1 Firm sales growth and IMF loans by macro regions and sectors

Due to the significant diversity in our sample, it is optimal to consider how effects can vary both at the macro-industrial level as well as the micro-regional level. Namely, we replicate the analysis in the first table but this time separate both by IMF macro regions in our sample (Africa, Latin America, and Eastern Europe) as well as by broad industrial sectors. The results are presented in Table 5.

INSERT TABLE 5

When looking at Table 5, we see that the effects indeed vary by region. In our sample when considering Africa, we find the that the coefficient of IMF disbursements is negative for our

OLS specifications (albeit not significant with firm fixed effects). When loans are instrumented, however, (in both columns 2 and 4) the coefficient turns positive but the effect is statistically significant, at the five percent level, only when controlling for firm fixed effects, in column 4. Specifically, one percent increase in IMF loans to GDP increases firm sales by about 134 percent, that is IMF disbursements can more than double firm sales. Such strong effects, however, are not replicable in the other sub-samples of countries.

Table 6 shows a similar decomposition, but where the sample is split by sectors, looking at Food, Mineral, Manufacturing, Wholesale, Transport, and Other Services. Only when considering manufacturing do we find significant results. In that case for firms operating in this sector and by instrumenting for disbursements under a fixed effects model we find that a one percent increase in disbursement to GDP can boost firm sales by about 9 percent. The coefficient is significant at the ten percent level.

INSERT TABLE 6

## 6 Channels

Given the disaggregated nature of the data set we are working with, we can explore more detailed channels through which IMF disbursements can affect firm sales. By using firm-level heterogeneity, we can disentangle the effects of an IMF intervention on the private sector. The WBES provides questions regarding firm-specific characteristics, some of which we included in the baseline regressions. In this section, we expand on this firm-level heterogeneity and also explore in detail the firms' financing strategy as a hypothetical transmission channel for the effects of IMF disbursements on firm sales growth.

### 6.1 Financial channels

On a theoretical ground, we identify several channels of interest through which IMF disbursements could influence firm sales growth. In general, the literature points out that these concessional financial flows can have both demand and supply side effects on firms (Chauvet and Ehrhart, 2018). In this section we try to unravel this black box with the help of some firm level characteristics and indicators of firm operating environment.

From the demand side, the effects are theoretically ambiguous. On the one hand, IMF disbursements are expected to relax the government borrowing constraints, and therefore the size and share

of government contracts may increase. This effect would be especially pronounced for firms which are large, state-owned, or operate almost exclusively in sectors directly affected by government expenditure. On the other hand, it is hard to reconcile the IMF disbursements with increased government spending, given the history of the institution and its preference for austerity-oriented measures.

From a supply side perspective, loans can affect the productive capacity of the firms. Following Chauvet and Ehrhart (2018), we investigate four channels through which IMF loans may influence firm growth: (1) access to finance and financial reputation, (2) Dutch disease, and (3) institutional and political environment. Each of them is captured by a different firm characteristic. More specifically, the World Bank Enterprise Survey includes questions on the sources of finance, openness to trade, and institutional capacity associated to firms. We focus on these supply side dynamics, and test empirically if the presence of an IMF loan can have an impact on firm sales through some specific channel which is measured by a specific firm characteristic.<sup>12</sup>

In order to examine this heterogeneity, we re-estimate the baseline estimations interacting IMF disbursements with some specific firm characteristics that may influence their effects. Equation (3) below is similar to Equation (1), except for the interaction term of IMF loans with a set of relevant firm-level characteristics. The rest of the analysis uses the firm fixed-effect estimation presented in column (3) of Table 4 as the baseline result, as follows:

$$g_{i,k,j,(t,t-2)} = \alpha + \beta X_{i,k,j,t} + \gamma R_{k,j,t-1} + \zeta CH_{i,k,j,t} + \theta P_{k,j,t-1} + \lambda CH_{i,k,j,t-1} * P_{k,j,t-1} + \tau_{k,t} + \mu_i + \varepsilon_{i,k,j,t} \quad (3)$$

We include a set of 11 variables from WBES for our analysis. Access to finance is measured using three variables: (i) whether a firm has an overdraft facility, (ii) quality of access to finance and (iii) if a firm faces any obstacles with access to finance (binary indicator). To measure financial reputation we also use three variables: (i) if a firm has internationally-recognized quality certification, (ii) whether a firm has a checking/saving account, and (iii) if financial statements are certified by an external auditor to measure the financial reputation of a firm. In line with the existing literature, we postulate that a firm achieves growth in sales with better access to finance and credible financial reputation as IMF disbursements flow in. The Dutch disease effect, measured with a firms' status as an exporter, examines if the firm experiences any adverse effect on its export potential as a consequence of the IMF loan. Finally the institution channel is composed

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<sup>12</sup>This strategy was first implemented by Rajan and Zingales (1998), who investigate whether financial development facilitates economic growth by exploring whether it may reduce the costs of external finance to firms. In particular, they interact measures of financial development with industrial sectors that are relatively more in need of external finance. They find that such sectors develop disproportionately faster in countries with more developed financial markets.

of whether a firm has any obstacle due to political instability, due to crime, theft and disorder, and corruption. We explore in this table a series of potential financing channels, keeping in mind that being survey data there are significant limitations to the interpretability.

Table 7 presents these results on the channels using the IMF loan data. In each of the 11 columns, we show the outcome on the interaction between IMF disbursements and a channel. The sample size of the panel observations includes about 11,500 firms. The interaction terms with various measures of "access to finance and financial reputation" are generally not statistically significant with the exception of the interaction with a categorical variable denoting lack of financial obstacles (column 2), which is negative and significant at the ten percent level, and a dummy denoting the existence of financial obstacles (column 3), which is positive and significant at the ten percent level. Hence firms with financing constraints are all more likely to perform well when an IMF loan is in, suggesting that IMF loans may release financing constraints at the firm level.

The interaction with our export identifier, which is positive and significant at the ten percent level, shows no evidence of the Dutch disease channel, while the interaction with "firms with trade obstacles" is negative and significant at the ten percent level, showing that firms lacking trade obstacles are all more likely to benefit from an IMF loan, suggesting that this may be a channel of transmission of IMF intervention at the firm level. Finally, the coefficients of the interaction with the (categorical) indicators of political and institutional quality (at the firm level) are not statistically significant.

To be able to comment this results, however, it should be kept in mind that this coefficient should be interpreted conditionally, as in any interaction model. The best way is to look at Figure 7, which shows the expected variation in firms' sales conditional on the categorical indicators: "no obstacles to access to finance", "no obstacle with political instability", "no obstacle with crime, theft and disorder" and "no obstacle with corruption". We can see that they are generally not significant with the exception of "lack of crime". In this case, the marginal effects of IMF loans on firms' sales are positive but not significant for firms declaring no crime, but they become negative for firms operating in an insecure environment.

Finally, we separate the firms by their main source of financing. We find that only firms which obtain most of their working capital from formal lending institutions such as banks or from the state have significant coefficients. Firms financed by banks have an annual sales growth rate which is 3% greater than the comparison case. The case for state financed firms again would seem to indicate a selection bias, where firms that seek state financing are experiencing lags in sales. We find no effect when interacting with IMF disbursements.

INSERT TABLE 7 (Panel A and B)

INSERT FIGURE 7

## 6.2 Conditionality channels

The dataset utilized to obtain the results in the previous section is preliminary. For now, we have only considered a one-dimensional approach to IMF intervention. As an extension to the results found in the previous section, we update the dataset to include the various dimensions of conditionality from the dataset by Kentikelenis et al. (2016). In particular, we consider the specific impact of IMF conditionality for both our variables of interest, firm sales and labor income shares. We do this through a series of specifications where we interact IMF lending characteristics (affected policy areas) with firm-specific characteristics.

We consider 9 broad policy areas through which IMF conditionality lending typically works: financial sector, external sector, external debt sector, fiscal, revenue, labor, re-distributive, institutional, and state reforms. Table 2c presents summary statistics for these variables. The Appendix also goes into detail on the type of reforms that can be implemented in these policy areas, or for greater detail refer to the original paper responsible for the construction of the data set (Kentikelenis et al. 2016). We then estimate Equation (3) by replacing IMF disbursements with the IMF number of conditional reforms, partitioned into the 9 policy areas listed above.

Table 8 is organized as follows. The dependent is firm average sales growth. Columns represent the firm characteristic and policy area taken into consideration. Therefore, Conditionality refers to the impacted policy area, while Channel is the firm-specific characteristic. As in Table 7, all specifications include our standard country-level controls, firm level controls, industry-year fixed effects and firm fixed effects. The results in Table 8 confirm some of our previous findings as well as providing new insights. We find that only the coefficients of the interaction with the conditionality of the financial sector, external sector, and external debt sector are statistically significant. More specifically, firms with financial obstacles seem to benefit more from both financial and external sector conditionality, while bigger firms are penalized by both external and external debt conditionality. On the other hand, we do not find any significant interaction when considering other area of IMF intervention.<sup>13</sup>

INSERT TABLE 8 (Panel A and B)

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<sup>13</sup>Figure 8 shows the marginal effects of IMF reforms on firms' sales, which are obtained interacting all types of conditionality with firm size. As can be seen they are never significant.

INSERT FIGURE 8

## 7 Labor Income Share

In this section, we estimate Equation (1) considering, as dependent variable, the labor income share described in Section 2. As in the baseline specification, in columns 1-2 of Table 9 we estimate both a pooled OLS and IV considering the full sample of firms, while in column 3 we use a fixed effects OLS estimator, restricting our sample only to firms observed twice in time in order to control for firm-level time-invariant heterogeneity. In column 4, results are presented for the same sample when IMF loans are instrumented.

As the coefficients of the control variables are concerned, the results are different to those obtained in Table 3, especially using the panel specification. Turning to the relationship between IMF disbursements to GDP and labor income share, Table 9 shows a negative but not significant coefficient in the specifications of columns 1-3. In column 4, when the endogeneity of IMF adoption is accounted for and controlling for firm fixed effects, consistently with previous findings (e.g., Lang 2020, Caraway and Rickard 2019, Vreeland 2002), we find that the coefficient of IMF disbursements is negative and significant, at the 10 percent level. More specifically, one standard deviation in IMF disbursements reduces the labour income share by 2.6 percentage points.<sup>14</sup>

INSERT TABLE 9

### 7.1 Financial Channels

In order to better pick apart the effects found in the previous section, we also explore firm specific channels through which IMF lending may affect the labor income share. We then estimate Equation (3) but taking as the dependent variable the labor income share instead of firms' sales. Table 10 is structured with columns representing the relevant firm-level characteristic, as described in section 6.1. All specifications include firm, and industry-year fixed effects.

Looking at Table 10, the interaction terms are always statistically significant with the exception of the interaction with “firms having trade obstacles”. Firms having an overdraft facility and experiencing financial constraints see a reduction in their labor income share when the country is under an IMF program, while the opposite holds for firms with no problems in accessing the credit

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<sup>14</sup>The calculation is based on the standard deviation of IMF disbursements in the regression sample with firm fixed effects of Column 4, Table 9, which is equal to .62.

market. As the borrower benefits from increased liquidity in financial markets deriving from the IMF intervention, this liquidity is passed on to firms. This evidence, however, seems to indicate that firms utilize their increasing availability to funds not to redistribute among workers.

Firms with an international certification and with a checking/saving account are all more likely to see an increase in the labor income share when an IMF loans flows in (while the opposite is true for firms with a financial statements certified by an external auditor). On the other hand, the coefficient of the interaction with the dummy denoting obstacles with respect to trade is not statistically significant while more export oriented firms see an increase in the labor income share after an IMF program is adopted. Finally, we also find positive and significant coefficients, at the five and ten percent level, when interacting IMF disbursements with the variable denoting “no obstacle with political instability”, “no obstacle with crime, theft and disorder” and “no obstacle with corruption”. This evidence suggest that in better and safer environments the firms redistribute among workers their increased availability of financial resources.

Figure 9 shows the marginal effects of IMF disbursements on labor income share. As we can see they are negative and significant, at the ten percent level, for firms below the average level of the indicator “Access to Finance”. Hence, IMF loans tend to reduce the share of workers’ compensation in the case of firms that are more financial constrained. Of interest are the results regarding institutional controls. We find that increasing IMF disbursements are associated to a lower labor income share when the firm reports a lack of political instability, crime, or corruption. This fits into the narrative of rent-seeking by institutions, namely that for firms operating in framework of higher institutional quality where these problems of rent-seeking are less pronounced, then IMF disbursements can improve the welfare of the workers. Because it is also the role of the IMF to help attain these conditions for firms through reforms, it is important to explore through which channel the IMF can do this for firms and workers.

Finally, as above, we separate the firms by their main source of financing. We find that only the coefficient of the interaction between IMF disbursements and firms belonging to the informal sector is negative and significant. Hence, only for this type of firms, IMF adoption is associated to a reduction in the labor income share.

INSERT TABLE 10 (Panel A and B)

INSERT FIGURE 9

## 7.2 Conditionality Channels

In this Section, we interact IMF policy reforms with firm-specific characteristics in order to investigate on the channels of transmission of IMF conditionality. We then estimate Equation (3) by replacing IMF disbursements with the different IMF targeted policy areas and growth of firms' sales with labor income share.

Table 11 presents the results for the effects of specific IMF conditionality programs on the labor income share. As before, the columns state the IMF policy areas and firm characteristics which are interacted in the model. All specifications contain as always country and firm level controls, industry-year fixed effects and are estimated using a fixed effects model with firms as the panel. In general, the results seem quite weak when it comes to IMF conditionality regarding the financial sector. The first 5 columns show no effects which are significant. The result is the same for external sector, debt, fiscal, institutional, state, revenue and surprisingly labor related conditionality agreements (e.g. see Reinsberg et al. 2019, Rickard and Caraway 2019).

We find some evidence however that redistributive and social policies may have an impact on the distribution of income within firms, as shown in Panel B of Table 11. In particular, with respect to firms placed in countries that have been exposed to these policies, we find that as firms become larger and more export oriented workers within these firms fare better as the labor income share increases. Given that IMF programs proposing these type of policies should work in favor of workers, the results are intuitive. Furthermore, the reason we find that larger firms are more affected is likely due to the fact that smaller firms may be able to skimp on these requirements. As Figure 10 shows, the marginal effects of re-distributive reforms on firms' sales are negative and significant in the case of small firms (i.e. with a size smaller than the median value) while they become positive and significant in the case of very large firms.<sup>15</sup>

INSERT TABLE 11 (Panel A and B)

INSERT FIGURE 10

To sum up, we find that IMF disbursements, on average, are more effective for firms' sales, in the case of firms that are either more financial constrained or more export oriented. Consistently, we also find that IMF reforms related to the financial, external sector and external debt sector may increase firm sales. On the other hand, IMF disbursements lead, on average, to an increase

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<sup>15</sup>The marginal effects of institutional reforms on firms' sales are also negative and significant in the case of small firms, turning insignificant for firms bigger than the median value.

in the labor income share, in the case of firms that are less financial constrained, more export-oriented or located in a better environment. As reforms are concerned, we find some evidence that redistributive and social policies may increase the compensation of the workers within firms.

## 8 Conclusions

This paper examines the link between IMF disbursements, firm growth and shared prosperity, by using a panel of 130,000 firms in 139 developing countries over the period 2003-2018. It evaluates the performance of firm considering changes in the firm sales as well as the labor's share in firm sales in response to disbursements provided by the IMF. This paper contributes to the literature on the IMF effectiveness and is the first study that evaluates the effect of IMF loans on firm sales and the labor income share at the firm level. Our identification strategy exploits the differential effect of changes in IMF liquidity on loan allocation (Lang 2016).

We find that, on average, IMF loans do not increase firms' sales growth. The outcome changes, however, when we differentiate across geographic regions and industrial sectors. Controlling for firm fixed effects, only African and Eastern European firms, and firms operating in the manufacturing sector, gain from an IMF program. When considering the variation in labor income share, however, controlling for firm fixed effects, we find that one standard deviation increase in an IMF loan size (to GDP) reduces the labour income by about 2.6 percentage points. Overall, the findings lead to the conclusion that firms' sales benefit from the IMF loans but at the cost of the workers.

Furthermore, as the channels are concerned, we find that IMF intervention is associated to a sales' increase for firms that are financially constrained and more export-oriented, which suggests that loans could improve firm performance through the alleviation of financing constraints in developing countries and exploiting their commercial ties. What is more, IMF loans favour bank-financed firms over those operating in the informal sector. Finally, using a detailed information on the number and scope of conditionality in each country's loan, we find that financial and external-sector conditionality, seem to improve firm sales.

When taking labor income share as the dependent variable, IMF disbursements lead, on average, to an increase in the labor income share, in the case of firms that are less financial constrained, more export-oriented or located in a better environment. When considering specific IMF reforms, we find that only redistributive conditionality is associated to an increase in labor income share.

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## Tables

**Table 1 – Distribution of firms across sectors**

	Freq.	Percent	Cum.
Chemicals	6584	4.57	4.57
Electronics	1599	1.11	5.68
Food	11413	7.92	13.60
Garments	11350	7.88	21.48
Manufacturing	33278	23.10	44.58
Metals & Minerals	7296	5.06	49.65
Not reported	14173	9.84	59.49
Retail	23060	16.01	75.50
Services	35300	24.50	100.00

*Source:* Authors calculations based on the WBES data

**Table 2a: Definition and Sources**

<b>Variable</b>	<b>Description</b>	<b>Source</b>
<b>FIRM</b>		
Log Sales (base year)	Establishment Sales 3 Years Ago, in log	World Bank Enterprise Survey
Sales growth	Average annual growth rate of sales, percent	Own elaboration from WBES
Foreign	Dummy=1 if owned by private foreign individuals, companies or organizations	World Bank Enterprise Survey
Export	Dummy=1 if sales from indirect exports>0	World Bank Enterprise Survey
Size	Small, Medium, And Large Firm Categories Based On No. Of Employees. 1 Small(<20) 2 Medium(20-99) 3 Large(100 & over)	World Bank Enterprise Survey
Firm has an overdraft facility	Dummy=1 if firms have an overdraft facility	World Bank Enterprise Survey
No obstacle with access to finance	No obstacle with access to finance, categorical variable (1-5)	World Bank Enterprise Survey
Firm has internationally-recognized quality certification	Dummy=1 if firm has internationally-recognized quality certification	World Bank Enterprise Survey
Firm has a checking/saving account	Dummy=1 if firm has a checking/saving account	World Bank Enterprise Survey
Financial statements certified by external auditor	Dummy=1 if firm has financial statements certified by external auditor	World Bank Enterprise Survey
No obstacle with electricity	No obstacle with electricity, categorical variable (1-5)	World Bank Enterprise Survey
No obstacle with transport	No obstacle with transport, categorical variable (1-5)	World Bank Enterprise Survey
No obstacle with political instability	No obstacle with political instability, categorical variable (1-5)	World Bank Enterprise Survey
No obstacle with crime, theft and disorder	No obstacle with crime, theft and disorder, categorical variable (1-5)	World Bank Enterprise Survey
No obstacle with corruption	No obstacle with corruption, categorical variable (1-5)	World Bank Enterprise Survey
<b>COUNTRY</b>		
GDP Growth	GDP (constant 2015 US\$), Annual rate of change	World Development Indicators, World Bank (2018))
GDP per capita (log)	GDP (constant 2015 US\$), per capita (in log)	World Development Indicators, World Bank (2018))
Population (log)	Log of total population	World Development Indicators, World Bank (2018))
Corruption	ICRG Corruption Index	International Country Risk Guide, The PRS Group (2018)
IMF disbursements (to GDP)	IMF disbursements to GDP	Kentikelenis, Stubbs, and King (2016)

**Table 2b: Summary Statistics**

Variables	Definition	Observations	Mean	Standard Deviation	Minimum	Maximum
<b>Firm characteristics</b>						
Sales growth	%	87408	0.11	0.42	-8.53	3
Labor Income Share		53685	0.22	0.23	0	7
Sales	log	87408	16.86	3.17	2.83	37.24
State	dummy	87408	0.01	0.12	0	1
Foreign	dummy	87408	0.1	0.3	0	1
Exports	dummy	87408	0.23	0.42	0	1
Size		87408	1.77	0.77	1	3
Access to Finance		67503	3.52	1.32	1	5
Overdraft	dummy	80692	0.56	0.5	0	1
Financial obstacles	dummy	84474	0.48	0.5	0	1
Quality certification	dummy	69273	0.25	0.43	0	1
Checking/saving account	dummy	69273	0.84	0.36	0	1
Financial statements certified by ext. auditor	dummy	69273	0.54	0.5	0	1
Trade obstacles	dummy	87408	0.54	0.5	0	1
Political stability		67737	3.4	1.46	1	5
(lack of ) crime, theft and disorder		69033	3.87	1.25	1	5
(lack of) corruption		69246	3.24	1.49	1	5
Self-financed firms	dummy	87408	0.7	0.46	0	1
Bank-financed firms	dummy	87408	0.1	0.29	0	1
Informal-sector firms	dummy	87408	0.1	0.3	0	1
State-finance firms	dummy	87408	0.1	0.3	0	1
<b>Country characteristics</b>						
GDP Growth	%	87408	5.19	3.02	-3.99	29.3
GDP per capita	log	87408	7.81	1.05	5.2	10.94
Population	log	87408	17.61	1.76	12.73	21.01
Corruption		87408	2.17	0.62	0	5.11
IMF Disbursements	%GDP	87408	0.13	0.45	0	5.01

Notes: Summary statistics are computed based on the full sample for the pooled OLS specification (Table 3, column 1).

**Table 2c: Summary Statistics: Conditionality**

Variable	N	Mean	Standard Deviation	Min	Max
External Debt Conditionality	125785	0.13	0.34	0	1
Financial Sector Conditionality	125785	0.13	0.34	0	1
External Sector Conditionality	125785	0.12	0.33	0	1
Labor Conditionality	125785	0.05	0.22	0	1
Fiscal Conditionality	125785	0.14	0.35	0	1
Revenue conditionality	125785	0.1	0.3	0	1
Redistributive Conditionality	125785	0.07	0.25	0	1
Institutional Conditionality	125785	0.05	0.22	0	1
State Conditionality	125785	0.11	0.31	0	1

**Table 3. Firm sales growth and IMF loans**

	(1)	(2)	(3)	(4)
(log) Sales (t-1)	-0.088*** (-12.009)	-0.090*** (-11.141)	-0.144*** (-9.987)	-0.153*** (-8.489)
State	-0.002 (-0.106)	-0.002 (-0.102)	0.060 (1.081)	0.102 (1.614)
Foreign	0.056*** (6.127)	0.059*** (6.007)	0.057* (1.903)	0.083*** (2.694)
Exports	0.044*** (6.924)	0.046*** (6.608)	0.044*** (2.730)	0.047** (2.424)
Size	0.160*** (12.954)	0.163*** (11.965)	0.135*** (6.722)	0.140*** (6.762)
GDP per capita	-0.173 (-1.057)	-0.208 (-1.093)	0.230 (0.936)	0.252 (1.046)
GDP growth	-0.006 (-1.186)	-0.008 (-1.193)	-0.002 (-0.257)	0.004 (0.649)
Population	-0.121 (-0.356)	0.689 (1.373)	-0.340 (-0.653)	0.667 (0.740)
Corruption	0.066* (1.754)	0.111*** (2.983)	-0.003 (-0.066)	0.047 (0.699)
IMF Disbursements	-0.012 (-0.440)	-0.027 (-0.635)	0.019 (1.222)	0.054 (1.133)
Constant	4.137 (0.818)		6.134 (0.644)	
Observations	87,408	77,933	9,888	9,888
R-squared	0.192	0.124	0.281	0.304
OLS	YES		YES	
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
IV		YES		YES
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Number of idpanel			4,944	4,944

*Notes:* Column (1) is estimated using the OLS estimator, with country and industry x year dummies and robust standard errors clustered at the country-year level. Column (2) is estimated using the within estimator, with firm fixed effects, industry x year dummies and robust clustered standard errors at the country-year level. Column (3) is estimated using the IV estimator with firm fixed effects, industry x year dummies and robust clustered standard errors at the country-year level. The underidentification stems from the Kleibergen-Paap rk LM statistic. The weak identification test stems from the Kleibergen-Paap rk Wald F-statistic. Standard errors are clustered at the country level \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

**Table 4. Firm sales growth and IMF loans (sample restricted to firms that received aid)**

	(1)	(2)	(3)	(4)
(log) Sales (t-1)	-0.093*** (-14.504)	-0.089*** (-10.014)	-0.135*** (-5.382)	-0.134*** (-4.452)
State	0.018 (0.410)	0.027 (0.614)	0.164 (1.088)	0.193 (1.130)
Foreign	0.068*** (4.656)	0.069*** (4.442)	0.067* (1.992)	0.071** (1.975)
Exports	0.046*** (4.620)	0.043*** (4.482)	0.007 (0.206)	0.014 (0.344)
Size	0.179*** (15.368)	0.175*** (11.852)	0.152*** (4.101)	0.148*** (3.532)
GDP per capita	-0.622* (-1.951)	-0.596 (-1.209)	0.232 (0.719)	0.088 (0.208)
GDP growth	-0.014 (-1.443)	0.039 (0.881)	-0.000 (-0.066)	0.018 (0.945)
Population, total	0.582 (0.848)	-0.795 (-0.430)	-0.501 (-0.707)	-1.936 (-1.122)
Corruption	0.128 (1.586)	0.298** (2.220)	0.042 (0.625)	0.110 (1.127)
IMF Disbursements	-0.064 (-1.401)	0.188 (0.828)	0.047 (1.521)	0.106* (1.664)
Constant	-1.726 (-0.184)		8.267 (0.675)	
Observations	22,368	21,441	2,044	2,044
R-squared	0.198	0.109	0.362	0.370
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			1,022	1,022

**Table 5. Firm sales growth and IMF loans by macro regions**

	(1)	(2)	(3)	(4)
<b>Panel A: Africa</b>				
IMF Disbursements	-0.213** (-2.204)	2.433 (0.732)	-0.210 (-0.744)	1.354** (2.365)
Constant	9.359 (0.281)		16.091 (0.411)	
Observations	27,734	24,498	2,500	2,500
R-squared	0.270	-0.394	0.357	0.362
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			1,250	1,250
<b>Panel B: Latin America</b>				
IMF Disbursements	0.012 (0.549)	0.071 (1.418)	-0.028 (-1.065)	0.049 (1.522)
Constant	-8.336 (-1.127)		-11.745 (-1.261)	
Observations	21,710	16,716	3,680	3,680
R-squared	0.190	0.162	0.329	0.370
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			1,840	1,840
<b>Panel C: Eastern Europe</b>				
IMF Disbursements	0.052* (1.747)	0.131* (1.898)	0.022 (0.499)	0.139 (1.043)
Constant	-2.793 (-0.388)		3.222 (0.201)	
Observations	13,845	13,845	1,578	1,578
R-squared	0.202	0.153	0.414	0.405
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			789	789

*Notes:* Results for the region "Asia" are omitted because of insufficient instances of IMF programs to Asian countries (insufficient observations for the variable of interest).

**Table 6. Firm sales growth and IMF loans by broad industrial sectors**

	(1)	(2)	(3)	(4)
<b>Panel A: Food</b>				
IMF Disbursements	-0.062**	-0.630	-0.060**	-2.378
	(-2.340)	(-1.010)	(-2.298)	(-0.170)
Constant	-2.455		-4.786	
	(-0.321)		(-0.254)	
Observations	8,316	7,418	854	854
R-squared	0.208	0.011	0.407	-5.523
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			427	427
<b>Panel B: Mineral</b>				
IMF Disbursements	-0.307	-0.958	-0.422	
	(-1.450)	(-0.693)	(-1.668)	
Constant	35.703**		71.203***	
	(2.297)		(4.506)	
Observations	12,563	11,622	722	722
R-squared	0.180	0.094	0.218	0.237
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			361	361
<b>Panel C: Manufacturing</b>				
IMF Disbursements	-0.011	-0.012	0.019	0.093*
	(-0.371)	(-0.275)	(0.948)	(1.755)
Constant	11.512		26.335***	
	(1.509)		(2.881)	
Observations	32,840	29,343	2,986	2,986
R-squared	0.201	0.137	0.280	0.303
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			1,493	1,493
<b>Panel D: Wholesale</b>				
IMF Disbursements	-0.004	-0.024	0.024	0.157
	(-0.148)	(-0.343)	(0.891)	(1.574)
Constant	0.809		-15.853	
	(0.154)		(-1.448)	
Observations	13,962	12,418	1,268	1,268
R-squared	0.213	0.133	0.355	0.312
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			634	634
<b>Panel E: Other Services</b>				
IMF Disbursements	-0.077*	-0.009	-0.056	0.075
	(-1.962)	(-0.117)	(-1.146)	(0.722)
Constant	23.448***		25.083***	
	(4.228)		(3.908)	
Observations	14,597	12,227	828	828
R-squared	0.218	0.125	0.354	0.376
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			414	414

**Table 7. The Channels, IMF loans and firm sales growth**

<b>Panel A: Annual growth rate of sales</b>											
	Overdraft	Access	Financial	International	Saving	Certified by	Trade	Dutch	Lack of political	Lack of crime, theft	Lack of
	facility	to Finance	obstacles	certification	account	ext. auditor	obstacles	Disease	instability	and disorder	corruption
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
IMF Disbursements	0.018	0.005	0.011	-0.018	-0.057*	-0.025	0.040**	-0.011	-0.031	-0.049*	-0.029
	(1.087)	(0.196)	(0.700)	(-1.002)	(-1.671)	(-1.421)	(2.210)	(-0.590)	(-0.958)	(-1.873)	(-0.972)
IMF Disbursements x CHANNEL	0.008	-0.008*	0.017*	-0.006	0.041	0.017	-0.035*	0.021*	0.003	0.007	0.003
	(0.781)	(-1.847)	(1.920)	(-0.278)	(1.221)	(0.685)	(-1.828)	(1.870)	(0.622)	(1.070)	(0.547)
CHANNEL	-0.014	0.004	-0.018	0.005	0.049**	0.045**	0.016	0.039***	0.008	-0.006	-0.001
	(-0.838)	(0.682)	(-1.323)	(0.258)	(2.084)	(2.499)	(0.805)	(2.637)	(1.408)	(-1.282)	(-0.216)
Constant	0.216	1.890***	6.310	1.497	1.810	1.363	5.668	2.067***	1.745***	1.832***	1.820***
	(0.021)	(7.032)	(0.691)	(0.196)	(0.237)	(0.177)	(0.601)	(9.057)	(6.653)	(6.963)	(6.845)
Observations	17,425	15,154	17,688	13,713	13,713	13,713	18,294	21,213	15,236	15,491	15,491
R-squared	0.280	0.267	0.292	0.273	0.274	0.275	0.281	0.257	0.254	0.257	0.256
Number of idpanel	11,219	10,755	11,302	9,724	9,724	9,724	11,573	13,308	10,824	10,959	10,959
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry x year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<b>Panel B: Annual growth rate of sales</b>											
	Self-	Bank-	Informal-	State-financed							
	financed	financed	sector	financed							
	firms	firms	sector	firms							
	(1)	(2)	(3)	(4)							
IMF Disbursements	0.022	0.021	0.014	0.019							
	(0.907)	(1.354)	(0.914)	(1.248)							
IMF Disbursements x CHANNEL	0.012	0.041***	-0.040**	-0.018							
	(0.934)	(2.691)	(-2.581)	(-0.626)							
CHANNEL	-0.005	-0.043	0.027**	-0.005							
	(-0.246)	(-1.432)	(2.118)	(-0.160)							
Constant	5.654	5.840	6.012	5.358							
	(0.596)	(0.616)	(0.635)	(0.565)							
Observations	18,294	18,294	18,294	18,294							
R-squared	0.281	0.281	0.281	0.281							
Number of idpanel	11,573	11,573	11,573	11,573							
Controls	YES	YES	YES	YES							
Firm FE	YES	YES	YES	YES							
Industry x year FE	YES	YES	YES	YES							



**Table 9. Labor Income Share and IMF loans**

	(1)	(2)	(3)	(4)
(log) Sales (t-1)	-0.044*** (-11.795)	-0.043*** (-11.905)	-0.028*** (-5.422)	-0.025*** (-4.338)
State	0.016 (1.355)	0.010 (0.927)	-0.051** (-2.184)	-0.061*** (-2.612)
Foreign	0.009** (2.052)	0.009** (2.129)	-0.009 (-0.588)	-0.020 (-1.193)
Exports	0.004 (0.836)	0.005 (1.144)	-0.014 (-1.448)	-0.022** (-2.364)
Size	0.059*** (9.230)	0.057*** (9.488)	0.010 (0.966)	0.007 (0.611)
GDP per capita	-0.107 (-1.302)	-0.151* (-1.695)	-0.123** (-2.252)	-0.163*** (-2.933)
GDP growth	-0.003 (-1.059)	-0.005 (-1.089)	0.001 (0.395)	-0.005 (-1.336)
Population, total	-0.434*** (-2.864)	-0.325 (-1.469)	-0.484** (-2.439)	0.246 (0.765)
Corruption	0.017 (0.838)	0.025 (1.169)	0.014 (1.379)	0.035*** (2.685)
IMF Disbursements	-0.021 (-1.528)	-0.033 (-1.288)	-0.010 (-0.902)	-0.042** (-2.517)
Constant	6.610 (0.026)		10.022*** (2.789)	
Observations	53,486	48,566	5,634	5,634
R-squared	0.149	0.090	0.072	0.075
Firm FE	NO	NO	YES	YES
Industry x year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
Kleibergen-Paap LM stat (p-value)		0.000		0.000
Panel observations			2,817	2,817

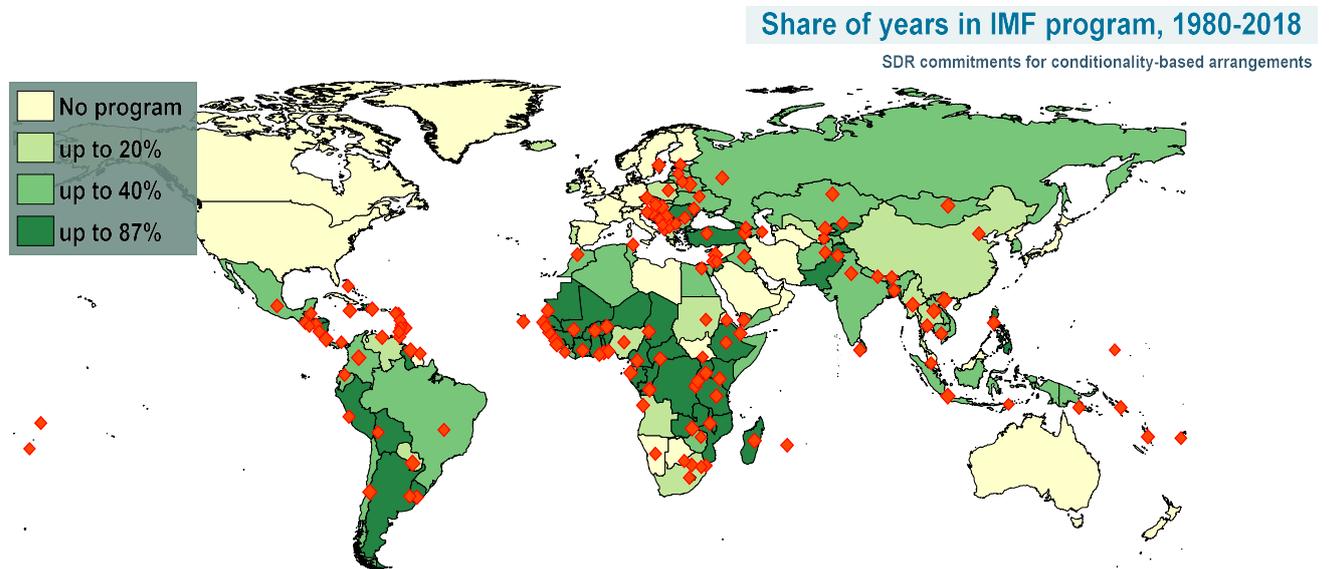
**Table 10. The Channels, IMF loans and the Labor Income Share**

<b>Panel A: Labor Income Share</b>											
	Overdraft	Access to	Financial	International	Saving	Certified by	Trade	Export	Lack of pol.	Lack of	Lack of
	facility	Finance	obstacles	certification	account	ext. auditor	obstacles	oriented	instability	crime, theft	corruption
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
IMF Disbursements	0.002	-0.039***	0.001	-0.012	-0.023	-0.004	-0.013	-0.019***	-0.031***	-0.056***	-0.054***
	(0.151)	(-4.003)	(0.074)	(-1.295)	(-1.652)	(-0.507)	(-1.043)	(-3.139)	(-3.398)	(-7.115)	(-4.718)
IMF Disbursements x CHANNEL	-0.027**	0.010***	-0.017***	0.021***	0.017**	-0.015*	0.005	0.021***	0.008***	0.013***	0.015***
	(-2.584)	(3.125)	(-3.239)	(3.725)	(2.158)	(-1.963)	(1.018)	(4.803)	(2.946)	(7.901)	(4.800)
CHANNEL	0.021**	-0.002	0.006	0.016	-0.018	-0.001	-0.004	-0.017*	-0.002	-0.007**	-0.006**
	(2.113)	(-0.674)	(0.949)	(1.445)	(-1.080)	(-0.114)	(-0.649)	(-1.805)	(-0.691)	(-2.452)	(-2.022)
Constant	10.812***	0.909***	10.322***	5.323	4.932	5.243	10.048***	0.853***	0.751***	0.896***	0.907***
	(2.773)	(5.651)	(2.947)	(1.510)	(1.450)	(1.518)	(2.775)	(6.230)	(6.829)	(5.511)	(5.387)
Observations	10,584	9,470	10,624	9,093	9,093	9,093	10,926	12,290	9,651	9,719	9,719
R-squared	0.078	0.093	0.078	0.082	0.081	0.080	0.072	0.073	0.077	0.093	0.095
Number of idpanel	7,102	6,612	7,005	6,297	6,297	6,297	7,174	8,066	6,757	6,784	6,784
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry x year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<b>Panel B: Labor Income Share</b>											
	Self-	Bank-	Informal-	State-financed							
	financed	financed	sector	financed							
	firms	firms	firms	firms							
	(1)	(2)	(3)	(4)							
IMF Disbursements	-0.015	-0.010	-0.007	-0.011							
	(-1.243)	(-0.897)	(-0.638)	(-1.081)							
IMF Disbursements x CHANNEL	0.006	-0.001	-0.015**	0.037							
	(1.293)	(-0.034)	(-2.324)	(1.320)							
CHANNEL	0.004	0.010	-0.010*	-0.005							
	(0.687)	(1.088)	(-1.928)	(-0.406)							
Constant	9.861***	9.982***	9.957***	9.950***							
	(2.757)	(2.785)	(2.766)	(2.779)							
Observations	10,926	10,926	10,926	10,926							
R-squared	0.072	0.072	0.073	0.073							
Number of idpanel	7,174	7,174	7,174	7,174							
Controls	YES	YES	YES	YES							
Firm FE	YES	YES	YES	YES							
Industry x year FE	YES	YES	YES	YES							



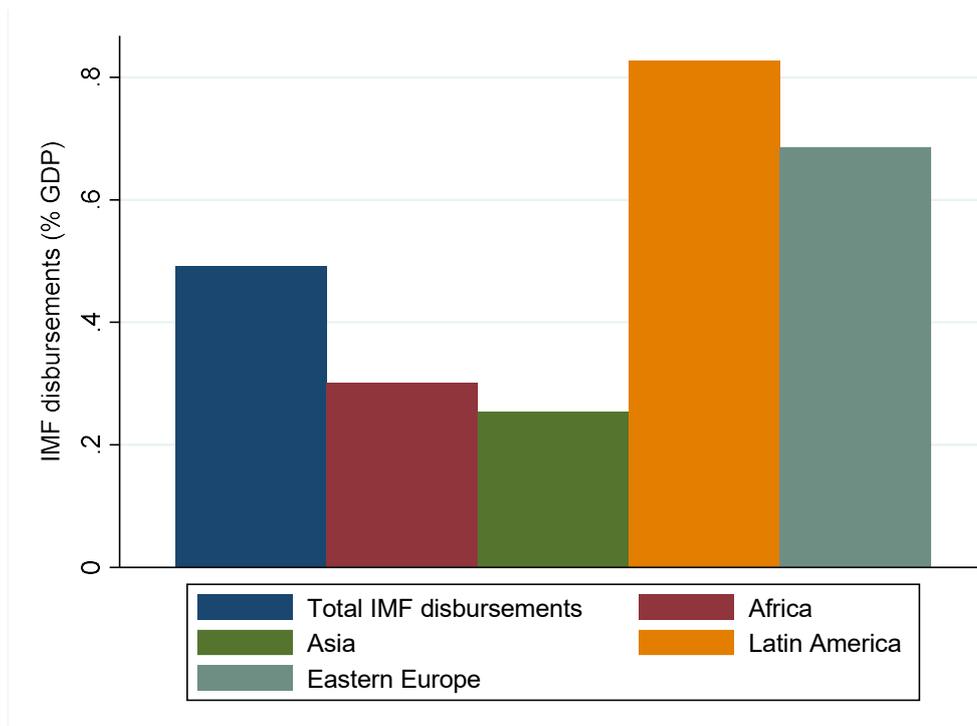
# Figures

Figure 1: Loan and firm distribution across countries

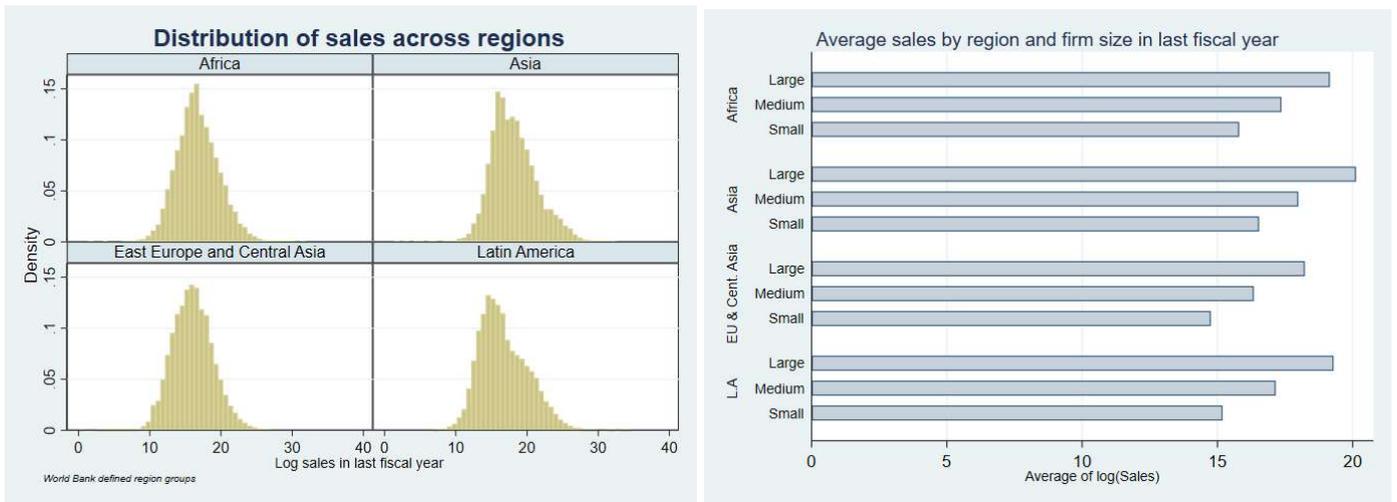


Notes: Red dots refer to WBES firms, while green shade areas IMF committed loans.

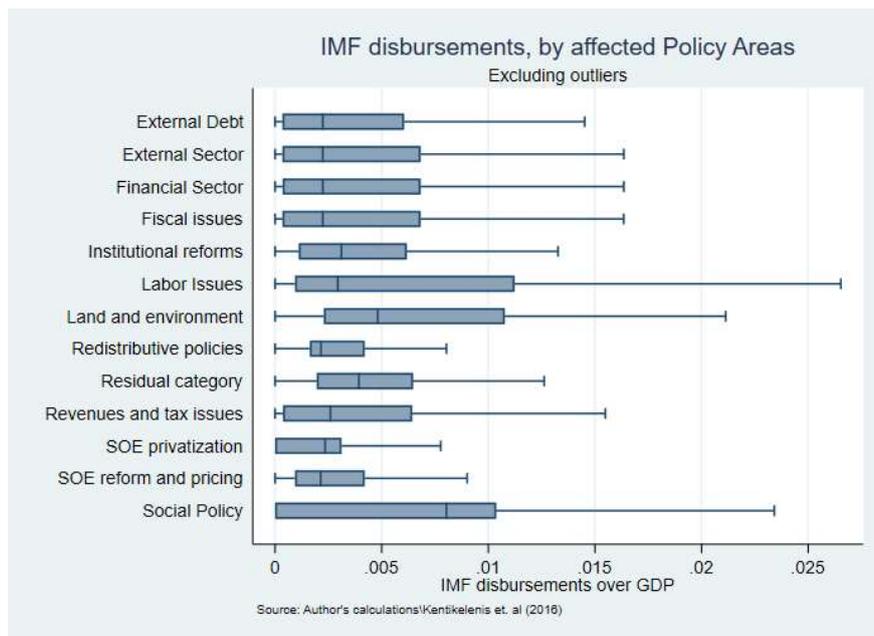
Figure 2: IMF Loan distribution across macro regions



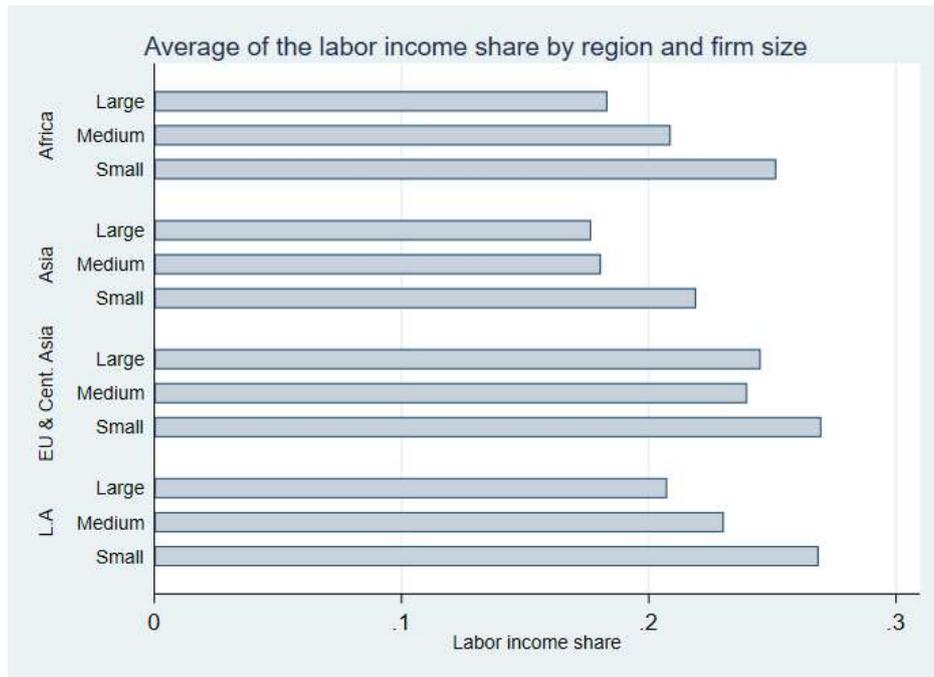
**Figure 3 – Distribution of the log sales across regions and average sales by region and size**



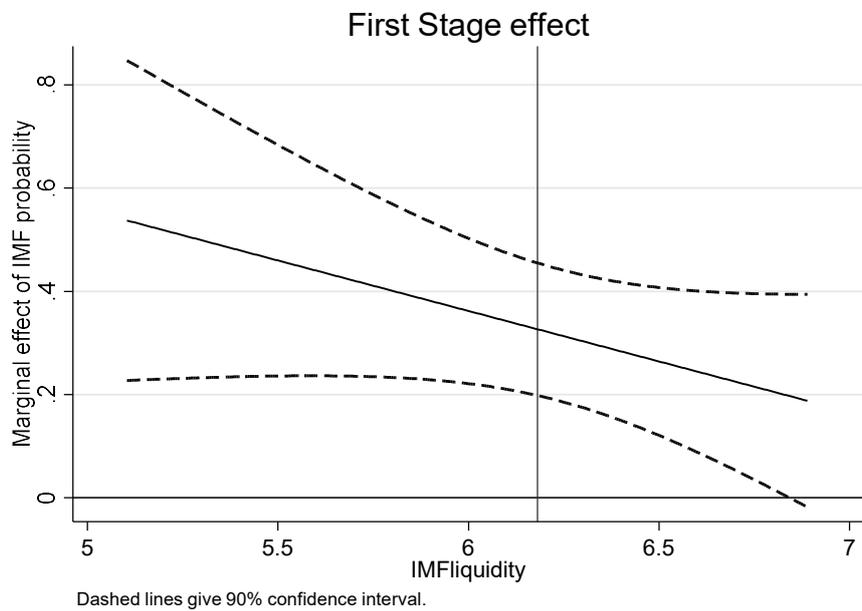
**Figure 4: Boxplot of policy areas affected by IMF programs**



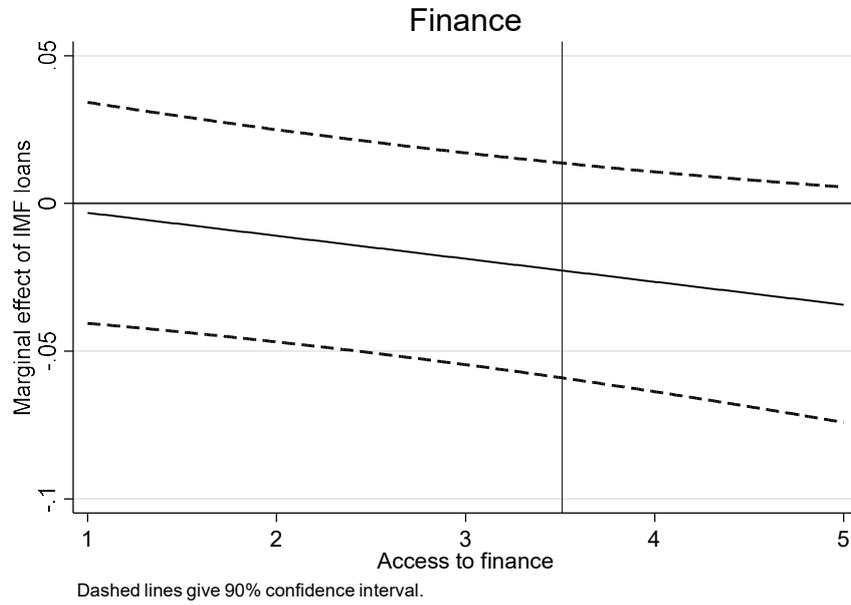
**Figure 5: Labor income share**



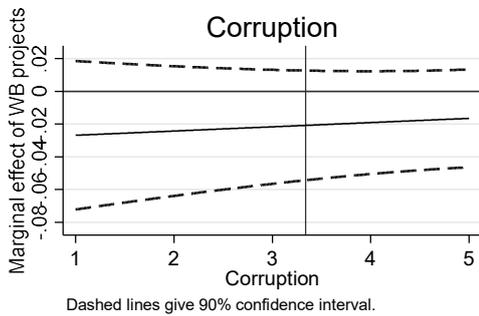
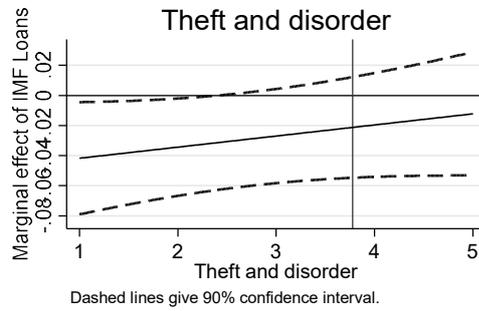
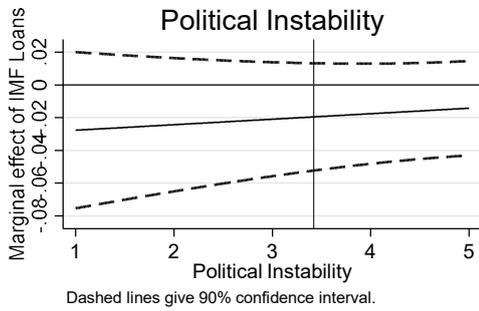
**Figure 6: First stage Marginal effects**



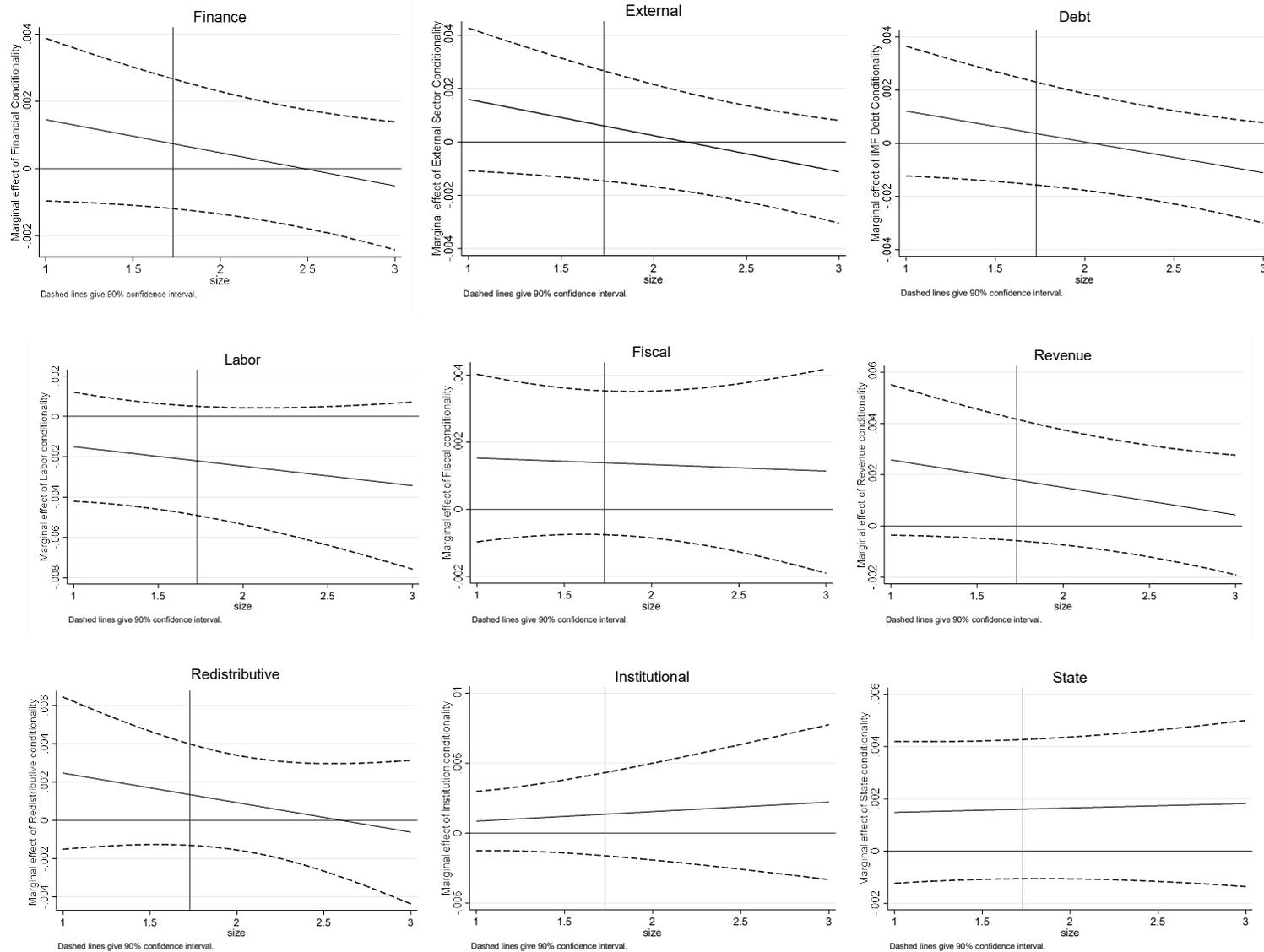
**Figure 7: The Channels, IMF loans and firm sales growth, Marginal Effects**



## Institutions



**Figure 8: The Channels, Conditionality and firm sales growth, Marginal Effects**



**Figure 9: The Channels, IMF loans and the Labor Income Share, Marginal Effects**

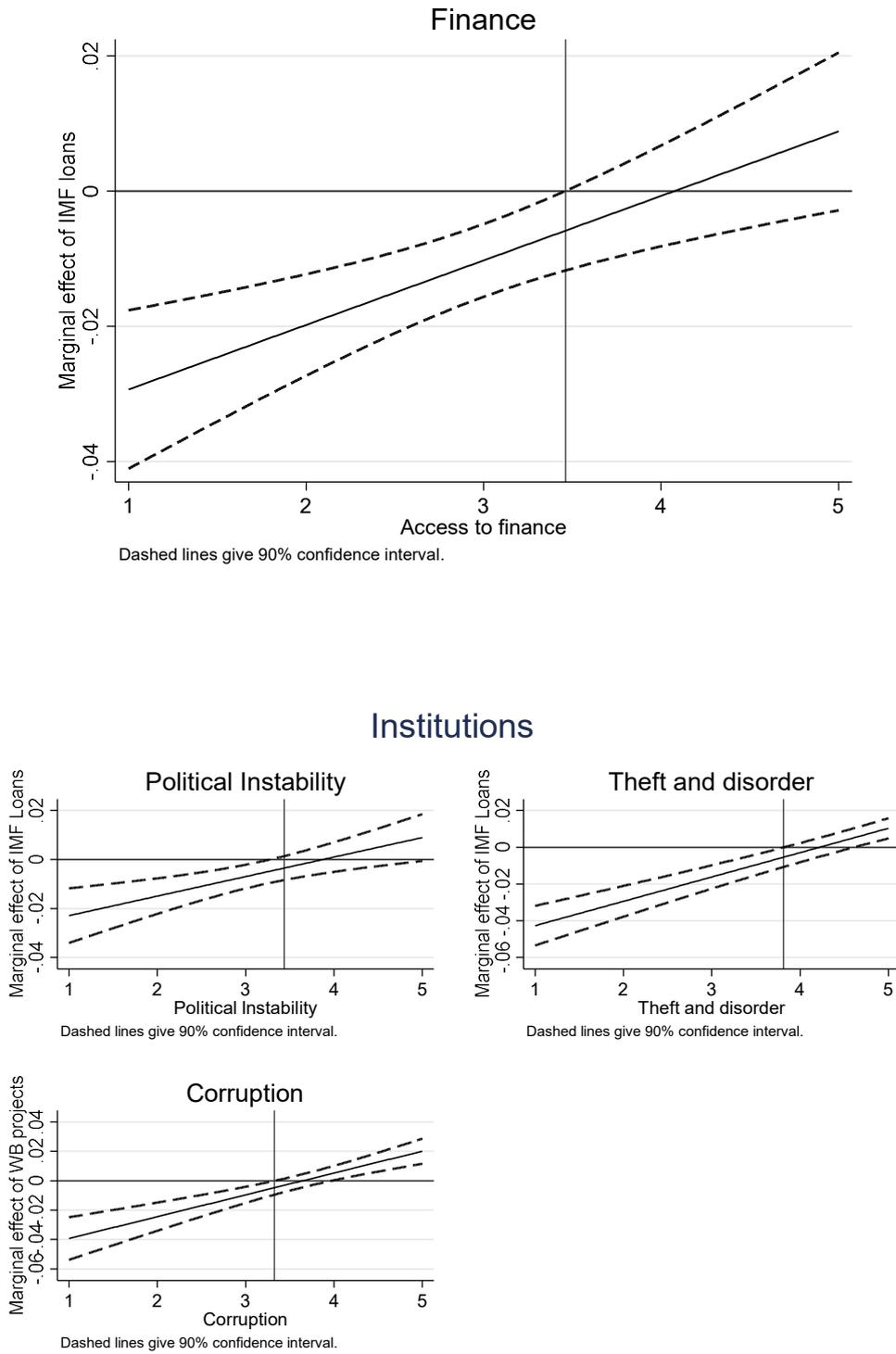
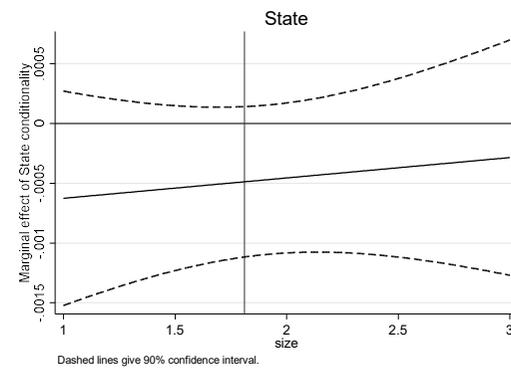
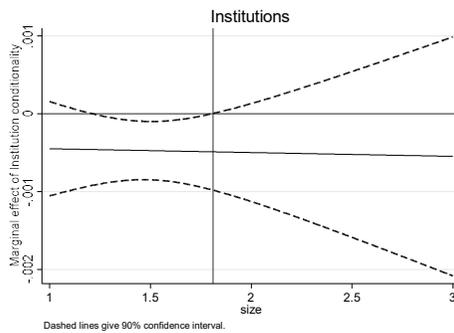
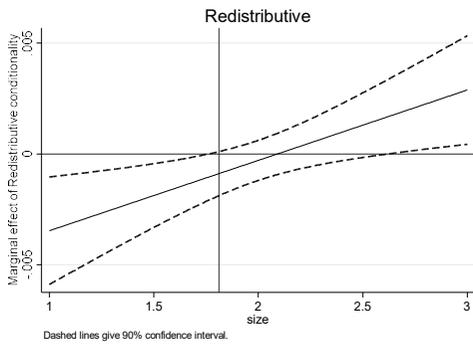
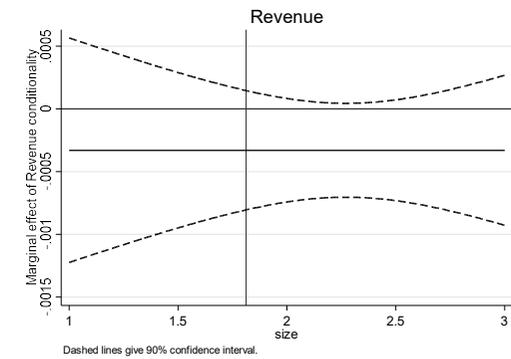
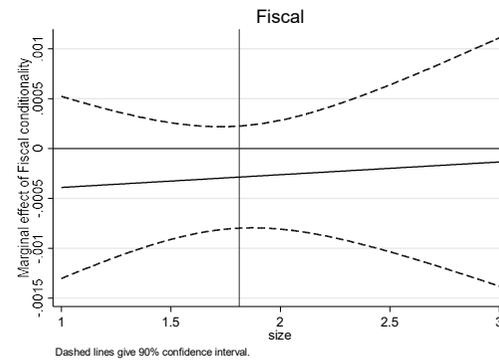
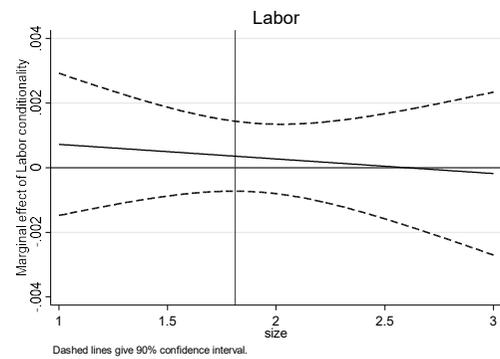
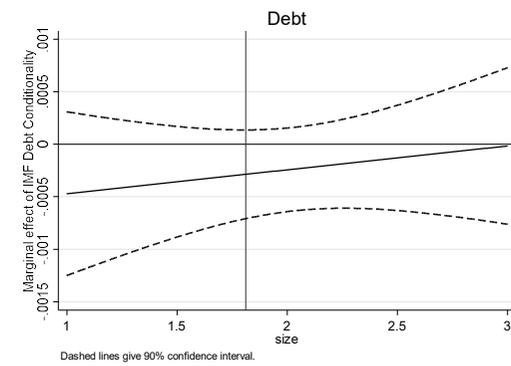
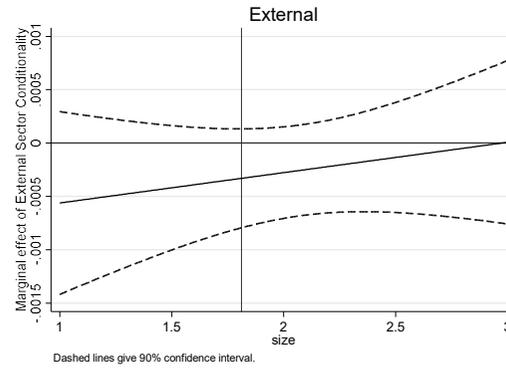
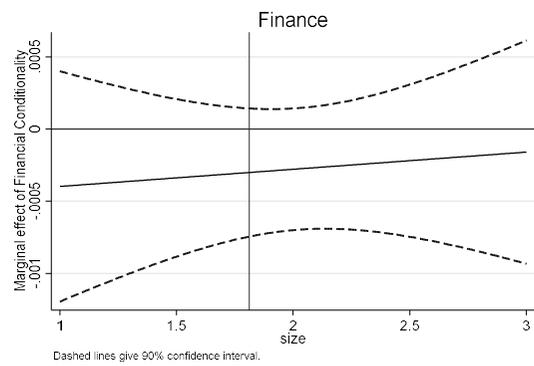


Figure 10: The Channels, Conditionality and the Labor Income Share, Marginal Effects



# Online Appendix

**Table A1: Average IMF disbursements/GDP by policy area and region**

Policy Area	WB defined regions				
	Africa	Asia	Latin America	Europe and Central Asia	Total
External debt issues	0.0029003	0.0030298	0.0078081	0.0100367	0.0237749
External sector (trade & exchange rate)	0.0030891	0.0030298	0.0080114	0.0125771	0.0267074
Financial sector and monetary policy	0.0029347	0.0029623	0.0083551	0.0134298	0.0276819
Fiscal issues	0.0027961	0.0039725	0.0077688	0.011999	0.0265364
Institutional reforms	0.001837	0.0034776	0.0122415	0.0048659	0.022422
Labor issues (public and private sector)	0.0030071	0.011974		0.0110595	0.0260406
Redistributive policies	0.0037393	0.0024247	0.0015277	0.0120669	0.0197586
Residual category	0.0039122	0.0039258			0.007838
Revenues and tax issues	0.0032061	0.002903	0.0103214	0.0105257	0.0269562
SOE privatization	0.0024645	0.0028139	0.0095765	0.0015183	0.0163732
SOE reform and pricing	0.0035104	0.002399	0.0021311	0.0114831	0.0195236
Social policy (restrictive or neutral)	0.0080371	0.0165575		0.0041543	0.0287489
<b>Total</b>	<b>0.0414339</b>	<b>0.0594699</b>	<b>0.0677416</b>	<b>0.1037163</b>	<b>0.2723617</b>

**Table A2a – Frequency of conditionality categories by region**

WB defined regions	Categories of conditionality					
	IB	PA	QPC	SB	SPC	Total
Africa	1430	1173	2611	3579	223	9016
Asia	0	318	1674	2612	0	4604
Latin America	745	893	1185	3403	493	6719
Europe and Central Asia	535	1674	1092	1715	0	5016
Total	2710	4058	6562	11309	716	25355

**Table A2b – Frequency of conditionality affected policy areas by region**

WB defined regions	Affected policy areas									
	External debt	External sector (trade and exchange system)	Financial sector, monetary policy, CB issues	Fiscal issues	Institutional reforms	Labor issues	Redistributive policies	Revenues and tax issues	SOE reform and pricing	Total
Africa	1983	347	1385	3136	945	703	89	380	48	9016
Asia	350	0	1974	0	0	0	0	2280	0	4604
Latin America	134	545	412	1019	1508	297	691	2113	0	6719
Europe and Central Asia	477	670	2121	1136	0	0	0	612	0	5016
Total	2944	1562	5892	5291	2453	1000	780	5385	48	25355

**Table A2c – Frequency of lending arrangements by region**

WB defined regions	IMF arrangement types								
	ECF	EFF	ESAF	ESF	PLL	PRGF	SBA	SCF	Total
Africa	1328	0	83	104	347	4740	2038	376	9016
Asia	1453	521	0	0	0	1759	871	0	4604
Latin America	134	0	0	0	0	1190	5179	216	6719
Europe and Central Asia	390	0	0	162	0	646	3818	0	5016
Total	3305	521	83	266	347	8335	11906	592	25355

**Table A2d – Average IMF SDR commitments by arrangement type and region**

	WB defined regions			
	Africa	Asia	Latin America	Other
ECF	2.27e+08	5.83e+08	1.93e+07	1.72e+08
EFF		4.39e+09		
ESAF	4.67e+07			
ESF	5.21e+07			6.66e+07
PLL	4.12e+09			
PRGF	9.32e+07	2.99e+08	8.43e+07	1.58e+08
SBA	1.54e+09	1.05e+09	6.98e+09	4.62e+09
SCF	1.49e+08		1.30e+08	

**Table A3: Arrangements details**

Arrangement Type	Categories of conditionality	Lending terms	Short description
Stand-By Arrangements	SBA IB, PA, PC, QPC, SB, SPC	Covers a period of 12–24 months, but no more than 36 months. Borrowing terms vary depending on member. Repayment are due within 3¼-5 years of disbursement, in 8 quarterly installments beginning 3 1/4 years after the date of disbursement.	Credit arrangement designed to provide short-term financial assistance.
Extended Fund Facility	EFF IB, PA, PC, QPC, SB, SPC	Drawings under extended arrangements are repayable in 12 semiannual installments 4 1/2 - 10 years after disbursement.	Long-term assistance to support structural reforms and address balance of payments difficulties.
Compensatory Financing Facility (formerly Compensatory and Contingency Financing Facility)	CFF(CCFF) IB, PA, PC, QPC, SB, SPC	Compensatory financing coverage based on parameters including quota, export shortfall, import excess.	Until 2009, CFF provided resources for BOP difficulties, from export shortfalls or temporary excess costs of cereal imports beyond the members' control.
Emergency Assistance and Natural Disaster	EAND IB, PA, SB	Subsidized for low-income countries and repayable in 8 quarterly installments 3 1/4 - 5 years after disbursement.	Financial assistance to countries with BOP financing needs in the wake of natural disasters. Replaced with RCF and RFI.
Emergency Assistance Post Conflict	EAPC IB, PA, QPC, SB	Subsidized for low-income countries and repayable in 8 quarterly installments 3 1/4 - 5 years after disbursement	Financial assistance to countries with BOP financing needs in the wake of armed conflict. Replaced with RCF and RFI.
Systemic Transformation Facility	STF IB, PA, QPC, SB	Assistance provided in small amounts with low conditionality.	From 1993-1995, STF provided temporary assistance to countries in transition from centrally planned to market economies facing balance of payments difficulties.
Enhanced Structural Adjustment Facility	ESAF IB, PA, PC, QPC, SB, SPC	Repayment period starts at 5½ years and ends 10 years after the loan disbursement, low interest rates of 0 – 0.5%.	Main IMF concessional financial facility for poor countries with protracted BOP problems. Replaced with PRGF in 1999.

Structural Adjustment Facility	SAF	IB, PA, QPC, SB, SPC	loans were extended on the same terms with 5½ years grace period and repayable in 10 years and at the interest rate of ½ percent per annum	Created in 1986 to provide concessional financing to assist low-income countries in addressing balance of payments financing needs arising from structural weaknesses.
Poverty Reduction and Growth Facility	PRGF	IB, PA, PC, QPC, SB, SPC	Repayment period starts at 5½ years and ends 10 years after the loan disbursement, low interest rates of 0 – 0.5%.	Formerly the ESAF, substituted with the PRGF in 1999. More explicitly aimed at anti-poverty goals.
Extended Credit Facility	ECF	IB, PA, QPC, SB	Loans are repayable in 10 equal semiannual installments 5 1/2 - 10 years after disbursement, with interest rates of 0 – 0.5%.	Formerly the PRGF, established 2010. Provides concessional financial assistance in support of a three-year macroeconomic and structural adjustment program to eligible low-income members facing protracted BOP issues.
Exogenous Shocks Facility- High Access Component	ESF- HAC	IB, PA, QPC, SB, SPC	Loans are repayable with a grace period of 5 ½ years and a final maturity of 10 years. Carry no interest rates.	Provides concessional financing to PRGT-eligible countries facing balance of payments needs caused by sudden and exogenous shocks. Rapid access component of the ECF, for quick concessional lending in form of outright disbursements.
Exogenous Shocks Facility- Rapid Access Component	ESF-RAC	IB, PA, SB		
Standby Credit Facility	SCF	IB, PA, QPC, SB	Arrangements range from one to two years. Loans are repayable in 9 equal semiannual installments 4–8 years after disbursement.	Replaced ESF-HAC in 2010. Provides concessional financial assistance to low-income countries that are experiencing short-term but not protracted BOP needs.
Rapid Credit Facility	RCF	IB, PA, SB	RCF loans have a grace period of 5 1/2 years and a maturity of 10 years.	Replaced ESF-RAC in 2010. It is an outright disbursement without explicit program-based conditionality or reviews.

Notes: Reporting only those lending facilities present in dataset and accounting for more than 1% of observations. Information on lending facilities and conditionality taken verbatim from IMF glossary: <https://www.imf.org/external/np/fin/tad/Docs/Glossary.pdf>

