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# Fiscal Consolidation and Firm Growth in Developing Countries: Evidence from Firm-level Data

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**ABSTRACT** *Despite a longstanding debate around the economic effects of fiscal consolidation policies, relatively few studies have focused on developing countries, and even fewer have paid attention to the growth implications at firm level. Using a unique narrative dataset based on contemporaneous policy documents to identify changes in fiscal policy aimed at reducing the accumulation of public debt, we investigate the effects of fiscal consolidation on the growth of 118,279 firms in 98 developing countries from 2006 to 2018. The results indicate that a one percentage point increase in fiscal consolidation as a share of GDP leads, on average, to a decline in firm growth of 3.97 percentage points. This decline is reduced when consolidation is large. We also find that debt-driven consolidation based on tax hikes is more contractionary than that based on spending cuts, though this contractionary effect is mitigated when spending cuts exceed 1.5 percent of GDP. While the negative effect of fiscal consolidation on firm performance is more pronounced in large and non-exporting firms, the effect is not statistically important in low-debt-risk developing countries.*

*JEL classification:* D22, E62, H63, O12

**KEYWORDS:** Fiscal consolidation, sovereign debt, firm performance, developing countries

## 1. Introduction

Public debt has been rising to critical levels since the global financial and economic crisis of 2008 in many developed and developing economies, making the need for fiscal consolidation – government policy specifically targeted at the reduction of deficits and the accumulation of public debt – ever more pressing.<sup>1</sup> The persistence of fiscal imbalances after the credit crunch

despite relatively short-lived attempts at financial restraint and austerity, slow economic growth and, more recently, the impact of both the COVID-19 pandemic and the global energy crisis triggered by the war in Ukraine, have challenged further the sustainability of public finances across the world. The aim of stabilizing debt, let alone bringing it down to a sustainable level, has, therefore, become increasingly more challenging. This is the case particularly for developing countries that have to contend with already vulnerable external indebtedness positions denominated in foreign currency in the context of floating exchange rate regimes and open capital accounts, insufficient foreign investment, and limited access to concessionary grants and loans (e.g., Carrière-Swallow et al., 2021). Developing countries are also particularly disadvantaged vis-à-vis developed countries in raising their fiscal capacity (the total revenue that a government can realistically raise given the available tax base) due to lower quality institutions, limited financial development, lower administrative capabilities, and higher level of informality associated with micro businesses.

Although fiscal consolidation is often seen as entailing a trade-off with economic growth, at least in the short term, some authors still cast doubt on the real effectiveness of fiscal retrenchments in narrowing the gap in public finance as well as bringing government debt into a sustainable path (DeLong & Summers, 2012; Fatás & Summers, 2018). The underlying argument is that attempts at reducing debt through fiscal consolidation can, in fact, lead to a higher debt to GDP ratio via their negative long-term impact on output. There has also been an intense debate about the need for flexible adjustment periods so that economies do not fall back into recessions since business cycles appear to be increasingly lacking synchronization and macroeconomic policies seem to be intimately related to financial stability (Agnello et al., 2012).

Against this backdrop, several studies have explored the macroeconomic effects of fiscal consolidation policies in both advanced and emerging economies (see, *inter alia*, Alesina et al., 2017; Claessens et al., 2012; Correa-Caro et al., 2018). Some scholars have also stressed that successful consolidations are primarily based on spending cuts rather than tax hikes (Ağca & Igan, 2019; Alesina & Ardagna, 2010; Guajardo et al., 2014). Such attention notwithstanding, and despite more general firm level evidence on IMF interventions and aid projects in developing countries (e.g., Bompreszi & Marchesi, 2021; Marchesi et al., 2021), among the relatively few studies that focus on the output implications of fiscal consolidation in developing countries, those that concentrate on firm and industry level effects can be counted on one hand (see Claessens et al., 2012; and Correa-Caro et al., 2018).

Several theoretical perspectives postulate a clear link between changes in fiscal policy and real output effects at firm level. For example, Neo-Keynesian thinking holds that under sticky prices and wages, firms will decrease production to counter the fall in demand resulting from lower discretionary spending by a government on goods and services as well as capital projects. By the same token, should the fiscal contraction come through tax hikes, reducing the after-tax income for consumers and businesses who in turn spend less on consumption and investment can be expected to lead to lower firm output, sales and profits. For highly indebted developing countries, firm growth effects of fiscal consolidation may also emerge via foreign capital inflows (including FDI) affecting domestic firms' output. Under such a scenario the debtor country pursues fiscal consolidation with existing external creditor countries ultimately benefiting from taxation and growth (Corden, 1988). As a result, the indebted country would have an incentive to default while foreign firms will be reluctant to invest in a country suffering from debt overhang. This makes the challenge of heavily indebted developing countries to escape from poverty even more difficult because they will be unable to attract foreign investment and benefit from associated positive spillovers to local firms since new potential creditors are discouraged by the prospect of an immediate loss of capital (Nguyen et al., 2005).

At an empirical level, Claessens et al. (2012) use a sample of 42 developed and emerging countries over the 2007-2009 financial crisis period to investigate how firms' performance responds to fiscal impulses. They employ changes in the structural deficits scaled by sectoral sensitivity to the business cycle as a proxy for discretionary fiscal impulse for 7,722 non-financial manufacturing firms. The authors conclude that firms' profit responded positively to the degree of fiscal expansion that occurred at the early stage of the crisis. In the same vein, Correa-Caro et al. (2018) examine the impact of fiscal stimulus on firms' profitability over the global financial crisis. They use a similar methodology as Claessens et al. (2012) but in a larger sample of 52 developed and emerging economies with financial statement data from 22,333 firms drawn from the Thomson Reuters Worldscope database. They conclude that an increment of one percent of potential GDP in structural deficit (i.e., fiscal stimulus) leads to an increase of 0.3 percentage points in corporate profitability, and the improvement is more pronounced in industries more sensitive to the business cycle.

In this paper we contribute to the limited literature on the micro economic effects of fiscal consolidation in developing countries by departing from the two above-mentioned studies in three significant ways. First, while they both use a statistical concept (i.e., changes

in the structural deficits) as a proxy for fiscal adjustments, we construct a unique dataset of more than 544 fiscal consolidation actions – defined as policy actions motivated by the desire to reduce government debt levels – for 98 developing countries following the narrative approach suggested by Romer and Romer (2010) and Devries et al. (2011). As observed by Devries et al. (2011), statistical approaches of fiscal adjustments suffer from measurement errors that are likely to be correlated with economic developments. Hence, measures linked to fiscal policy actions not motivated by current or projected economic conditions, are more likely to yield more precise and unbiased estimates of the effects of fiscal consolidation (Romer & Romer, 2010). Second, we provide a novel perspective on the effects of fiscal consolidation packages on firm performance by decomposing our fiscal consolidation measure into adjustment episodes based on tax hikes and spending cuts. No previous study has examined the distinct effects of these consolidation packages on economic activity in developing countries taking a micro approach from the perspective of firm growth. Last, we combine our new narrative dataset of fiscal policy actions with the cross-sectional World Bank Enterprise Survey (WBES) database covering 118,279 firms across 98 developing countries. Creating this unique combined dataset, which involved considerable effort, allows us to fully exploit firm-level variation within countries and capture the heterogeneous effects of fiscal retrenchments on companies with different characteristics. Our novel insights from firm-level evidence complement existing country-level evidence in this respect.

Our key finding is that firm growth decreases with fiscal consolidation actions. The negative association is more pronounced in large and non-exporting firms, as well as in firms that are more dependent on infrastructure provisions. However, consistent with existing literature, we also find that the decline in firm performance is mitigated to a considerable extent by large fiscal consolidations. When we allow the state of the debt-cycle to differ, we observe that fiscal adjustments in low-debt-risk developing countries are no longer important compared to their high-debt-risk counterparts where large adjustments are expansionary and rebuild the credibility of these countries due to the expectation of better economic performance in the future. Furthermore, we show that debt-driven consolidation efforts based on tax hikes are more contractionary than those based on spending cuts.

The rest of the paper proceeds as follows. The next section describes the dataset we construct, and the methodology used. We then present the empirical results, discuss the significance of our findings, and conduct some robustness checks (also referring to additional robustness tests in the ‘Supplementary Material’ of an online appendix). Finally, we draw

conclusions, outline key policy implications, and point to profitable avenues for future research.

## **2. Data and methodology**

### *2.1. Data*

The most arduous task in our analysis was the construction of a large dataset recording debt-driven fiscal consolidation episodes covering 98 developing countries. The data are mostly retrieved from IMF staff reports – i.e., Article IV consultations, IMF Program documents and relevant Economic Development reports from 2006 to 2018. All firm-level data are collected from the World Bank Enterprise Survey (WBES) while country-level data are obtained from other World Bank sources as outlined below. The data collection process is described briefly below while a ‘Supplementary Material’ online appendix outlines the methodology for identifying the fiscal consolidation measures.

#### *2.1.1. Fiscal consolidation approach*

The narrative approach we use to construct our fiscal consolidation measures is in line with, among others, Romer and Romer (2010), Devries et al. (2011) and Carrière-Swallow et al. (2021). This approach is based on policymakers’ actions and intentions that are primarily motivated by reductions in government debt as described in contemporaneous policy documents that include country policy reports, budget reports, central and regional bank reports. These actions could be tax hikes or spending cuts, both expressed as a percentage of GDP. In most cases, we compile historical information gathered from IMF staff reports as the primary source but, where relevant, we complement our dataset with regional bank reports and national budget reports.<sup>2</sup>

For each country included in our sample, historical documents and successive editions of the IMF staff reports provide us with relevant information to determine previously announced fiscal consolidation actions that were fully implemented. Since this measure of fiscal consolidation is based on policymakers’ implemented actions rather than the traditionally adopted statistical concept of a cyclically adjusted primary budget balance (CAPB), we alleviate two major measurement issues. First, there is a potential correlation between cyclical adjustment methods and economic developments. Second, CAPB raises concerns about reverse causality which may bias the results towards finding evidence of expansionary effects.<sup>3</sup>

### *2.1.2. Stylized facts*

We identify 544 fiscal consolidation episodes for all policy actions aimed at reducing government debt in 98 developing countries between 2006 and 2018. The list of countries and corresponding fiscal consolidation years are detailed in Table A1 of Appendix I. Following the literature on fiscal consolidation (Ağca & Igan, 2019; Agnello et al., 2019; Pappa et al., 2015), we define large fiscal consolidation as those consolidation actions which exceed 1.5% of GDP. Out of a total of 544 consolidation actions, 135 are large according to this commonly adopted cut off point. These records are illustrated in Figure A1 (Appendix I), which shows that the episodes of fiscal consolidation appear most frequently between 2016 and 2017 following the upward pattern in the average government debt as a share of GDP.

Table A2, which displays the summary statistics, shows that the average fiscal consolidation is about 0.1% of GDP, while large fiscal consolidation is approximately 3.2% of GDP. To gain a deeper insight into the fiscal consolidation packages, we distinguish between tax hikes and spending cuts taken to reduce government debt. Accordingly, we identify 279 and 265 fiscal consolidation actions based on tax hikes and spending cuts, respectively. Additionally, we disaggregate all the consolidation actions related to spending cuts into current spending cuts (143 consolidation episodes) and capital spending cuts (122). Tax hikes represent around 0.09% of GDP, on average, and spending cuts are much lower with an average of 0.01% of GDP.

### *2.1.3. Firm-level data*

To examine the effect of fiscal consolidation actions on firm performance in developing countries, we match our narrative dataset with repeated cross-sectional firm-level information available in WBES over the period 2006-2018. Table A1 also lists coverage (in years) of the WBES surveys by country. Our data for estimation combine relevant information on firm level variables from the WBES surveys with country level data including the fiscal consolidation measures.

We construct our dependent variable (firm performance) with data on the growth of firms' sales. This measure was preferred to profitability since although the latter is critical to a company's existence, growth is crucial to long-term survival. WBES contains information on company sales one year and three years before the survey. Hence, we compute for each firm the growth rate of sales by using the differential in log sales over three years for each available survey as follows:

$$Growth_t = \frac{\log(sales_t) - \log(sales_{t-2})}{2} \quad (1)$$

We use the GDP deflator with the same base year (100 = 2005) to deflate all sales that are provided in local currency. Thereafter, we convert them into US dollars with exchange rate data for each country. Consistent with Chauvet and Ehrhart (2018), we drop the top one percent of firms with the largest growth rates to avoid outliers.

We also use a set of variables to control for firm-level characteristics. We control for the size of the firm, *Size*, by assigning discrete values for each firm in the sample. The value of 1 is assigned for firms with less than 20 employees, 2 for firms with 20-100 employees, and 3 for firms with more than 100 employees. We also account for the firm's ownership structure by constructing two variables: *State share*, taking value 1 if part (or all) of the firm's shares is owned by the government and 0 otherwise; and *Foreign share*, which equals 1 if part (or all) of the firm's shares is owned by a foreign entity. We include a dummy, *Export*, which equals 1 if the firm exports part of its sales to the foreign market. We also control for firm maturity, *Age*, defined as the number of years since the firm began its operations. Specifically, we classify firms as Young (1–5 years old)<sup>4</sup>, Mature (6–15 years old) and Old (more than 15 years old), assigning them values 1, 2 and 3, respectively. Finally, we control for the catch-up effect by including the lagged value of sales, *Sales*(−2).

The annual average sales growth, as shown in Table A2, is about 9.66 percent, much lower than the 16.85 percent registered three years before. While 22 percent of firms export part of their production to the foreign market, 12 percent of them are owned, in part or all, by foreign entities. Our sample of firms is mostly composed of large and mature companies.

#### 2.1.4. Country-level data

We include a set of macroeconomic variables reflecting important dimensions of the effects of fiscal policy actions on firm performance. Following previous studies (Agnello et al., 2013; Guajardo et al., 2014), we control for countries' level of development by using the log of GDP per capita (in constant 2005 US dollars). To control for the buoyancy of a country's economy, we include the real GDP growth rate. We also include the log of the country's population to account for the size of the country. These three variables are collected from the World Development Indicators. To control for the size of the government bond market and



sovereign debt levels, we use the ratio of general government debt to GDP. We also control for monetary conditions using inflation, measured as the percentage change of the country's price index. To account for the trade policy environment, we construct a trade openness variable, *Trade*, defined as the sum of exports and imports as a percentage of GDP. The data for these variables are from the World Economic Outlook database.

To control for quality of governance and economic institutions, we include a set of variables collected from the World Bank's World Governance Indicators (Kaufmann et al., 2011). First, we include government effectiveness, to capture the government's commitment to pursue its declared programs and policies. Second, we include regulatory quality to control for the government's ability to formulate and implement sound policies and regulations that stimulate and enable the development of the private sector. Last, we use corruption to control for the quality of economic institutions. These three indicators range from -2.5 to 2.5, with higher values indicating 'better' governance. All these country-level variables are averaged over the three years for which firm growth is computed. Finally, we recognize that firm performance in developing countries might be influenced by the IMF balance of payment assistances and conditionalities. As noted by Morrissey (2015), aid is an important component of public sector fiscal behavior, a claim empirically validated by several studies (e.g., Mascagni & Timmis, 2017 for Ethiopia; and Bwire et al. 2017 for Uganda). Accordingly, to control for such effects, we generate a dummy variable (*IMF*), taking value 1 (0 otherwise) if the country is under one of the following IMF stabilization programs: Extended Credit Facility (ECF), Poverty Reduction and Growth Facility (PRGF), Standby Credit Facility (SCF), and Structural Adjustment Facility (SAF).<sup>5</sup>

Table A2 indicates a considerable degree of variation in the country-level variables. In particular, while the perceived level of government effectiveness and regulatory quality is low, on average, real GDP growth and inflation are relatively high at 4.82 and 7.2 percent, respectively. Given that our sample is composed of developing countries, the overall perceived level of corruption is high, whereas 67.62 percent of GDP represents exports and imports. Between 2006 and 2018, 36 percent of the countries in our sample were under the IMF's balance of payment assistance or stabilization programs.

## 2.2. Methodology

To evaluate the impact of fiscal consolidation policies on the (growth) performance of firms, our specification takes the following form:<sup>6</sup>

$$\begin{aligned}
& Growth_{i,k,j(t,t-2)} \\
& = a + \beta_1 Fiscal_{j(t,t-2)} + \beta_2 Country_{j(t,t-2)} + \beta_3 Firm_{i,k,j,t} + u_j + \tau_{k,t} \\
& + \varepsilon_{i,k,j,t}
\end{aligned} \tag{2}$$

where  $Growth_{i,k,j(t,t-2)}$  is the annual average growth rate of sales for firm  $i$  in industry  $k$ , and country  $j$ . As explained earlier, the average annual growth rate is calculated over three years, between year  $t$  and  $t - 2$ .  $Fiscal_{j(t,t-2)}$  denotes the amount of fiscal consolidation as a share of GDP. This variable can also represent our alternative and more specific measures of fiscal consolidation actions in the form of tax hikes, spending cuts, current and capital spending cuts, all expressed as a percentage of GDP. While  $Country_{j(t,t-2)}$  is a set of country-level control variables,  $Firm_{i,k,j,t}$  is a set of time varying firm-level characteristics. We also include  $u_j$  to account for time-invariant country characteristics. Lastly,  $\tau_{k,t}$  represents industry  $x$  year dummies to control for industry-level business cycles.

A number of statistical pitfalls may arise when measuring the impact of aggregate policy variables on the economic behavior of micro-units. The fact that  $Fiscal_{j(t,t-2)}$  is measured at the country-year level, while  $Growth_{i,k,j(t,t-2)}$  is measured at the firm level largely allies downward bias in the OLS standard errors thereby inflating test statistics. We, therefore, cluster the robust standard errors at the country-year level since our aggregate policy variable,  $Fiscal_{j(t,t-2)}$ , is measured at the same level. Moreover, potential endogeneity problems may occur from the inclusion of discretionary fiscal policy variables which might not be orthogonal to developments of the business cycle. For example, there might be some fiscal consolidation efforts resulting from current economic conditions affecting firm performance which would be reflected in fiscal policy actions, thereby causing problems of reverse causality. The action-based fiscal consolidation measures we employ mitigates these biases to some extent because they are designed to exclusively capture exogenous fiscal adjustment efforts unrelated to cyclical conditions.<sup>7</sup> Nevertheless, we cannot entirely exclude the risk of reverse causality and potential endogeneity given the different levels at which the variables are observed and the fact that our econometric specification provides average estimates. Hence, later in the paper we supplement our analysis with instrumental variable (IV) estimations and other robustness tests designed to address these issues.

### 3. Empirical evidence

#### 3.1. Baseline results

We begin our analysis by exploring how fiscal consolidation actions – motivated by reductions in government debt – affect firm growth performance in developing countries. The results are presented in Table 1 for the full sample of firms across the 98 developing countries. We first estimate equation (2) using OLS (column 1). In columns (2)-(5), we include country and sector-year fixed effects.<sup>8</sup>

#### < Table 1 >

The estimate of  $Sales(-2)$ , statistically significant across all columns, suggests the presence of a ‘catching-up’ effect, meaning that firms with lower performance in year  $(t - 2)$  tend to have better growth prospects in year  $t$ . Fiscal consolidation efforts implemented to reduce government debt are negatively and significantly associated with firm performance at the 5 percent level (column 2). Hence, debt-driven fiscal consolidation has contractionary effects on the growth of firms in developing countries. In column (3), we include an indicator variable which equals 1 when fiscal consolidation exceeds 1.5 percent of GDP. This is interacted with our measure of fiscal consolidation to shed light on the effect of large fiscal consolidations on firm performance. Interestingly, with the large fiscal adjustment variable introduced in the specification, both the magnitude and statistical significance of the (negative) coefficient on fiscal consolidation increase. However, firm performance is also stimulated by large fiscal consolidations, implying that the contractionary effect is mitigated when consolidation exceeds 1.5 percent of GDP. This is a novel finding which is consistent with the expansionary effects of large fiscal consolidations. As claimed by Giavazzi and Pagano (1990), severe or large fiscal adjustments anticipate forward-looking expectations about future economic output.

These results are not only statistically significant, but economically meaningful. A one percentage point increase in fiscal consolidation as a share of GDP leads to a reduction of firms' sales growth of about 3.97 percentage points. However, the growth of firms' sales may increase by the same proportion (i.e., 3.97 percentage points) if changes in fiscal consolidation are above 1.5 percent of GDP (column 3).

Next, following Leigh et al. (2010), we explore whether expansionary fiscal adjustments are more likely to occur in economies with high perceived sovereign default risks. In doing so, we split the sample into two groups of high (above-median) and low (below-median) sovereign debt levels, as reported in columns (4) and (5). The results suggest

that for the subsample with relatively low sovereign debt, fiscal tightening does not necessarily influence firm performance. Nevertheless, firm performance falls significantly following fiscal consolidation for the subsample with relatively high sovereign debt, and this negative effect is mitigated for large fiscal consolidations. This finding is in line with the view that large fiscal adjustments in favor of bringing sovereign debt to sustainable levels actually help high-debt-risk countries to rebuild their credibility because of the expectation of better economic performance in the future. That said, we ought to acknowledge that the result in column 5 may be dependent on the chosen measure of perceived default risk on sovereign debt, which makes it difficult to be certain about the underlying mechanisms at play. The literature does suggest that economic agents consider larger fiscal adjustments to be more credible as they anticipate forward-looking expectations about long-term economic performance and sovereign default risk (Alesina & Ardagna, 2010). It has also been argued that large fiscal consolidations, especially in highly indebted countries, ease the default risk premium because the consolidation improves the credibility of the country's policymakers in meeting their obligations (Ağca & Igan, 2019). Hence, it is indeed possible that reducing debt when it is very high reassures investors who are therefore less fearful of potential tax hikes in the medium to long term to pay off the debt. But though plausible, we are unable to corroborate this hypothesized 'virtual debt burden' rationale.

The estimates of country-level control variables mostly align to those reported in the literature. Firm performance increases with real GDP growth and GDP per capita (albeit statistically insignificant) implying that in rapidly growing economies and with higher income per capita, firms enjoy higher sales growth. In developing countries, firms are also growing with higher inflation, which is plausible when acknowledging they may tend to increase the price of goods and services more than the rise in their costs of production. IMF programs seem to improve firms' sales growth in developing countries with relatively high sovereign debt.

Regarding the association between firm performance and firm-level variables, younger firms tend to have higher sales growth than older ones. On the other hand, foreign-owned firms tend to have higher sales growth than state-owned ones and being an outward-looking (exporting) firm also helps to increase firm performance. Finally, larger firms tend to experience higher growth (the *SIZE* coefficient being positive in all regressions).

### *3.2. Tax hikes versus spending cuts*

Several studies suggest that fiscal adjustments based on spending cuts are less likely to have contractionary effects on output than those based on tax hikes (e.g., Ağca & Igan, 2019; Alesina & Ardagna, 2010; Guajardo et al., 2014). Our own results on how the composition of fiscal consolidation packages affects firm performance in developing countries are summarized in Table 2. In columns (1) and (2) we start with specifications that only include tax hikes while in columns (3) and (4) we only include spending cuts. Next, in columns (5) and (6) we include both tax hikes and spending cuts.

The results suggest that debt-driven consolidation efforts based on tax hikes are more contractionary than those based on spending cuts, even though the latter are not statistically significant (column 5). In column (6), we add the interaction effects of fiscal consolidation with tax hikes and spending cuts above 1.5 percent of GDP to evaluate the effects on firm performance. We observe that a one percentage point increase in tax hikes and spending cuts reduces firm growth by about 4.45 and 2.73 percentage points, respectively, in developing countries. This negative impact is alleviated by large tax hikes (albeit statistically insignificant) and spending cuts. These are novel results confirming that spending-based adjustments are less likely to have contractionary effects on firm performance than tax-based adjustments. There may be several reasons behind these findings. First, consolidations based on spending cuts usually tend to be affiliated with monetary easing than consolidations based on tax hikes (Guajardo et al., 2014; Leigh et al., 2010). Second, in the short-run, government spending reversals alter the impact of spending cuts (Corsetti et al., 2012). Third, consolidation actions based on spending cuts are less costly in terms of short-run output losses than those based on tax hikes (Alesina et al., 2018).

**< Table 2 >**

Next, in order to ascertain which components of spending cuts are more prone to cause expansionary effects on firm performance, we decompose our spending-based consolidation variable into current and capital spending cuts.<sup>9</sup> Both measures are computed as a share of GDP and the results are summarized in columns 7-10 of Table 2. Column (7) includes the effects of current and capital spending cuts as constitutive terms, whereas column (8) adds the interaction effect of both these measures when they exceed 1.5 percent of GDP. In columns (9) and (10), we include the effects of both the spending cuts measures and tax hikes simultaneously.

We find that capital spending cuts are more likely to have contractionary impacts on firms' sales growth than current spending cuts (the latter being statistically insignificant). A

one percentage point increase in capital spending cuts reduces firm performance by about 3.32 percentage points, an effect mitigated when capital spending cuts are higher than 1.5 percent of GDP (column 10). This finding is consistent with that of Arizala et al. (2017) who find that, in African countries, a drop in public investment has a more contractionary effect on output than a reduction in public consumption. Indeed, reductions in capital spending are likely to lead to a deterioration of public capital, thereby hindering long-term growth. In developing countries, this adverse impact can be mitigated by reducing unproductive current and capital outlays.

### *3.3. Does fiscal consolidation harm some firms more than others?*

Our findings so far reveal that debt-driven fiscal consolidation policies are negatively correlated with firm performance in developing countries and this negative impact is reversed for large fiscal adjustments. In this section, we investigate whether the effect of fiscal consolidation is contingent on certain aspects of firms' characteristics. We distinguish between small, medium and large firms according to the number of employees, and firms that are exporters or domestic, depending on whether a proportion of their sales is directly exported or not. The results are summarized in Table 3. Column (1) suggests that the adverse impact of fiscal tightening on firm performance loses its statistical significance if we consider only small firms. However, after we include large fiscal consolidation, the results are very similar to those of Table 1.

#### **< Table 3 >**

Compared to small firms, medium sized firms appear to be more affected by the adverse impact of fiscal consolidation (columns 2 and 5). Although no direct interpretative comparison of the coefficients associated with the fiscal consolidation measure can be made across different regressions with different sample sizes, the same pattern would seem to hold true when comparing the effect of fiscal policy actions on medium and large firms (columns 5 and 8), with the latter being affected even more. In terms of fiscal consolidation packages, tax hikes also have more contractionary effects than spending cuts and this impact becomes more harmful as we move from small to large firms. This result differs from that of Aǧca and Igan (2019), who found a more contractionary effect of fiscal consolidation on loan spreads in small firms than large firms. Nevertheless, because our sample focuses exclusively on firms in developing countries, it is reasonable to expect that tax authorities in these countries

face several challenges with tax hikes because of the many unregistered small businesses working in the shadow economy. Therefore, medium and large firms may be the most affected by fiscal consolidation actions because they tend to operate in the formal sector.

Turning to the effect of fiscal consolidation on exporting and domestic firms, fiscal tightening is more detrimental for the latter group of firms than the former. We find that for a one percentage point increase in fiscal consolidation, sales growth drops by around 1.60 (albeit not significant) and 4.47 percentage points in exporter and domestic firms, respectively (columns (11) and (14)). Both effects are mitigated by large consolidations. These results further support the idea of exporting (or multinational) firms enjoying a foreign tax advantage since they have the resources to move profits to low-tax jurisdictions as empirically supported by Rego (2003), Gumpert et al. (2016) and Hearson (2018).

### *3.4. Robustness Checks*

#### *3.4.1. Endogeneity concerns*

Questions may arise regarding the orthogonality of action-based fiscal consolidation, which is based on the willingness of policymakers to reduce public debt. However, the amount of public debt incurred may not be exogenous to economic growth and, therefore, not exogenous to the dynamism of the domestic private sector. To mitigate these concerns, we undertake IV estimations.

Our strategy in identifying appropriate instruments was initially to consider the level of public debt which, as argued by Collignon (2012) and Yartey et al. (2012), can be a good predictor of future fiscal consolidation actions. However, since part of the fluctuations in fiscal consolidation episodes are directly related to reducing the level of public debt, this may not be a suitable instrument on its own. Hence, we look for other potential sources of exogenous variation in public debt, namely foreign exchange earnings (associated with countries that are heavily dependent on commodity exports) and controlling for episodes of debt crises. We use dummies to represent these categories,<sup>10</sup> which together with the level of public debt, constitute our set of instruments. The IV estimates are presented in Table 4 where government debt/GDP is removed from the country-level control variables. In these estimations, we also assess the sensitivity of the results by removing the IMF dummy (column 3 and 4) and adding a new dummy (column 5 and 6) representing internet access (equal to 1 if the firm has an internet website, 0 otherwise). As shown by Clarke et al. (2015), internet access has been a significant predictor of sales growth in developing countries. The results corroborate the baseline estimates of Table 1 in that fiscal consolidation retains its

negative effect on firm performance, albeit with higher magnitude than under OLS. However, this negative effect diminishes with large fiscal consolidations (Table 4, column 2) so the overall results are consistent with those reported in column 3 of Table 1. Moreover, after removing the IMF dummy from the set of control variables, the effects of fiscal consolidation on firm growth continues to be negative and significant (column 3) as this effect is mitigated with large consolidation measures (column 4). In columns 5 and 6, the signs and significance of our consolidation measures remain intact, while the effect of the newly introduced control variable, internet access, is positive and statistically significant, suggesting that having a website positively influences the sales growth of firms.

**< Table 4 >**

To further tackle endogeneity concerns, we present in section SA3 of the ‘Supplementary Material’ online appendix regressions relating to a multi-level mixed model, in which the highest level represents the country, and the lowest level represents the firm. This specification has the advantage of capturing both within and between country effects of fiscal consolidation. These results, shown in Table SA3, are also consistent with our baseline results.

#### *3.4.2. Sample dependence and specification tests*

Because fiscal consolidation is measured at country level and our sample includes 98 developing countries, one may suspect that our findings are sensitive to sample dependence and potential biases due to misspecification and/or outliers. To address these concerns, we undertake robustness checks by re-estimating our baseline specification using various sub-samples, where we drop specific regions, sectors and firms from the full sample and assess the validity of our results. Section SA4 of the online appendix provides further details of these sub-samples tests, leading to an extensive set of results (presented in Tables SA4.1-SA4.4). All estimations indicate that the significance of fiscal consolidation of firm performance is negative, mitigated to some extent by large consolidations, suggesting that our results are not driven by sample selection.

Additionally, sections SA5-SA7 of the online appendix present and discuss several specification tests including the investigation of the nonlinear effect of fiscal consolidation on firm sales growth, whether the nonlinearity is dependent on the state of development, and the specific category of firms based on their size, ownership structure and/or outward-looking activities. Furthermore, in section SA8 we run additional robustness tests to ensure that our



main results are not adversely affected by omitted variable bias (which may also act as a source of endogeneity), alternative classifications of fiscal consolidation, and alternative measures of firm performance, all of which reassure as to the validity and reliability of our findings. We explain these tests and report the results in the ‘Supplementary Material’, and our findings are robust to these specification issues.

### 3.5. Exploring the infrastructure channel and the heterogeneous effects of fiscal consolidation

Although there exist several theoretical mechanisms to explain the adverse impact of fiscal consolidation on firm performance, as discussed in the introduction section, one potential channel encouraging firm growth especially in developing countries is the provision of public infrastructure to support the capital investments of the private sector. As the performance of the private sector depends largely on firms’ access to infrastructure services such as electricity, transport, and telecommunications (Chauvet and Ferry, 2021), we take our analysis a step further by investigating how the provision of public infrastructure affects the relationship between fiscal consolidation and firm growth. Specifically, given the results in Table 2 relating to capital spending cuts, we assume that if the perception of constraints relating to infrastructure provision adversely affects firm performance, then firms in industries that are functionally more reliant on infrastructure services would be disproportionately affected by debt-driven fiscal consolidation. To investigate this effect, we modify equation 2 (in line with Chauvet and Ferry, 2021) to incorporate interaction effects of fiscal consolidation with infrastructure intensity:

$$\begin{aligned}
 Growth_{i,k,j(t,t-2)} &= a + \delta Fiscal_{j(t,t-2)} * INTENSITY_k + \gamma_{j,t} + \beta Firm_{i,k,j,t} + u_k + \tau_t \\
 &+ \varepsilon_{i,k,j,t} \qquad \qquad \qquad (3)
 \end{aligned}$$

where the country-level variables in equation (2) are replaced by country-year dummies,  $\gamma_{j,t}$ . Here we control for industry fixed effects,  $u_k$ , as well as year dummies  $\tau_t$ . The interaction term  $Fiscal_{j(t,t-2)} * INTENSITY_k$  allows for the heterogeneous effect of fiscal consolidation at industry level as we include, in the estimation, three different infrastructure intensity measures,  $Electricity_k$ ,  $Transport_k$  and  $Telecommunication_k$ , with data collected from WBES.<sup>11</sup> The results are presented in Table 5. As shown in columns (1)-(3), the interaction between fiscal consolidation and perception of access to electricity, transport, and

telecommunication as obstacles to business is negative and significant in all three specifications, implying that fiscal consolidation actions are more detrimental to the growth of firms that depend heavily on infrastructures. The magnitude of the effect of fiscal consolidation is more pronounced in firms that perceive telecommunication as an obstacle for business, followed by electricity and transport. In line with the findings of Table 2, these results confirm the relevance of the infrastructure channel in the transmission of the effects of fiscal consolidation on firm growth.

< Table 5 >

#### **4. Conclusion**

This study set out to examine the effects of fiscal consolidations on growth in developing countries, taking a micro approach, by focusing on the impact on firm growth. We construct a new dataset of more than 544 fiscal consolidation actions based on the narrative approach suggested by Romer and Romer (2010) and Devries et al. (2011). By combining this dataset with the cross-sectional World Bank Enterprise Surveys database covering 118,279 firms in 98 developing countries, we show that fiscal consolidations are significantly associated with lower firm growth. The negative association is mitigated when fiscal consolidations are large. We find that fiscal tightening is more detrimental to the growth performance of non-exporting firms, and firms in industries that are more dependent on public infrastructure. Moreover, small firms are less affected by fiscal retrenchments than large firms in developing countries. In terms of fiscal consolidation packages, consistent with existing literature, we find that debt-driven consolidation efforts based on tax hikes are more contractionary than those based on spending cuts. This contractionary effect tends to diminish particularly when spending cuts are large capital spending cuts.

The findings of this study have three main implications. First, greater efforts are needed to ensure that high-debt-risk governments are committed to a fiscal discipline which disallows them from abandoning planned consolidation actions before their implementation. This could be achieved by establishing fiscal rules. Second, the probability of success of fiscal consolidation policies also depends on its size. We have shown that large consolidations are encouraged to be pursued in developing countries as they tend to have a more positive impact on firms' sales growth. This is particularly important because the likelihood of such measures to be successful is higher than less ambitious measures as we determine that beyond an inflection point of 1.5% of GDP (or 1.69% going by the estimate of the nonlinear specification), fiscal consolidation ceases to be detrimental to the growth rate of

firms. Last, the composition of the fiscal adjustment also plays an important role for success. We have demonstrated that adjustments based on spending cuts tend to be more effective than tax hikes, possibly due to limited fiscal capacity in many developing countries. However, we also understand that given the perceived low tax burden in developing countries, they also have greater scope to implement tax-based consolidations because spending cuts, *per se*, may not be sufficient to bring sovereign debt to sustainable levels.

Despite the validity and significance of our findings based on firm-level data, which offer rich information, a few final caveats are in order. First, although WBES claims representativeness and country-to-country comparability on the basis a standardized stratified random sampling strategy along with a high-quality sampling frame, the survey adopts a ‘universe of inference’ limited to the ‘formal’ private sector. This means that some other forms of establishments that are not uncommon in developing countries such as cooperatives and other collectives, not to mention those entities populating the shadow economy (which still constitutes a large proportion of enterprises in the developing world), are not captured by the WBES data. Second, it must be acknowledged that treatment of a fiscal consolidation action as a sort of national shock at the firm level, inevitably forced us to implicitly assume that such a shock will affect all regions where firms are located, within each country, in the same way, irrespective of differences in sub-national levels of resources that could be deployed to react to such fiscal contraction. Finally, the decomposition of high and low debt by the median classification we use may not be the most appropriate in so far as it may bear little relation with how the perceived sovereign risk of countries is determined. Further research, therefore, is needed to address the complexity of this measure which is typically denominated in a foreign currency and characterized by different degrees of maturity. These caveats provide profitable avenues for further research.

## Notes

1. As noted by Kose et al. (2020), the global economy has experienced four waves of rapid debt accumulation in emerging and developing economies over the past 50 years, but the latest wave of debt, which started in 2010, stands out mainly for its exceptional size and speed.
2. These include sources such as the African, Asian, and Inter-American Development Banks, which provide relevant country reports we consulted.
3. See section SA1 of the online appendix for further discussion of this approach alongside illustrative cases of action-based fiscal consolidations that were not fully implemented and therefore excluded from our consideration. Section SA2 provides further details of the WBES survey.

4. In our sub-sample of young firms (1-5 years old), we could only include firms that were either 4 or 5 years old as they were the only eligible ones to participate in the survey and provide their annual sales figures 1 year and 3 years before the survey took place.
5. Despite the inclusion of this control variable, it should be noted that its contribution to sales growth could also be through fiscal consolidation measures.
6. We follow similar specifications on the effects of fiscal policy measures at the micro-level (see Ağca & Igan, 2019; Chauvet and Ferry, 2021).
7. Romer and Romer (2010) distinguish between legislated tax changes implemented to attain or maintain normal growth, which they call endogenous, and those changes not primarily due to current or projected economic conditions, which they call exogenous. The former includes purely countercyclical legislated tax changes as well as legislated changes undertaken because of changes in government spending, while the latter includes legislated tax changes motivated by the desire to reduce fiscal deficits and changes undertaken to promote long-run growth. Our fiscal consolidation measure records the first typology of the latter, as we concentrate on changes primarily motivated by the desire to reduce government debt, that are thus deemed to be not systematically associated with current economic conditions.
8. Due to the highly unbalanced panel, we resort to controlling for time-invariant heterogeneity using sector and country fixed effects.
9. Due to the high heterogeneity on how developing countries report their typologies of taxation, we focus on spending cuts only as decomposition based on tax-based consolidations was not possible.
10. The effect of foreign exchange earnings is qualified by creating a ‘commodity exports’ dummy taking value 1 (0 otherwise) if a country has more than 60 percent of its total merchandise exports composed of commodities (according to UNCTAD annual reports). The ‘debt crisis’ dummy is similarly defined following the classification and data provided by Laeven and Valencia (2020).
11. In the WBES survey, business owners and top managers are asked three questions about their perceptions of access to electricity, transport, and telecommunication as obstacles to their business activities. Each of the three questions is formulated as follows: “How much of an obstacle is electricity/transport/telecommunication to the current operations of this firm?”. The answers are ordered from 0 (not an obstacle) to 4 (extreme obstacle). In line with Harrison et al. (2014) and Chauvet and Ferry (2021), we aggregated the three exogenous measures at the industry level.

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## Data availability statement

The online supplementary material includes additional information relating to our data collection and estimations. All the data and codes used in this study are available upon request from the corresponding author.

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