

# Post Covid-19 Firm-Level Government Support in Egypt: Uneven Allocation and Unequal Effects

Amirah El-Haddad and Chahir Zaki

# **POST COVID-19 FIRM-LEVEL GOVERNMENT SUPPORT IN EGYPT: UNEVEN ALLOCATION AND UNEQUAL EFFECTS<sup>1</sup>**

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## Abstract

The COVID-19 pandemic saw two sets of policy responses: lockdown to limit spread of the virus, which was a huge demand and supply shock, and government support to firms and individuals to offset the effects of this policy-induced shock. This paper explores the allocation and effectiveness of government support to firms in Egypt. We consider both financial support measures which were by and large already being implemented pre-COVID, as well as tax- and loan-related exemptions and deferrals. Our main findings show that government support has helped mitigate the effects of COVID-19, with a significantly larger, favorable impact on smaller, younger and private firms. However, although these firms apparently make better use of government support, they receive a disproportionately smaller share of it. In line with the emerging 'unsocial' social contract, government support has been chiefly determined by political connections and a captured industrial policy. This 'misallocation' reinforces the missing middle phenomenon which acts as a constraint as SMEs are unable to grow. Finally, to control for the endogeneity of support, we use an instrumental variable approach and a propensity score matching. Our results remain globally robust.

**Keywords:** COVID-19, effectiveness of government support, manufacturing, Egypt, political connections, missing middle, 'unsocial' social contract, financial support, tax and debt relief support measures.

**JEL Classifications:** D22, L10, L25, L29.

## ملخص

شهدت جائحة فيروس كورونا (كوفيد-19) مجموعتين من الاستجابات السياسية: الإغلاق للحد من انتشار الفيروس، والذي كان بمثابة صدمة كبيرة في العرض والطلب، والدعم الحكومي للشركات والأفراد لتعويض آثار الصدمة الناجمة عن هذه السياسة. تبحث هذه الورقة تخصيص الدعم الحكومي للشركات في مصر. وفعاليتها. ونأخذ في عين الاعتبار كلاً من تدابير الدعم المالي التي تم تنفيذها بالفعل بشكل عام قبل فيروس كورونا (كوفيد-19)، بالإضافة إلى الإعفاءات والتأجيلات المتعلقة بالضرائب والقروض. وتظهر النتائج الرئيسية أن الدعم الحكومي قد ساعد في التخفيف من آثار فيروس كورونا (كوفيد-19)، مع تأثير إيجابي أكبر بكثير على الشركات الصغيرة والناشئة والخاصة. ومع ذلك، على الرغم من أن هذه الشركات تستفيد من الدعم الحكومي بشكل أفضل على ما يبدو، إلا أنها تتلقى حصة أقل منه بشكل غير متناسب. وفقاً للعقد الاجتماعي "غير الاجتماعي"، تم تحديد الدعم الحكومي بشكل رئيسي من خلال العلاقات السياسية والسياسات الصناعية التي تم الاستحواذ عليها. يعزز "سوء التخصيص" هذا الظاهرة الوسطى المفقودة والتي تعمل بمثابة قيد لأن الشركات الصغيرة والمتوسطة غير قادرة على النمو. وأخيراً، للتحكم في تأثير المتغير الداخلي للدعم، نستخدم منهج المتغير الفعال ومطابقة درجة الميل. وتظل نتائجنا قوية على الصعيد العالمي.

## 1. Introduction

The pandemic has had severe economic consequences around the world. Most countries have instituted full or partial lock-down measures to save lives during the pandemic. To mitigate the spread of the virus the Egyptian government instituted a partial lockdown as of March 2020. The lockdown restricted opening hours and movement with the exception of grocery shops and supermarkets (El-Tawil 2020). Further restrictions were introduced in April 2020 which lasted until the end of May 2020. Another round of less strictly-enforced restrictions were introduced during the second wave of COVID-19 from December 1st 2020 to January 2021.

However, protecting human life has an economic cost. Lockdown measures led to both demand and supply-side shocks which resulted in a global economic crisis. Substantial numbers of businesses have been forced to exit the market or to temporarily close. Global supply chains have been substantially disrupted resulting in increased supply costs limiting in turn firms' ability to enforce the quality and timeliness of contracts (Demertzis, and Maslloren 2020 and Ayadi et al. 2021). Sharma et al. (2020) use twitter data from NASDAQ to show that US firms faced grave difficulties in sustaining their supply chains.

In Egypt, despite the fact that there was positive GDP growth in 2021, manufacturing gross value added declined by nearly 6%. Construction and agriculture were the source of GDP growth during the pandemic (Ministry of Planning and Economic Development 2022). Consequently, numerous firms have shut down, suffered lower productivity, lost previous productivity gains and have seen their sales and profits shrink (Bloom et al. 2021). Surviving firms have adopted various strategies to cope with the pandemic such as reducing input costs through worker layoffs and salary adjustments for example.

To mitigate the shock on both firms and households the government of Egypt rolled out a full-fledged stimulus package. This included a number of fiscal and monetary measures. On the fiscal front, the government announced a \$6.13 billion package – equivalent to 1.8% of GDP (Krafft et. al. 2021). To support government revenues, a Corona tax of 1% has been levied on all public and private sector salaries and of 0.5% on state pensions. These revenues were supposed to fund fiscal measures to support negatively affected sectors, namely cutting taxes on dividends and real estate, fast-tracking payouts from the Export Subsidy Fund, expanding the Social Security and Pension Act's coverage; providing one-time stipends of EGP 500 for seasonal and temporary workers; and postponing the filing deadline for auditors and SMEs (El-Haddad 2020b).

With respect to monetary and financial policy, a preferential interest rate (8%) has been set for the loans of some industries such as tourism, manufacturing, agriculture and construction sectors, and on mortgages for low-income and middle-class housing. The aim of these measures was to counter the contractionary effects of the pandemic through encouraging industrial sector growth and

capital expenditure lending, and so help shrink the budget deficit. Furthermore, the Central Bank of Egypt (CBE) has provided short-term loans to micro-enterprises and small and medium enterprises (SMEs) of up to a year to cover their operational expenses. In addition, the share of bank loan portfolios that must be allocated to SMEs has been raised from 20 to 25 percent. The Financial Regulatory Authority (FRA) also announced a delay of up to 50% of the value of monthly installments for micro-borrowers. Our data show that postponement of loan installments repayment, delay of loan service payments, reductions and discounts on given loans and tax payment deferrals have been the most frequently used government support measures in the manufacturing sector in the country.

There are two important considerations in thinking about government support. The first relates to vulnerability and equity: whether to target sectors and/or firm types (e.g. micro and SMEs) most affected by the crisis, or to give support to those sectors or firms whose performance are most likely to be significantly improved with limited support. The second approach may imply giving support to those least in need of those in need. This is similar to considering targeting on poverty headcount versus the depth of poverty. Another analogy is the triage argument in medicine that when resources are limited those with the highest likelihood of survival should be supported and not those with the lowest.

The second consideration is the effectiveness of the actual support received by sectors or firms. Did support prevent firm closures, the laying off of workers or large reductions in revenues or profits? From an economic perspective, support should go where it is most effective. It may be the case that government support is most effective when given to the most vulnerable. In this case there is no equity trade-off. Whether this is the case is what the core of what this paper investigates.

But in Egypt, as in other countries with poorer governance, support can be shaped by the prevalent state-business relationships that are mediated by the excessive degree of capture of industrial policy. In Egypt, the ‘unsocial’ Social Contract emerging under liberalization meant that the state used trade, industrial and other economic policies to favour an emerging group of crony capitalists who in turn provided support for the regime (El-Haddad 2020a). Thus, it is important to look into whether the COVID19 crisis has induced a shift in the entrenched pattern of support.

In this paper, we analyze a new data set from our 2020/21 Egyptian Industrial Firm Behavior Survey (EIFBS) to first look into which types of firms have received government support, both pre and post-pandemic and the underlying determinants of the existing distribution. We then assess the effectiveness of this support in curbing the negative impacts of the shock. We focus on six main performance indicators: employment, revenues, losses in profits, reduction in working hours, layoffs and whether the firm has ever closed down since the start of the pandemic. The latter four

measures capture more the immediate impacts of pandemic induced short-term changes, whereas revenue and employment may be regarded as longer run effects.

Government support is divided into two broad categories: 1) Financial Support; and 3) Exemptions and Deferments. The former are further divided into: 1) financial and technical support towards factors of production; and 2) general and other financial support. While we cover all categories with the range of all 14 underlying government support measures, we pay particular attention to the top five used measures post-COVID. These all fall under the ‘Exemptions and Deferments’ category, which captures more the short-term support measures designed to swiftly mitigate the damaging effects of the crisis, which were received by about 84% of all firms receiving post-COVID support (see also Krafft et al. 2021 on types of firm support in Egypt). In contrast ‘Financial Support’ has generally been of a longer-term nature, already being received by many firms pre-pandemic.

Evaluating effectiveness of government support is a crucial question to inform the efficient use of limited government resources, improve budget allocations and to identify effective measures to strengthen firm resilience in the face of future shocks. The empirical literature assessing the effectiveness of these programs and especially on the region is still relatively scarce, this paper fills this gap. Bennedsen et al. (2020), use survey data for small, medium and large firms. They compare firms’ actual layoff and furlough decisions to the reported counterfactual decisions in the absence of government aid. Estimating that 81,000 fewer workers were laid off and 285,000 fewer furloughed they conclude that government support had been effective in preserving jobs. Similarly, Lalinski and Pal (2021), using data for Slovakian firms, show that government support has helped save jobs and sustain economic activity. This is different for high productivity privately owned and exporting firms in Portugal, which generally did not reduce their employment levels despite not having resorted to government support (Kozeniauskas et al. 2020).

We find that government support has helped mitigate the effects of COVID-19, with a significantly larger, favorable impact on smaller, younger and private firms. Thus, government support is most effective when given to the most vulnerable. However, although these firms apparently make better use of government support, they receive a disproportionately smaller share of it, which reinforces the missing middle phenomenon, which is further reinforced by persistent soft budget constraint faced by public sector firms. In line with the ‘unsocial’ Social Contract, government support has been chiefly determined by political connections and a captured industrial policy. Political connections are perpetuated by the fact that post-COVID support is in large part determined by pre-COVID government support. Those firms which received support pre-COVID also receive it post-COVID. There is a practical aspect to such an approach since systems of support were already in place pre-COVID, making it straightforward to identify firms which had previously received support, compared to identifying others that are unknown and most likely not politically

connected to government. Nonetheless, the fact that political connections influence the allocation of support in response to the pandemic may mean that it is not allocated in the most efficient manner.

In contrast, compared to Financial Support, post-COVID support on ‘Exemptions and Deferments’ had been relatively more allocated to favor smaller, younger and private firms where it is more effective. Hence there is some evidence that the COVID19 crisis has induced some shift in the entrenched pattern of support. This short-term relatively more crisis induced category of support has reduced post-COVID firm layoffs which is not the case for the pre-existing ‘Financial Support’ interventions. More nuances arise when looking at the six measures most frequently implemented post-COVID: export drawback, loan and tax related measures are the most effective. It has indeed been found that tax relief and support through the formal banking channel may not reach most firms in developing countries, but it can keep otherwise viable firms from slipping into informality Mora (2020).

With respect to the least frequently used financial support to the purchase and lease of industrial land is the most effective.

The following section describes the EIFBS data. Section three depicts the stylized facts, followed by a section on the methodology. Section five presents the empirical findings and section six proceeds with a discussion of these results and concludes.

## **2. Data**

We use unique and recently collected data from the self-designed 2020/21 Egyptian Industrial Firm Behavior Survey (EIFBS) of 2,383 Egyptian manufacturing firms. The data were collected at the beginning of the second wave of COVID-19 extending to the height of it<sup>4</sup>. EIFBS firms comprise a multistage stratified sample drawn from the 2017 economic census sample of 33,331 establishments, which is itself drawn from a sample of 117,149 establishments, the latter covering three other censuses, namely the population, housing and establishments’ census.

The EIFBS sample design is based on three parameters to ensure that the sample produces representative and precise estimates at the national level. These parameters are number of employees, region (urban governorates, lower and upper Egypt) and economic activity level (2 digits). The sample frame, however, excludes firms with less than 5 employees and thus is only representative of small, medium (SMEs) and large enterprises. This also implies that informal firms – albeit present – are underrepresented in our sample.

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<sup>4</sup> Precisely between November 19<sup>th</sup> 2020 and the 5<sup>th</sup> of February 2021.



We oversampled by selecting a sample of 3,149 establishments in order to be sure to obtain the target number of 2,200. First, the sample was allocated proportionally among the three regions (urban governorates, lower Egypt, and upper Egypt), which cover 99.2% of industrial establishments in Egypt. A systematic random sample was drawn to select three governorates from each region using Probability Proportional to Size (PPS). The industrial establishments in each region were allocated among governorates proportional to their size (measured by employment). Next, a systematic random sample was used to select the establishments in each governorate after sorting the establishments according to the number of employees and economic activity at the 4 digits level. Two questionnaires were administered, one for firms that are still in operation, and another, very similar one<sup>5</sup>, for firms that have exited the market or have temporarily shut down operations. The response rate is 75%, meaning that we successfully interviewed 2,383 establishments of which 2338 are in operation and 45 firms that have either exited the market or are temporarily closed. Of the 766 firms we could not interview, an unknown number, and presumably a much higher proportion, have also exited the market. The questionnaire includes 14 modules: basic firm identification data, firm size, firm expectations on recovery and potential exit, changes in firm performance, pandemic transmission channels, ownership and management characteristics, innovation, management practices and use of information technology (IT), production costs, obstacles to operation, exports and global value chains, obstacles to exports, worker training and government support.

As per government support, our analysis focuses on all types of government support before and after the pandemic. We distinguish between financial and non-financial support. Financial support is handed to the firm in the form of direct monetary payments. Other types of support fall under exemptions or deferment of due payments by the firm to government or banking institutions. Exemptions and Deferments capture more the short term nature of support measures designed to swiftly dim the damaging effects of the crisis on employment or revenue for example.

In detail these two broad categories can be divided in three subcategories. We divide 'Financial Support' into two subcategories. First is financial and technical support towards factors of production for: 1. the purchase or lease of land; 2. workers' insurance payments; 3. preparing tenders, auctions or bids; and 4. for the production process. The second sub-category is general and other financial support for: 1. feasibility studies; 2. legal fees; 3. general financial support; 4. swift repayment of old state dues; and 5. refund of export burdens (export drawback). Exemptions and Deferments cover: 1. postponement of repayment of bank loan installments; 2. reduction or discount on bank loans; 3. deferral of loan service payments after the due date; 4. deferral of tax payments (income / sales) and 5. exemptions or reductions of tax payments (income / sales).

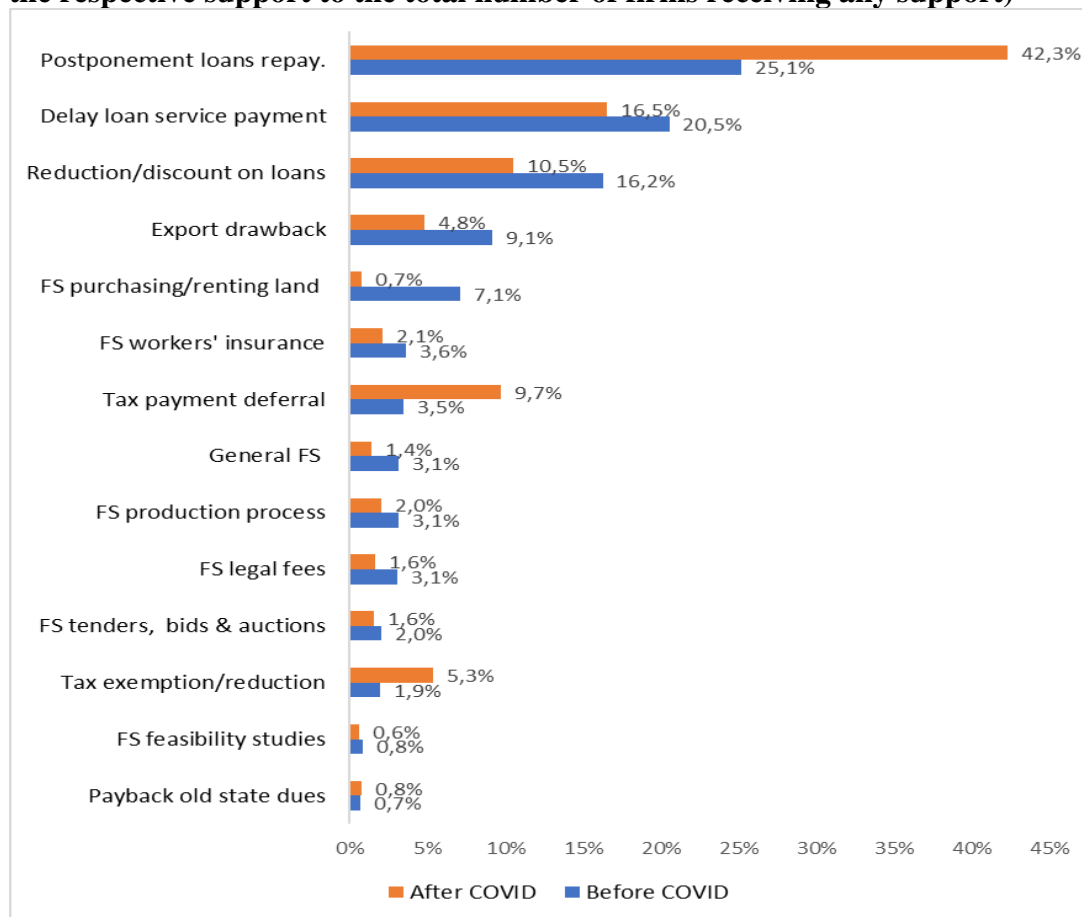
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<sup>5</sup> Only four modules are slightly different. The main difference is that for temporarily closed or closed firms there are no values for current variables such as production, exports, employment or revenues.

### 3. Stylized Facts

Numbers of firms receiving any form of government support has increased by just under a third, increasing from a total of 383 firms pre-COVID to 506 post. Still a modest share presenting about a quarter of all surveyed firms. The frequency of implemented support measures has increased by 17% from 886 to 1035. Figure 1 shows that there has been notable shifts in the types of support measures in response to COVID-19. Three categories have nearly doubled in terms of proportion of use. They fall under the Exemptions and Deferrals support category: postponement of loan repayments (42.3% of all firms receiving support compared to just 25% prior to COVID); tax payment deferral (9.7% compared to 3.5%) and tax exemptions or reductions (5.3% compared to 1.9%). These three in addition to the other two measures of this category, namely deferral in loan service payments (16.5%) and reductions and discounts on loans (10.5%), represent the most measures implemented post-COVID, precisely 84% of all firms receiving support have received any of these 5 measures. In comparison, together with the three loan-related measures, export drawback and financial support with purchasing or renting of land represented the top five administered government support measures prior to the pandemic.

**Figure 1: Structural shifts in government support after COVID-19 (share of firms receiving the respective support to the total number of firms receiving any support)**



Source: Authors' own elaboration using the EIFBS. Note: FS stands for financial support.

## **COVID-Support and Firm Characteristics**

There is a dominance of large firms receiving post COVID-19 financial support (Figure 2), both in support of factors of production, general and other types (e.g. for feasibility studies or legal fees). In contrast, SMEs have received above average Exemptions and Deferments such as postponements to repay loans or their service, reductions in taxes and deferral of payments. This is in contrast to wide evidence that COVID-19 specific support has disproportionately reached SMEs (Freund 2021; El-Haddad et al. 2021).

Similarly, older firms – with a mean age above the median of 20 years - have disproportionately received greater ‘Financial Support’ compared to younger firms<sup>6</sup>, particularly the support directed at factors of production (Figure 3). The majority of the ‘Exemptions and Deferments’ goes to the younger firms, in line with the announced purpose of this category’s measures.

In terms of firm ownership, the split for receipt of financial support for factors of production is more or less equal, with the exception of public firms receiving a higher proportion for land purchase or lease (59%) and for feasibility studies (73%, Figure 4). Another exception is export drawback which goes predominantly to private sector firms. As intended by the short term debt and tax support measures, private firms have indeed received the majority of deferments than have their public counterparts.

## **COVID-Support and the History of Support and Political Connections**

Included among our potential determinants of support receipt is the history of received support as well as political connections known to be binding in the majority of MENA countries. Figure 5 indicates that firms that have been receiving government support in the past, especially that of a financial and longer term nature, are very likely to be the ones also receiving the same type of support post COVID-19 (Figure 5). Indeed, only 0.5% of all firms have received ‘Financial Support’ post-COVID while not having received it prior to COVID (Table A1). Old structures of support are already in place which makes identifying those firms straightforward compared to others. The same is not strictly true with additional support provided under ‘Exemptions and Deferments’ designed to directly target the effects of the crisis and to potentially reach new segments of firms. In fact, over 10% of firms were newly targeted with measures of that category post-COVID.

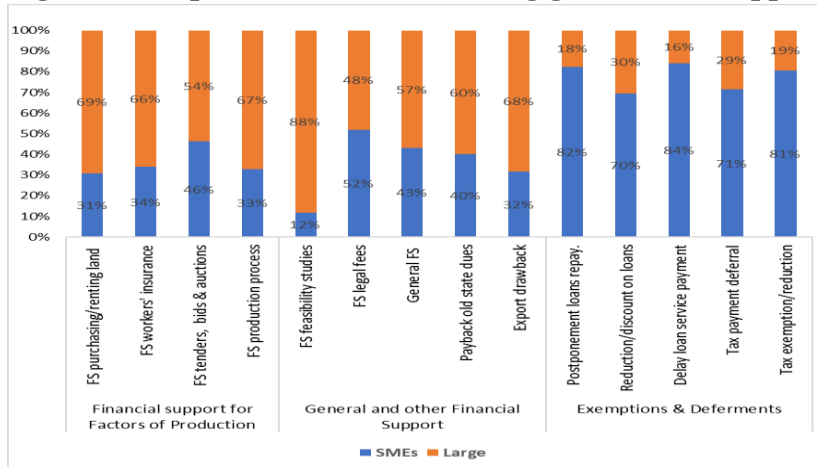
A firm is said to be politically connected if it has or ever had a government official among its owners, managers or board of directors. On average a larger proportion of politically connected firms are receiving post COVID-19 financial support with the exception of trivial support such as with legal fees and tenders (Figure 6). Export drawback support hardly goes to politically

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<sup>6</sup> With the exception of Export Drawback which is equally split between old and younger firms.

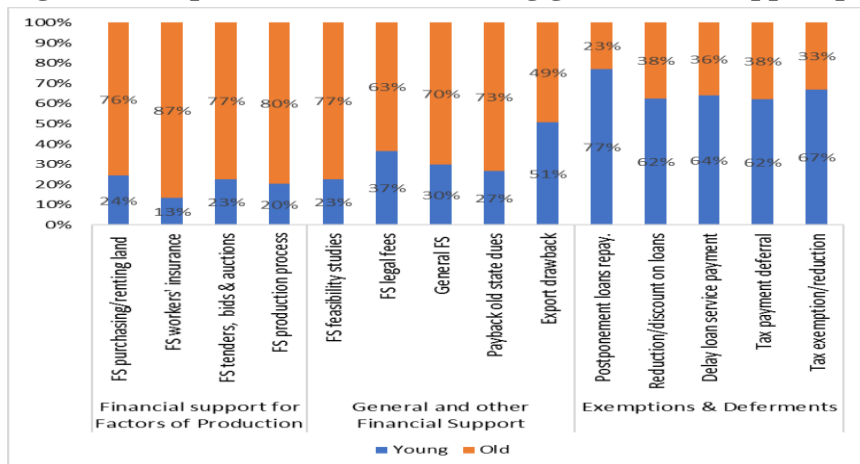
connected firms (PCF). PCFs are unlikely to be exporters in the first place – as are public firms - since they largely benefit from the captive domestic market. Non-politically connected firms receive the bulk of short term debt and tax related facilitations.

**Figure 2: Proportion of firms accessing government support post COVID-19 – by firm size**



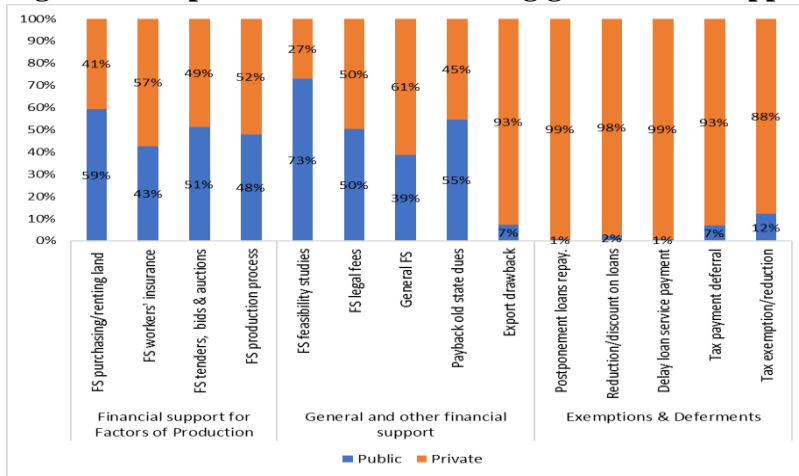
Source: Authors' own elaboration using the EIFBS. Note: FS stands for financial support.

**Figure 3: Proportion of firms accessing government support post COVID-19 – by firm age**



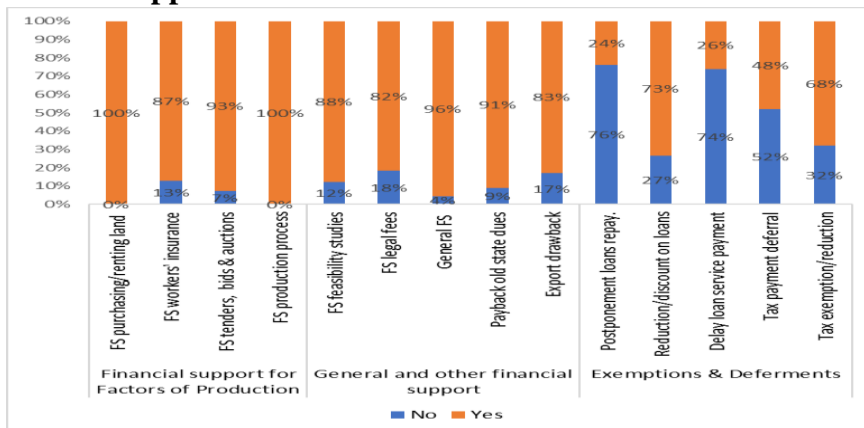
Source: Authors' own elaboration using the EIFBS. Note: FS stands for financial support.

**Figure 4: Proportion of firms accessing government support post COVID-19– by ownership**



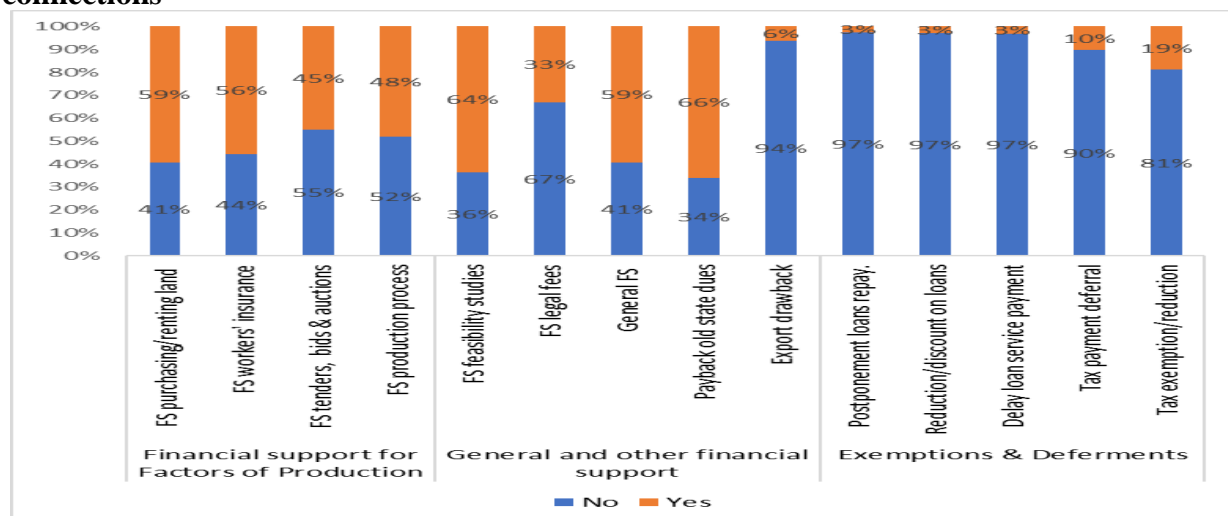
Source: Authors' own elaboration using the EIFBS.

**Figure 5: Proportion of firms accessing government support post COVID-19 – by prior COVID support**



Source: Authors' own elaboration using the EIFBS. Note: Yes (No) indicates firms (not) receiving support prior to COVID-19.

**Figure 6: Share of firms receiving government support after COVID-19 -by political connections**



Source: Authors' own elaboration using the EIFBS.

Note: Yes (No) indicates firms that are (not) politically connected.

### Government Support and Firm Performance

Table 1 presents a cross-tabulation of the mean value of each performance indicator against the government support measures. The data show that performance is positively associated with support. Levels of employment and revenues are greater, layoffs and reductions in profits and working hours are less post COVID-19 compared to their non-benefitting counterparts, as is being less likely to have ever closed since begin of the pandemic.<sup>7</sup>

<sup>7</sup> In order to examine whether performance variables differ significantly between the firms that received support vs. those that did not, we run a t-test for the two groups. The results show that the differences are statistically significant especially for employment, profit decreases, and the ever being closed status.

**Table 1: Firms' performance and government support**

|                   |   |                               | Without support |                     |               |                     |          | With support |              |                     |               |                     |          |             |
|-------------------|---|-------------------------------|-----------------|---------------------|---------------|---------------------|----------|--------------|--------------|---------------------|---------------|---------------------|----------|-------------|
|                   |   |                               | Ln (employ.)    | Ln(monthly Revenue) | Reduced hours | Decrease in profits | Lay-offs | Ever-closed  | Ln (employ.) | Ln(monthly Revenue) | Reduced hours | Decrease in profits | Lay-offs | Ever-closed |
| Financial Support | Financial support for Factors of Production | FS purchasing & renting land  | 3,06            | 12,00               | 0,38          | 0,47                | 0,04     | 0,39         | 4,81         | 14,23               | 0,27          | 0,51                | 0,00     | 0,19        |
|                   |   | FS workers' insurance         | 3,04            | 11,98               | 0,38          | 0,47                | 0,04     | 0,40         | 4,73         | 14,18               | 0,37          | 0,20                | 0,00     | 0,12        |
|                   |   | FS tenders, bids & auctions   | 3,05            | 11,99               | 0,38          | 0,47                | 0,04     | 0,39         | 4,71         | 14,15               | 0,22          | 0,36                | 0,00     | 0,03        |
|                   |   | FS production process         | 3,04            | 11,97               | 0,38          | 0,47                | 0,04     | 0,40         | 4,97         | 15,19               | 0,29          | 0,11                | 0,00     | 0,03        |
|                   | General and other Financial Support         | FS feasibility studies        | 3,06            | 12,00               | 0,38          | 0,47                | 0,04     | 0,39         | 5,20         | 13,39               | 0,00          | 0,68                | 0,00     | 0,13        |
|                   |   | FS legal fees                 | 3,05            | 11,99               | 0,38          | 0,47                | 0,04     | 0,40         | 3,96         | 13,21               | 0,22          | 0,18                | 0,00     | 0,01        |
|                   |   | General FS                    | 3,05            | 11,99               | 0,38          | 0,47                | 0,04     | 0,39         | 4,43         | 14,07               | 0,23          | 0,04                | 0,00     | 0,15        |
|                   | Financial Support                           | Payback old state dues        | 3,06            | 12,00               | 0,38          | 0,47                | 0,04     | 0,39         | 4,58         | 14,29               | 0,32          | 0,35                | 0,09     | 0,10        |
|                   |   | Export drawback               | 3,04            | 11,98               | 0,38          | 0,47                | 0,04     | 0,39         | 5,23         | 15,25               | 0,37          | 0,28                | 0,01     | 0,21        |
|                   |   | Postponement loans repay      | 3,08            | 12,05               | 0,39          | 0,46                | 0,04     | 0,37         | 2,92         | 11,60               | 0,35          | 0,54                | 0,01     | 0,58        |
| Other Support     | Exemptions & Deferments                     | Reduction & discount on loans | 3,04            | 11,97               | 0,39          | 0,48                | 0,04     | 0,40         | 3,91         | 13,46               | 0,23          | 0,18                | 0,01     | 0,21        |
|                   |   | Delay loan service payment    | 3,07            | 12,00               | 0,39          | 0,46                | 0,04     | 0,38         | 2,85         | 12,21               | 0,23          | 0,64                | 0,00     | 0,70        |
|                   |   | Tax payment deferral          | 3,03            | 11,93               | 0,38          | 0,48                | 0,04     | 0,40         | 4,02         | 14,07               | 0,33          | 0,21                | 0,00     | 0,24        |
|                   |   | Tax exemption/reduction       | 3,05            | 11,96               | 0,39          | 0,48                | 0,04     | 0,40         | 3,65         | 13,79               | 0,25          | 0,21                | 0,05     | 0,15        |
|                   |   |                               |                 |                     |               |                     |          |              |              |                     |               |                     |          |             |

Source: Authors' own elaboration using the EIFBS.

#### 4. Methodology

In order to examine the determinants and the effect of government support on firms' performance, we proceed in two stages.

First, we analyze the determinants of receiving government support as follows:

$$Gov.Sup_{ijk} = \gamma_0 + \gamma_1 Z_{ijk} + \gamma_2 Pol.Con._{ijk} + Gov.SupBC_{ijk} + \epsilon_{ijk} \quad (1)$$

Where  $Gov.Sup_{ijk}$  is a dummy variable that takes the value of 1 if the firm  $i$  in sector  $j$  in governorate  $k$  benefited from any support program and zero otherwise,  $Z$  is a vector of control variables that indicates whether the firm is privately or publicly owned, is formal, is located in an industrial zone, is exporting and gives the firm's age<sup>8</sup> and size.<sup>9</sup> As shown in the stylized facts section above, two variables are expected to affect the likelihood of access to post-COVID government support, namely whether the firm is politically connected ( $Pol.Con.$ ) and whether it had access to any government support prior to COVID ( $Gov.SupBC$ ).

<sup>8</sup> Calculated as the difference between year of establishment and survey year.

<sup>9</sup> a categorical variable for small, medium and large firms.

Second, to examine the impact of government support on firms' performance, we run the following regression:

$$Y_{ijk} = \beta_0 + \beta_1 Gov.Sup_{ijk} + \beta_2 X_{ijk} + \epsilon \quad (2)$$

Where  $Y$  is a vector of performance variables, namely: 1) employment and monthly revenue post COVID-19 of firm  $i$  in sector  $j$  in governorate  $k$ ; and 2) three dummies that take the value of 1 if profits and working hours have declined post-COVID and if firm  $i$  in sector  $j$  in governorate  $k$  had reported laying off any employees post-COVID.  $Gov Sup$  is a dummy variable that takes the value of 1 if the firm has benefited from any post-COVID support measure and zero otherwise.

$X$  is a vector of control variables. In this vector we distinguish between two groups of regressors: 1) 'status variables' or 'innate characteristics' of the firm such as its size, exporting or formality status, its age<sup>10</sup>, its ownership (public or private), its sector and whether it is located in an industrial zone and; 2) behavioral variables that particularly shape the performance and survival of the industrial firm (El-Haddad and Zaki, 2022a, 2022b forthcoming), such as managerial practices, investment in innovation or in worker training and the adoption of advanced technology. Thus, the  $X$  vector includes a dummy variable taking the value of 1 if the firm had provided worker training prior to the COVID-19 crisis, a dummy variable that takes the value of 1 if the manager had utilized technology such as computers, the internet, internal information link networks, distributed machine control systems, and quality control systems, a dummy variable that takes the value of 1 if the firm had spent on R&D other than market research surveys, and a dummy variable that takes the value of 1 if the manager had either specified any performance indicators or production targets; or had monitored these performance indicators.  $\epsilon$  is the discrepancy term.

We carry on our analysis in three steps. First, to control for the endogeneity of government support and firm performance, we adopt an instrumental variable (IV) approach. We instrument government support with two instruments: (i) whether the firm is politically connected (*Pol.Con.*), and (ii) whether it had benefited from any government support measure prior to COVID (*Gov.SupBC*) since these two variables are shown to be highly correlated with the likelihood of receiving any type of government support.

The second and third extension of our model examine the differential effect of government support by firm size and age; and by ownership. This helps identify to what extent has support been well allocated and targeted, i.e. whether support goes where it is more effective. Recent literature has referred to the missing middle phenomenon in the Middle East and North Africa Region (MENA)

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<sup>10</sup> We use the median age of 20 years to distinguish between young and old firms.



that raises the fact that the distribution of firms is such as there is a concentration of a number of *very old*, mostly large, firms on the one hand and very large numbers of very small, younger firms on the other (Schiffbauer et al. 2014, Diwan et al. 2016, Rijkers et al.2014, WB 2014, El-Haddad 2020a). This phenomenon is very marked in the MENA region. With an average age of 21 years, MSMEs in MENA oil importing countries are about 10 years older than either their East Asia and Pacific or than their Europe and Central Asia comparators (El-Haddad et al. 2021). Egypt has the oldest firms (23 years) on average followed by Tunisia and Morocco (20). Jordan and Djibouti have younger firms, but still quite old at 16<sup>11</sup> years. Larger firms are older, with age ranging from 18 for small, 23 for medium (between 20 and 100 workers), 26 for large (> 100 workers) and 36 years of age for extra-large (> 600 worker) firms. The latter group is twice as old as the group of small firms in our sample.

Given this distribution, it is important to identify (1) whether the pattern of support is more skewed towards politically connected, older, larger and/or public firms<sup>12</sup>; and (2) if government support provided to this group is more or less effective compared to their smaller, younger and private counterparts.

Finally, to check the robustness of our results, we apply propensity score matching to compare between a treated group of firms benefiting from government support to a comparison group of firms that haven't received support but have similar characteristics to the other group.

## **5. Empirical Results**

This section presents the empirical findings of the determinants of firms' receipt of post-COVID government support and the effect of that support on a number of performance measures. These include employment, revenues, layoffs, whether the firm had ever closed since the start of the pandemic as well as reported reductions in profits and in working hours.

### **5.1. Determinants of Government Support**

Table 2 presents results from three regressions, where the dependent variables are the 'Overall Government Support' dummy, the 'Financial Support' dummy and the 'Exemptions and Deferments' dummy.<sup>13</sup> The independent variables are as specified in equation (1) above less the behavioural variables. Tables 3-4 present individual regressions of all particular government support measures that fall under 'Financial Government Support'. Table 5 presents the same for the five distinct debt and tax related support measures that fall under the 'Exemptions and Deferments' support category.

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<sup>11</sup> In other classifications 15 and above is already very old.

<sup>12</sup> As we've seen above financial support is skewed towards larger firms.

<sup>13</sup> Taking the value of 1 if the firm has received 'any' support within the respective support group and zero otherwise.

Table 2 shows that overall having received pre-COVID government support, being old, foreign or located in an industrial zone increases the likelihood for post-COVID overall support and for support under the ‘exemptions and deferments’ category. Exporting pre-COVID or being large (not SME), public or politically connected additionally increase a firm’s chance for receiving post-COVID financial support in particular. These results, confirm the stylized facts presented above.

The individual regressions for each of the 14 support measures separately (Table 3) show the importance of pre-COVID government support and political connections as robust determinants of post-COVID support. Since the systems for pre-COVID support were already in place, identifying firms which had previously received support was straightforward, compared to identifying others that are unknown, unimportant to government, or about which government has limited information. At the same time, previous support, especially financial, is picking up political connections. Political connections are not robustly significant for the ‘Exemptions and Deferments’ support category (Table 5), so possibly these categories of support were targeted to more deserving firms. However, there is still a political element through the importance of connections for support prior to COVID.

Private firms are consistently less likely to receive financial support from government, other than export drawback (columns 1-10, Table 3). Receipt of refunds for incurred export-related expenses (e.g. tariffs incurred on imported inputs) is the exception since, by definition, only exporters are eligible. Exporters do not become exporters through political favoritism but by being competitive. For all other types of financial support there is evidence of a ‘soft budget constraint’. Public firms in Egypt have enjoyed greater protection than their private sector counterparts for years through the provision of cheap state credit and a soft budget constraint. Public companies in crisis are routinely bailed out (El-Haddad and Zaki 2022; El-Haddad 2015).<sup>14</sup>

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<sup>14</sup> Softening of the budget constraint occurs when the strict relationship between expenditure and earnings has been relaxed because excess of expenditure over earnings will be paid by some other institution, typically the state. A further condition of softening is that the decision maker expects such external financial assistance with high probability, and this probability is built firmly into his behavior” (Kornai, 1986). Kornai, the first one to use this terminology, argues that there are different ways to soften the budget constraint of the firm: through 1) soft subsidies, 2) soft taxation, 3) soft credit and; 4) soft administrative prices (ibid.). For a literature review on soft budget constraints see Maskin (1999).

**Table 2: Determinants of post COVID-19– Overall**

|                | Overall<br>Government Support | Financial<br>Support   | Exemptions<br>and Deferments |
|----------------|-------------------------------|------------------------|------------------------------|
| Formal         | -0.0251<br>(0.0266)           | -0.0237<br>(0.0263)    | -0.0111<br>(0.0133)          |
| Old            | -0.0356**<br>(0.0142)         | -0.0546***<br>(0.0140) | 0.0280***<br>(0.00711)       |
| Foreign        | 0.0429<br>(0.0303)            | 0.0567*<br>(0.0300)    | -0.0100<br>(0.0152)          |
| Exporter       | -0.00825<br>(0.0431)          | -0.0673<br>(0.0426)    | 0.101***<br>(0.0216)         |
| SME            | -0.0139<br>(0.0199)           | -0.0170<br>(0.0196)    | -0.0262***<br>(0.00996)      |
| Private        | -0.0446<br>(0.0367)           | 0.0197<br>(0.0363)     | -0.100***<br>(0.0184)        |
| Indus. Zone    | 0.0606***<br>(0.0170)         | 0.0593***<br>(0.0168)  | -0.00293<br>(0.00852)        |
| Pol. Con.      | 0.0731*<br>(0.0424)           | 0.0150<br>(0.0420)     | 0.122***<br>(0.0213)         |
| Gov. Supp. BC  | 0.513***<br>(0.0238)          | 0.336***<br>(0.0236)   | 0.282***<br>(0.0119)         |
| Constant       | 0.0814<br>(0.0507)            | -0.00466<br>(0.0501)   | 0.143***<br>(0.0254)         |
| Gov. dummies   | YES                           | YES                    | YES                          |
| Sector dummies | YES                           | YES                    | YES                          |
| Observations   | 2,185                         | 2,185                  | 2,185                        |
| R-squared      | 0.368                         | 0.308                  | 0.319                        |

Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 3: Determinants of post COVID-19 Government Support by**

|                | Financial and Technical Support for Factors of Production |                    |                          |                    |                     | General and other Financial Support |                           |                        |                   | Exemptions and Deferments               |                               |                            |                      |                         |
|----------------|---|--------------------|--------------------------|--------------------|---------------------|-------------------------------------|---------------------------|------------------------|-------------------|---|-------------------------------|----------------------------|----------------------|-------------------------|
|                | Land  | Workers' Insurance | Tenders, bids & auctions | Production Process | Feasibility studies | Legal fees                          | General financial support | Payback old state dues | Exports drawback  | Postponement loan installment repayment | Reduction & discount on loans | Delay loan service payment | Tax payment deferral | Tax exemption/reduction |
| Formal         | -0.004<br>(0.01)  | -0.01<br>(0.01)    | -0.01<br>(0.01)          | -0.01<br>(0.01)    | -0.002<br>(0.003)   | -0.001<br>(0.01)                    | -0.001<br>(0.01)          | -0.002<br>(0.005)      | -0.004<br>(0.01)  | -0.07***<br>(0.02)                      | -0.002<br>(0.01)              | 0.12***<br>(0.02)          | 0.01<br>(0.02)       | 0.01<br>(0.01)          |
| Old            | 0.001<br>(0.002)  | 0.01***<br>(0.003) | 0.01***<br>(0.002)       | 0.01***<br>(0.003) | 0.001<br>(0.001)    | 0.002<br>(0.002)                    | 0.004*<br>(0.002)         | 0.001<br>(0.001)       | 0.003<br>(0.002)  | 0.01*<br>(0.01)                         | 0.01*<br>(0.004)              | 0.01**<br>(0.005)          | 0.01<br>(0.005)      | 0.002<br>(0.004)        |
| Foreign        | 0.003<br>(0.01)   | -0.01<br>(0.01)    | -0.004<br>(0.01)         | -0.001<br>(0.01)   | -0.001<br>(0.004)   | -0.005<br>(0.01)                    | -0.007<br>(0.01)          | -0.001<br>(0.01)       | 0.005<br>(0.01)   | 0.16***<br>(0.03)                       | -0.03**<br>(0.01)             | -4.6e-05<br>(0.02)         | -0.06***<br>(0.02)   | -0.03*<br>(0.02)        |
| Exporter       | -0.0003<br>(0.01)   | -0.03**<br>(0.01)  | -0.01<br>(0.01)          | -0.05***<br>(0.01) | -0.002<br>(0.01)    | -0.03**<br>(0.01)                   | -0.02**<br>(0.01)         | -0.01<br>(0.01)        | 0.19***<br>(0.01) | -0.07*<br>(0.04)                        | -0.03<br>(0.02)               | 0.02<br>(0.02)             | 0.0003<br>(0.03)     | 0.002<br>(0.02)         |
| SME            | 0.0003<br>(0.004)   | -0.01**<br>(0.01)  | -0.001<br>(0.01)         | -0.02***<br>(0.01) | -0.001<br>(0.002)   | -0.003<br>(0.01)                    | -0.01<br>(0.01)           | 0.003<br>(0.004)       | -0.01<br>(0.01)   | -0.001<br>(0.02)                        | -0.01<br>(0.01)               | -0.002<br>(0.01)           | 0.003<br>(0.01)      | 0.02**<br>(0.01)        |
| Private        | -0.04***<br>(0.01)  | -0.05***<br>(0.01) | -0.06***<br>(0.01)       | -0.06***<br>(0.01) | -0.02***<br>(0.005) | -0.08***<br>(0.01)                  | -0.02**<br>(0.01)         | -0.02***<br>(0.01)     | 0.01<br>(0.01)    | 0.05<br>(0.03)                          | 0.01<br>(0.02)                | 0.02<br>(0.02)             | -0.02<br>(0.02)      | -0.03*<br>(0.02)        |
| Indus. Zone    | -0.001<br>(0.003)   | -0.01<br>(0.01)    | -0.01**<br>(0.004)       | -0.02***<br>(0.01) | -0.004**<br>(0.002) | -0.003<br>(0.005)                   | -0.01**<br>(0.004)        | -0.002<br>(0.003)      | 0.005<br>(0.005)  | -0.01<br>(0.01)                         | -0.02**<br>(0.01)             | 0.001<br>(0.01)            | 0.08***<br>(0.01)    | 0.02**<br>(0.01)        |
| Pol. Con.      | 0.05***<br>(0.01)   | 0.16***<br>(0.01)  | 0.06***<br>(0.01)        | 0.11***<br>(0.01)  | 0.03***<br>(0.01)   | 0.04***<br>(0.01)                   | 0.12***<br>(0.01)         | 0.05***<br>(0.01)      | -0.01<br>(0.01)   | -0.04<br>(0.04)                         | -0.06***<br>(0.02)            | -0.01<br>(0.02)            | 0.02<br>(0.03)       | 0.08***<br>(0.02)       |
| Gov. Supp. BC  | 0.03***<br>(0.004)  | 0.08***<br>(0.01)  | 0.05***<br>(0.01)        | 0.10***<br>(0.01)  | 0.012***<br>(0.003) | 0.06***<br>(0.01)                   | 0.06***<br>(0.01)         | 0.02***<br>(0.004)     | 0.06***<br>(0.01) | 0.20***<br>(0.02)                       | 0.16***<br>(0.01)             | 0.10***<br>(0.01)          | 0.16***<br>(0.02)    | 0.14***<br>(0.01)       |
| Constant       | 0.03***<br>(0.01)   | 0.04**<br>(0.02)   | 0.04***<br>(0.01)        | 0.08***<br>(0.02)  | 0.02***<br>(0.01)   | 0.09***<br>(0.02)                   | 0.02<br>(0.01)            | 0.02*<br>(0.01)        | -0.01<br>(0.02)   | -0.06<br>(0.05)                         | -0.05**<br>(0.03)             | 0.04<br>(0.03)             | -0.04<br>(0.04)      | -0.03<br>(0.03)         |
| Gov. dummies   | YES   | YES                | YES                      | YES                | YES                 | YES                                 | YES                       | YES                    | YES               | YES                                     | YES                           | YES                        | YES                  | YES                     |
| Sector dummies | YES   | YES                | YES                      | YES                | YES                 | YES                                 | YES                       | YES                    | YES               | YES                                     | YES                           | YES                        | YES                  | YES                     |
| Observations   | 2,179   | 2,179              | 2,179                    | 2,179              | 2,179               | 2,179                               | 2,179                     | 2,179                  | 2,179             | 2,179                                   | 2,179                         | 2,179                      | 2,179                | 2,179                   |
| R-squared      | 0.13  | 0.21               | 0.13                     | 0.21               | 0.12                | 0.12                                | 0.15                      | 0.11                   | 0.19              | 0.25                                    | 0.22                          | 0.27                       | 0.20                 | 0.21                    |

Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## 5.2. Effect of Government Support

Each cell of Table 4 and Tables A3-A6 in the Annex show regression results for which the column heading is the dependent variable. The regressors are the  $X_{ijk}$  vector in equation (2) above, governorate and sector dummies and the support measure indicated in the row heading in the table. Table 4 shows the effect of government support on firm performance for all firms. Tables A3-A6 show same regressions for sub-samples broken down by size, age and ownership respectively.

The sub sample analysis addresses three research questions: first, to determine how effective the various measures are, and how this impact is mediated by firm characteristics of interest; second, to determine whether the pattern of support presented above as stylized facts is supported by the results. That is, has support gone disproportionately to where it is most effective?; and, finally, how do these results relate to political connections, the missing middle phenomenon and to the discussion on equity and vulnerability?

**Table 4: Effect of Government Support on Firm Performance - IV Estimates**

| Type of Government Support Measure        |                                     | Post-COVID                              |                      |                     |                    |                    |                    |
|---|-------------------------------------|---|----------------------|---------------------|--------------------|--------------------|--------------------|
|   |                                     | Ln (empl.)                              | Ln (monthly revenue) | Decrease in profits | Reduced hours      | Lay-offs           | Ever-closed        |
| Overall                                   | Government Support                  | 0.30***<br>(0.08)                       | 0.79***<br>(0.21)    | -0.34***<br>(0.07)  | -0.30***<br>(0.07) | -0.06**<br>(0.03)  | -0.28***<br>(0.07) |
| Sub-regressions                           | Financial Support                   | 0.54***<br>(0.15)                       | 1.56***<br>(0.39)    | -0.55***<br>(0.12)  | -0.50***<br>(0.12) | -0.10**<br>(0.05)  | -0.51***<br>(0.12) |
|   | Exemptions & Deferments             | 0.45***<br>(0.13)                       | 1.14***<br>(0.32)    | -0.52***<br>(0.11)  | -0.46***<br>(0.10) | -0.09**<br>(0.04)  | -0.42***<br>(0.10) |
| Disaggregated Government Support Measures |                                     |   |                      |                     |                    |                    |                    |
| Financial Support                         | Purchasing & renting land           | 3.15***<br>(1.10)                       | 11.14***<br>(2.91)   | -2.22**<br>(0.88)   | -2.23***<br>(0.86) | -0.46<br>(0.36)    | 3.13***<br>(0.90)  |
|   | Workers' Insurance                  | 1.01***<br>(0.34)                       | 3.87***<br>(0.95)    | -0.71**<br>(0.28)   | -0.71***<br>(0.27) | -0.15<br>(0.12)    | -1.02***<br>(0.28) |
|   | Tenders, bids & auctions            | 2.33***<br>(0.73)                       | 7.76***<br>(1.98)    | -1.97***<br>(0.60)  | -1.88***<br>(0.58) | -0.38<br>(0.24)    | -2.27**<br>(0.59)  |
|   | Production process                  | 1.17***<br>(0.34)                       | 3.98***<br>(0.94)    | -1.01***<br>(0.29)  | -0.96***<br>(0.27) | -0.20*<br>(0.12)   | -1.13***<br>(0.28) |
|   | Feasibility studies                 | 6.21***<br>(2.39)                       | 22.33***<br>(6.60)   | -3.98**<br>(1.90)   | -4.11**<br>(1.85)  | -0.86<br>(0.77)    | -6.28***<br>(2.00) |
|   | Legal fees                          | 2.31***<br>(0.68)                       | 7.08***<br>(1.82)    | -2.22***<br>(0.57)  | -2.05***<br>(0.54) | -0.42*<br>(0.23)   | -2.20***<br>(0.55) |
|   | General and other Financial Support | 1.30***<br>(0.44)                       | 5.02***<br>(1.23)    | -0.92**<br>(0.36)   | -0.92**<br>(0.34)  | -0.19<br>(0.15)    | -1.30***<br>(0.36) |
|   | Payback old state dues              | 2.87**<br>(1.15)                        | 11.48***<br>(3.22)   | -1.58*<br>(0.93)    | -1.71*<br>(0.89)   | -0.36<br>(0.39)    | -2.95***<br>(0.94) |
|   | Exports drawback                    | 2.43***<br>(0.73)                       | 5.91***<br>(1.85)    | -2.97***<br>(0.64)  | -2.61***<br>(0.60) | -0.52**<br>(0.24)  | -2.21***<br>(0.59) |
|   | Other Support                       | Postponement loan installment repayment | 0.73***<br>(0.22)    | 1.87***<br>(0.59)   | -0.90***<br>(0.19) | -0.79***<br>(0.18) | -0.16**<br>(0.07)  |
| Reduction & discount on loans             |                                     | 0.91***<br>(0.27)                       | 2.20***<br>(0.72)    | -1.16***<br>(0.23)  | -1.01***<br>(0.21) | -0.20**<br>(0.09)  | -0.82***<br>(0.22) |
| Exemptions & Deferments                   |                                     | 1.47***<br>(0.44)                       | 3.78***<br>(1.11)    | -1.73***<br>(0.39)  | -1.53***<br>(0.38) | -0.31**<br>(0.15)  | -1.37***<br>(0.39) |
| Tax payment deferral                      |                                     | 1.08***<br>(0.32)                       | 2.71***<br>(0.72)    | -1.18***<br>(0.27)  | -1.06***<br>(0.25) | -0.21**<br>(0.11)  | -1.00*<br>(0.25)   |
| Tax exemption/reduction                   |                                     | 1.07***<br>(0.31)                       | 3.47***<br>(0.87)    | -1.04***<br>(0.25)  | -0.96***<br>(0.24) | -0.19*<br>(0.10)   | -1.02***<br>(0.25) |

Notes: (i) Robust standard errors in parentheses. (ii) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. (iii) Each cell represents a regression where the dependent variable is the one mentioned in the column and the treatment is the government support presented in each row. (vi) Both Sargan and Basman test of overidentification are run and overidentifying restrictions are valid for all regressions.

The results show that government support has helped mitigate the effects of COVID-19, with a significantly larger, favorable impact on smaller, younger and private firms. However, although these firms apparently make better use of government support, they receive a disproportionately smaller share of support.

The first row of Table 4 shows that firms receiving any sort of government support perform significantly better on all outcome measures. A negative coefficient on the adverse impact outcomes in the last four columns means the adverse effect was weaker, so a larger negative coefficient corresponds to better (or less bad) firm performance. Looking at the full sample, the same holds true when government support is broken down into ‘Financial Support’ and ‘Exemptions and Deferments’ (result rows 2 and 3 in Table 4).

### **Effectiveness of Government Support by Size, Age and Ownership**

However, the effect varies by firm characteristics. When we consider the sub-sample estimates in Table A2, we see that government support has a better effect for SMEs compared to large firms. Government support overall significantly improves firm performance for five out of the six outcomes for SMEs, but only two out of six for larger firms (1<sup>st</sup> result row). Government support has no effect on large firms’ employment, they do not reduce their post-COVID falls in working hours or layoffs and there is no effect on whether large firms had been closed since the beginning of the pandemic. In addition, the observed coefficient is higher for small firms than larger firms for every outcome.<sup>15</sup> Exactly the same pattern is observed when government support is disaggregated into the two sub-categories in the second and third rows of the table.

An even clearer picture emerges when comparing young versus old firms (Table A3). For government support overall (1st result row), there is a significant improvement for five out of six outcomes for young firms, but only three out of six for older firms, and the coefficients are consistently larger for young firms than old ones. The same is observed for disaggregated government support measures with one exception (financial support does not affect revenues in young firms).

The pattern is stronger still for public versus private (Table A4). Government support, both overall and disaggregated, improves every performance outcome for private firms, but for less than three out of six performance indicators for public firms, with absolutely no effect on employment, revenues or the ever-having closed status. This is understandable, as support is unlikely to affect rigid public sector employment and more or less relatively stable revenue stream. Again, in the minority of cases when measures are effective for both private and public sector firms, the former coefficients are significantly<sup>16</sup> larger than for their public counterparts.

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<sup>15</sup> The insignificance of the support measures with respect to layoffs only means that there are no significant differences of that effect by firm size, still overall support measures have shown desirable effects on layoffs in the pooled sample, mostly derived from the effect of the ‘Exemptions and Deferments’ measures (Table 4).

<sup>16</sup> Also at the 1% level compared to 5 and 10% for public firms.

Hence 'Financial Support' has been incorrectly skewed towards larger firms where it has been least effective. In contrast, post-COVID support on 'Exemptions and Deferments' had been relatively more allocated to favor smaller, younger and private firms post-COVID (Tables 2-4) where it is more effective.

### **The Most Effective Government Support Measures**

This section discusses the results in the remaining rows of Table 4 and A2-A5 in which the types of support are further disaggregated.

Considering the separate interventions of the two sub-categories of support, all debt and tax-related measures of the 'Exemptions and Deferments' category have reduced layoffs, which is not the case for 'Financial Support' interventions. This finding reflects the likely short-term effects of relatively more short-term, crisis induced support measures. One exception are the 'export drawback' and 'financial support towards the production processes, which have also reduced layoffs. On the other hand, 'Financial Support' measures produce larger positive effects on employment on revenues.

Together with 'export drawback', measures included in the 'Exemptions and Deferments' category are the six measures most frequently implemented after COVID (Table A6). These six measures reached just under 90% of all firms which received any form of government support. The most effective of these measures in magnitude of effect across the six firm performance indicators is export drawback, followed by allowing delays in loan service payments, and delays in paying taxes

With respect to the least commonly used measures, providing financial support in purchasing and renting land is the most effective followed by the state paying back its old dues to firms. Financial support towards workers insurance is the least effective, perhaps because many workers do not have insurance in the first place. In contrast, there were accumulated government arrears from 2012 of payments due to firms from the export support program. In the wake of the pandemic, about 40 billion Egyptian pounds of arrears were paid within a year and a half (IDSC 2022), which had indeed favorable effects on the performance of these firms. These payments would fall under the paying back old state dues measure.

The results presented here are relevant to illustrating the 'missing middle' and the role of the 'soft budget constraint' and 'crony capitalism' in explaining it. They also illustrate the importance of unequal access to industrial land in Egypt as well as for the spread of political connections in the country which will be highlighted in the discussion below.



### 5.3. Robustness Checks: Propensity Score Matching (PSM)

To check the robustness of our results and to control for the endogeneity between government support and firm performance, we apply propensity score matching to compare between a treated group of firms benefiting from government support to a comparison group of firms that haven't received support but have similar characteristics to those which do.

The treatment is receiving government support, either any at all or the specific type of support. So, we first run a set of logit models in which the dependent variable takes the value of 1 if the firm gets that category of government support and zero otherwise. From that we obtain the propensity score that is the predicted probability ( $p$ ) of receiving that support. We then match each participant to one or more nonparticipants on propensity score, using radius matching, Kernel and nearest neighbor matching.<sup>17</sup> For the matching we use employment, private ownership, age, being located in an industrial zone, along with other behavioral variables that are not affected by the intervention.

The analysis is restricted to the region of common support, which is the region of overlapping propensity scores for treatment and comparison groups. There is a high level of common support for different types of government support with very few observations that are off-support.<sup>18</sup> Most importantly, the results closely match our overall IV results in Table 4 especially for the longer term performance indicators of overall employment and monthly revenues (Table 5). With respect to the shorter term performance indicators effects on reduced working hours are smaller and not as significant as they were in the IV estimation, probably on account of a limited number of observations within some of the support measures which makes matching harder. But still the results are nonetheless somewhat similar.

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<sup>17</sup> All matching methods yield highly similar results.

<sup>18</sup> Pointing out that their propensity scores (PS) did not align with those of another observation in the comparison group.

**Table 5: Effect of Government Support on Firm Performance - PSM Estimates**

| Type of Government Support Measure  |                               | Post-COVID                              |                      |                     |                    |                    |                    |                    |
|-------------------------------------|-------------------------------|---|----------------------|---------------------|--------------------|--------------------|--------------------|--------------------|
|                                     |                               | Ln (empl.)                              | Ln (monthly revenue) | Decrease in profits | Reduced hours      | Lay-offs           | Ever-closed        |                    |
| Overall                             | Government Support            | 0.74***<br>(0.08)                       | 1.27***<br>(0.13)    | -0.09***<br>(0.02)  | -0.07***<br>(0.03) | -0.02**<br>(0.01)  | -0.04*<br>(0.02)   |                    |
| Sub-regressions                     | Financial Support             | 1.02***<br>(0.11)                       | 1.70***<br>(0.18)    | -0.14***<br>(0.03)  | -0.10***<br>(0.03) | -0.03**<br>(0.01)  | -0.20***<br>(0.03) |                    |
|                                     | Exemptions & Deferments       | 0.56***<br>(0.09)                       | 0.99***<br>(0.15)    | -0.07**<br>(0.03)   | -0.05*<br>(0.03)   | -0.01<br>(0.01)    | 0.03<br>(0.03)     |                    |
|                                     | Financial Support             | Purchasing & renting land               | 0.91***<br>(0.33)    | 1.26**<br>(0.54)    | 0.11<br>(0.11)     | -0.14<br>(0.11)    | -0.04<br>(0.04)    | -0.08<br>(0.10)    |
| Workers' Insurance                  |                               | 1.00***<br>(0.22)                       | 1.30***<br>(0.36)    | -0.23***<br>(0.07)  | -0.13*<br>(0.07)   | -0.04<br>(0.03)    | -0.22***<br>(0.07) |                    |
| Tenders, bids & auctions            |                               | 0.93***<br>(0.28)                       | 1.13**<br>(0.46)     | -0.15*<br>(0.09)    | -0.13<br>(0.09)    | -0.04<br>(0.03)    | -0.29***<br>(0.08) |                    |
| Production process                  |                               | 1.35***<br>(0.26)                       | 2.18***<br>(0.43)    | -0.29***<br>(0.08)  | -0.11<br>(0.08)    | -0.04<br>(0.03)    | -0.30***<br>(0.08) |                    |
| Feasibility studies                 |                               | 1.08**<br>(0.52)                        | -0.46<br>(0.96)      | 0.03<br>(0.17)      | -0.15<br>(0.17)    | -0.03<br>(0.06)    | -0.18<br>(0.16)    |                    |
| Legal fees                          |                               | 0.72**<br>(0.31)                        | 0.98*<br>(0.52)      | -0.20**<br>(0.10)   | -0.01<br>(0.10)    | -0.04<br>(0.04)    | -0.31***<br>(0.10) |                    |
| General and other Financial Support |                               | General financial support               | 1.08***<br>(0.29)    | 1.02**<br>(0.47)    | -0.30***<br>(0.09) | -0.08<br>(0.09)    | -0.04<br>(0.03)    | -0.12<br>(0.09)    |
|                                     |                               | Payback old state dues                  | 0.91**<br>(0.42)     | 1.65**<br>(0.70)    | -0.25*<br>(0.13)   | -0.05<br>(0.13)    | 0.04<br>(0.05)     | -0.21<br>(0.13)    |
|                                     |                               | Exports drawback                        | 1.14***<br>(0.13)    | 1.98***<br>(0.22)   | -0.10**<br>(0.04)  | -0.09**<br>(0.04)  | -0.02<br>(0.02)    | -0.19***<br>(0.04) |
| Other Support                       |                               | Postponement loan installment repayment | 0.45***<br>(0.12)    | 0.77***<br>(0.19)   | -0.04<br>(0.04)    | -0.10***<br>(0.04) | -0.01<br>(0.01)    | 0.081**<br>(0.04)  |
|                                     | Reduction & discount on loans | 0.82***<br>(0.18)                       | 1.55***<br>(0.29)    | -0.13**<br>(0.06)   | -0.14**<br>(0.06)  | -0.02<br>(0.02)    | 0.004<br>(0.05)    |                    |
|                                     | Exemptions & Deferments       | Delay loan service payment              | 0.36**<br>(0.15)     | 0.82***<br>(0.25)   | -0.04<br>(0.05)    | -0.05<br>(0.05)    | -0.03<br>(0.02)    | 0.08*<br>(0.05)    |
|                                     |                               | Tax payment deferral                    | 0.68***<br>(0.12)    | 1.21***<br>(0.24)   | -0.09**<br>(0.04)  | 0.01<br>(0.04)     | -0.02<br>(0.01)    | -0.04<br>(0.04)    |
|                                     | Tax exemption/reduction       | 0.66***<br>(0.19)                       | 1.15***<br>(0.31)    | -0.09<br>(0.06)     | -0.003<br>(0.06)   | -0.01<br>(0.02)    | -0.09<br>(0.06)    |                    |

Notes: (i) Robust standard errors in parentheses. (ii) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. (iii) Each cell represents a regression where the dependent variable is mentioned in the column and the treatment is the government support presented in each row (vi) Sargan and Basman test are run. Overidentifying restrictions are valid for all regressions.

## 6. Discussion and Conclusion

The results here show that government support has helped mitigate the effects of COVID-19, with a significantly larger, favorable impact on smaller, younger and private firms. Accordingly, government support is most effective when given to firms which may be considered the most vulnerable. However, although these firms apparently make better use of government support, they receive a disproportionately smaller share of support, which is consistent with trends in domestic political economy in recent years.

In Egypt's emerging 'unsocial' Social Contract, industrial policy has been mediated by state-business relations which underpin the substantive dimension of the contract of the deliverables exchanged between the state and businesses. State-business relations in the country are characterized by the excessive degrees of capture of industrial policy (El-Haddad 2020a). The 'unsocial' Social Contract emerging under liberalization meant that the state used trade, industrial and other economic policies to favour an emerging group of crony capitalists who in turn provided support for the regime. This approach displaced building a wide base of support in the public through the provision of public services, which have declined in quantity and quality. The growing inequality and diminishing benefits for the masses undermined the contract's sustainability resulting in the Arab Spring (*ibid.*).

Crony capitalism represents the most audacious example of Olson's law whereby it provides a way of turning public goods to private gain, padding the pockets of the powerful, undermining economic competitiveness and misdirecting resources (Micklethwait and Wooldridge 2015). Block (2018) describes crony capitalism as an oligarchic market with rule by the twenty or fifty or hundred leading families and business groups. In simple terms, it is a union between capitalist and politicians enabling the former to acquire wealth and the latter to seek and retain power (Pei 2016). This is what is called the 'unsocial' social contract (El-Haddad 2020a). Other groups are marginalized.

The situation has only partially changed post-COVID19 which has provided both constraints and opportunities. This paper empirically reveals the persistence of the determinants of the pattern of distribution of government support both pre- and post-COVID19. Political connections are and remain a predominant determinant of receipt of firm-level government support in Egypt (see also recent results from Francis and Kubinek 2022). Our analysis shows that support received regularly *prior* to COVID is a chief determinant of post-COVID government support, creating thus a vicious circle of the same recipients of government support. This vicious circle feeds on 'crony capitalism' and a 'soft budget constraint' both of which reinforce 'the missing middle' phenomena in Egypt. The 'missing middle' in the Middle East and North Africa Region (MENA) refers to the distribution of firms with a concentration of a number of *very* old, mostly large, firms on the one hand and very large numbers of very small, younger firms on the other (Schiffbauer et al. 2014, Diwan et al. 2014, Rijkers et al. 2014, WB 2014). This phenomenon is very marked in the MENA

region with its countries being about 10 years older than either their East Asia and Pacific or than their Europe and Central Asia comparators (El-Haddad et al. 2021). Egypt has top position in terms of the oldest firms of all amongst MENA oil importing countries, with a mean age of 23 years,. Egypt's extra-large firms (>600 workers) are twice as old as the group of small firms in our sample.

Returning to the discussion in the introduction, another important finding is that the recipients of support are neither the most vulnerable nor are they where support is most effective. This is so since support goes predominately and unjustifiably to politically connected, larger and older firms. Support additionally goes chiefly and unduly to the public sector rather than the private one where this paper shows indeed it is most effective in improving all firm performance indicators.

Of the least commonly used measures financial support for purchasing and renting land is the most effective of these measures across the six firm performance indicators. Unequal access to land has been a major constraint to industrial development in developing countries in general (e.g. Altenburg 2011) as well as in Egypt (Loewe 2013, El-Haddad 2016). The government of Egypt is aware of this and has addressed the problem of obtaining industrial land by making land available through the usufruct or purchase right charging only for the cost of utilities. They also allow the Industrial Development Authority to obtain approvals from various authorities on behalf of the investor in less than 20 working days through a process of cooperation and consultation with local and foreign businesses (IDSC 2022 June 1st). Whether the process of support for obtaining or leasing the land will be transparent, or operate behind a smoke of political favouritism, remains to be seen.

However, another implication of the results presented here is that the crisis has presented a chance to make small steps in the right direction. Whilst political connections are principal determinants of receipt of firm-level government support in Egypt, they influence 'Financial Support' measures to a greater degree than they influence debt and tax support measures under 'Exemptions and Deferments'. By going to the politically connected larger and older firms, 'Financial Support', with its relatively longer term nature, has been reinforcing the 'missing middle'. However, post-COVID, the crisis has presented a chance for the pattern of support to slowly shift towards the more vulnerable, non-politically connected, smaller, younger and private sector firms through the more frequent use of 'Exemptions and Deferments' support measures.

There are some caveats to consider when looking at the results of this study. The costs of the various measures has not been taken into account. This study has produced marginal effects for a firm receiving the particular support but has not provided those effects to a dollar unit of that support. A more sophisticated data-set would be warranted to include costing in the assessment and would be a useful extension to the analysis but that is beyond the scope of this paper.

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## Annex

**Table A1: Government Support Transition Matrix (in % of all surveyed firms)**

|                   |   | Neither before<br>nor after   | Before only | After Only | Before and<br>After | Total |      |
|-------------------|---|-------------------------------|-------------|------------|---------------------|-------|------|
| Overall           |   | 80,0%                         | 3,6%        | 10,2%      | 6,2%                | 100%  |      |
| Facilities        |   | 82,7%                         | 3,0%        | 10,3%      | 4,0%                | 100%  |      |
| Financial         |   | 93,8%                         | 2,9%        | 0,5%       | 2,8%                | 100%  |      |
| Financial Support | Financial support<br>for Factors of<br>Production | FS purchasing & renting land  | 97,3%       | 2,3%       | 0,0%                | 0,4%  | 100% |
|                   |   | FS workers' insurance         | 98,5%       | 0,5%       | 0,2%                | 0,9%  | 100% |
|                   |   | FS tenders, bids & auctions   | 99,3%       | 0,0%       | 0,0%                | 0,6%  | 100% |
|                   |   | FS production process         | 98,8%       | 0,2%       | 0,0%                | 1,0%  | 100% |
|                   |   | FS feasibility studies        | 99,8%       | 0,0%       | 0,0%                | 0,2%  | 100% |
|                   | General and other<br>Financial<br>Support         | FS legal fees                 | 98,7%       | 0,5%       | 0,1%                | 0,6%  | 100% |
|                   |   | General FS                    | 98,7%       | 0,6%       | 0,1%                | 0,6%  | 100% |
|                   |   | Payback old state dues        | 99,7%       | 0,0%       | 0,1%                | 0,2%  | 100% |
|                   |   | Export drawback               | 98,6%       | 0,5%       | 0,2%                | 0,7%  | 100% |
|                   |   | Postponement loans repay      | 87,1%       | 3,6%       | 8,3%                | 1,0%  | 100% |
| Other Support     | Exemptions &<br>Deferments                        | Reduction & discount on loans | 96,2%       | 1,5%       | 0,8%                | 1,5%  | 100% |
|                   |   | Delay loan service payment    | 92,8%       | 3,3%       | 3,1%                | 0,8%  | 100% |
|                   |   | Tax payment deferral          | 94,8%       | 0,6%       | 4,0%                | 0,7%  | 100% |
|                   |   | Tax exemption/reduction       | 97,2%       | 0,3%       | 2,1%                | 0,5%  | 100% |

Source: Authors' own elaboration using the EIFBS



**Table A2: Effect of Government Support on Firm Performance – by firm size**

| Type of Government Support Measure |   | SMEs (Post-COVID)         |                         |  |                     |                     |                    | Large (Post-COVID)  |                     |                     |                  |                  |                  |                  |
|------------------------------------|---|---------------------------|-------------------------|--|---------------------|---------------------|--------------------|---------------------|---------------------|---------------------|------------------|------------------|------------------|------------------|
|                                    |   | Ln (Employ.)              | Ln(Monthly Revenue)     | Decrease in Profits                        | Reduced Hours       | Lay-offs            | Ever-closed        | Ln (Employ.)        | Ln(Monthly Revenue) | Decrease in Profits | Reduced Hours    | Lay-offs         | Ever-closed      |                  |
| Overall                            | Government Support                          | 0.46***<br>(0.16)         | 0.99***<br>(0.35)       | -0.46***<br>(0.11)                         | -0.50***<br>(0.11)  | -0.07<br>(0.05)     | -0.45***<br>(0.11) | 0.02<br>(0.13)      | 0.52*<br>(0.31)     | -0.13*<br>(0.07)    | -0.03<br>(0.07)  | -0.003<br>(0.03) | 0.01<br>(0.07)   |                  |
| Sub-regressions                    | Financial Support                           | 1.18***<br>(0.39)         | 2.69***<br>(0.88)       | -1.07***<br>(0.26)                         | -1.11***<br>(0.27)  | -0.16<br>(0.12)     | -1.13***<br>(0.27) | 0.02<br>(0.14)      | 0.60*<br>(0.34)     | -0.15*<br>(0.08)    | -0.04<br>(0.08)  | -0.002<br>(0.03) | -0.001<br>(0.07) |                  |
|                                    | Exemptions & Deferments                     | 0.64***<br>(0.24)         | 1.36***<br>(0.53)       | -0.70***<br>(0.17)                         | -0.78***<br>(0.18)  | -0.10<br>(0.07)     | -0.66***<br>(0.18) | 0.03<br>(0.23)      | 0.92*<br>(0.53)     | -0.23*<br>(0.12)    | -0.05<br>(0.13)  | -0.004<br>(0.05) | 0.003<br>(0.12)  |                  |
|                                    | Disaggregated Government Support Measures   |                           |                         |  |                     |                     |                    |                     |                     |                     |                  |                  |                  |                  |
| Financial Support                  | Financial support for Factors of Production | Purchasing & renting land | 13.48**<br>(6.18)       | 28.65**<br>(13.53)                         | -14.52***<br>(5.24) | -16.40***<br>(5.57) | -2.09<br>(1.58)    | -13.54***<br>(5.05) | -0.46<br>(1.07)     | 4.86*<br>(2.79)     | -0.88<br>(0.60)  | -0.56<br>(0.62)  | 0.17<br>(0.23)   | -0.93<br>(0.58)  |
|                                    |   | Workers' Insurance        | 3.05***<br>(1.18)       | 8.33***<br>(2.72)                          | -1.68**<br>(0.78)   | -1.07<br>(0.81)     | -0.31<br>(0.35)    | -2.57***<br>(0.83)  | -0.06<br>(0.35)     | 1.74**<br>(0.88)    | -0.35*<br>(0.19) | -0.15<br>(0.20)  | 0.03<br>(0.07)   | -0.17<br>(0.18)  |
|                                    |   | Tenders, bids & auctions  | 6.10**<br>(2.56)        | 12.59**<br>(5.79)                          | -6.68***<br>(2.07)  | -7.60***<br>(2.19)  | -0.96<br>(0.71)    | -6.17***<br>(1.97)  | -0.24<br>(0.78)     | 3.83*<br>(2.06)     | -0.74*<br>(0.43) | -0.38<br>(0.45)  | 0.10<br>(0.16)   | -0.53<br>(0.41)  |
|                                    |   | Production process        | 4.04***<br>(1.37)       | 9.37***<br>(3.04)                          | -3.51***<br>(0.95)  | -3.53***<br>(0.99)  | -0.54<br>(0.40)    | -3.81***<br>(1.00)  | -0.005<br>(0.30)    | 1.49*<br>(0.77)     | -0.32*<br>(0.16) | -0.10<br>(0.17)  | 0.01<br>(0.06)   | -0.07<br>(0.16)  |
|                                    | General and other Financial Support         | Feasibility studies       | 58.96*<br>(34.64)       | 127.30<br>(78.08)                          | -60.81*<br>(32.59)  | -66.93*<br>(35.24)  | -8.87<br>(7.53)    | -58.84*<br>(31.91)  | -0.43<br>(1.90)     | 9.15*<br>(5.22)     | -1.90*<br>(1.13) | -0.86<br>(1.09)  | 0.19<br>(0.40)   | -1.07<br>(1.00)  |
|                                    |   | Legal fees                | 4.85**<br>(1.91)        | 10.14**<br>(4.25)                          | -5.11***<br>(1.47)  | -5.70***<br>(1.55)  | -0.74<br>(0.54)    | -4.84***<br>(1.47)  | -0.11<br>(0.67)     | 3.29*<br>(1.70)     | -0.69*<br>(0.37) | -0.28<br>(0.38)  | 0.05<br>(0.14)   | -0.31<br>(0.35)  |
|                                    |   | General financial support | 2.95***<br>(1.13)       | 7.96***<br>(2.57)                          | -1.65**<br>(0.74)   | -1.08<br>(0.77)     | -0.30<br>(0.33)    | -2.49***<br>(0.79)  | -0.06<br>(0.48)     | 2.44**<br>(1.24)    | -0.50*<br>(0.26) | -0.19<br>(0.28)  | 0.03<br>(0.10)   | -0.20<br>(0.25)  |
|                                    |   | Payback old state dues    | 14.53**<br>(6.34)       | 48.03**<br>(22.00)                         | -10.93**<br>(4.38)  | -9.89**<br>(4.37)   | -1.76<br>(1.54)    | -13.19***<br>(4.95) | -0.66<br>(1.27)     | 5.10<br>(3.27)      | -0.86<br>(0.71)  | -0.67<br>(0.73)  | 0.24<br>(0.27)   | -1.24*<br>(0.69) |
|                                    |   | Exports drawback          | 6.05**<br>(2.42)        | 12.78**<br>(5.37)                          | -6.45***<br>(1.83)  | -7.23***<br>(1.97)  | -0.93<br>(0.68)    | -6.07***<br>(1.82)  | 0.16<br>(0.53)      | 1.73<br>(1.20)      | -0.49*<br>(0.29) | -0.06<br>(0.30)  | -0.04<br>(0.11)  | 0.16<br>(0.28)   |
|                                    |   | Other Support             | Exemptions & Deferments | Postponement of loan installment repayment | 0.97**<br>(0.38)    | 2.19**<br>(0.93)    | -1.05***<br>(0.27) | -1.16***<br>(0.29)  | -0.15<br>(0.11)     | -1.00***<br>(0.28)  | 0.12<br>(0.45)   | 1.50<br>(1.00)   | -0.42*<br>(0.25) | -0.06<br>(0.25)  |
| Reduction & discount on loans      | 1.12***<br>(0.41)                           |                           |                         | 2.50**<br>(0.98)                           | -1.21***<br>(0.28)  | -1.37***<br>(0.30)  | -0.17<br>(0.12)    | -1.14***<br>(0.29)  | 0.19<br>(0.64)      | 2.07<br>(1.50)      | -0.60*<br>(0.35) | -0.08<br>(0.37)  | -0.04<br>(0.13)  | 0.18<br>(0.33)   |
| Delay loan service payment         | 2.37***<br>(0.89)                           |                           |                         | 5.69***<br>(2.00)                          | -2.03***<br>(0.64)  | -2.01***<br>(0.64)  | -0.31<br>(0.24)    | -2.24***<br>(0.71)  | 0.30<br>(0.69)      | 1.72<br>(1.56)      | -0.54<br>(0.38)  | 0.01<br>(0.39)   | -0.08<br>(0.14)  | 0.37<br>(0.35)   |
| Tax                                | Tax payment deferral                        |                           | 1.76**<br>(0.74)        | 3.52***<br>(1.35)                          | -2.01***<br>(0.58)  | -2.33***<br>(0.62)  | -0.28<br>(0.22)    | -1.80***<br>(0.56)  | 0.01<br>(0.41)      | 1.77*<br>(0.97)     | -0.42*<br>(0.23) | -0.13<br>(0.23)  | 0.01<br>(0.08)   | -0.07<br>(0.21)  |
|                                    | Tax exemption/reductio                      |                           | 1.68***<br>(0.58)       | 4.24***<br>(1.53)                          | -1.62***<br>(0.41)  | -1.73***<br>(0.43)  | -0.24<br>(0.17)    | -1.63***<br>(0.42)  | -0.17<br>(0.54)     | 2.58*<br>(1.35)     | -0.51*<br>(0.30) | -0.26<br>(0.31)  | 0.07<br>(0.11)   | -0.37<br>(0.28)  |

Notes: (i) Robust standard errors in parentheses. (ii) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. (iii) Each cell represents an IV regression where the dependent variable is the one mentioned in the column and the independent variables are whether the firm is formal or not, private or not, its age, whether it is located in an industrial zone, whether the firm provides

training to its workers or not, uses technology or not, spends on R&D or not, uses good management practices or not, governorate and sector dummies, in addition to the government support presented in each row.

**Table A3: Effect of Government Support on Firm Performance – by age**

| Type of Government Support Measure        |  | Young                                      |                     |                      |                      |                      |                      |                      | Old                 |                      |                     |                     |                      |                   |  |
|---|--|--|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|---------------------|---------------------|----------------------|-------------------|--|
|   |  | Ln (Employment)                            | Ln(Monthly Revenue) | Decrease in Profits  | Reduced Hours        | Lay-offs             | Ever-closed          | Ln (Employment)      | Ln(Monthly Revenue) | Decrease in Profits  | Reduced Hours       | Lay-offs            | Ever-closed          |                   |  |
| Overall                                   | Government Support                           | 0.437**<br>(0.180)                         | 0.590*<br>(0.353)   | -0.384***<br>(0.123) | -0.777***<br>(0.143) | -0.0459<br>(0.0497)  | -0.532***<br>(0.137) | 0.292**<br>(0.130)   | 1.117***<br>(0.300) | -0.158**<br>(0.0777) | -0.0469<br>(0.0801) | -0.0173<br>(0.0360) | -0.0239<br>(0.0708)  |                   |  |
| Sub-regressions                           | Financial Support                            | 1.112**<br>(0.464)                         | 1.486<br>(0.976)    | -1.006***<br>(0.326) | -2.120***<br>(0.376) | -0.136<br>(0.131)    | -1.388***<br>(0.359) | 0.379**<br>(0.163)   | 1.424***<br>(0.368) | -0.187*<br>(0.0972)  | -0.0663<br>(0.101)  | -0.0215<br>(0.0452) | -0.0685<br>(0.0889)  |                   |  |
|   | Exemptions & Deferments                      | 0.578**<br>(0.243)                         | 0.779*<br>(0.461)   | -0.504***<br>(0.167) | -1.012***<br>(0.205) | -0.0586<br>(0.0655)  | -0.699***<br>(0.189) | 0.594**<br>(0.275)   | 2.307***<br>(0.654) | -0.332**<br>(0.163)  | -0.0918<br>(0.165)  | -0.0357<br>(0.0742) | -0.0249<br>(0.146)   |                   |  |
| Disaggregated Government Support Measures |  |  |                     |                      |                      |                      |                      |                      |                     |                      |                     |                     |                      |                   |  |
| Financial Support                         | Purchasing & renting land Workers' Insurance | 12.36*<br>(7.104)                          | 16.98<br>(13.67)    | -11.92**<br>(5.869)  | -26.61***<br>(10.12) | -1.886<br>(1.700)    | -16.33**<br>(7.160)  | 2.861**<br>(1.398)   | 11.29***<br>(3.375) | -0.714<br>(0.807)    | -0.718<br>(0.830)   | -0.126<br>(0.373)   | -2.019***<br>(0.783) |                   |  |
|   | Tenders, bids & auctions                     | 7.916**<br>(3.661)                         | 10.97<br>(6.910)    | -6.698**<br>(2.685)  | -13.22***<br>(4.019) | -0.736<br>(0.889)    | -9.309***<br>(3.325) | 0.797**<br>(0.349)   | 3.203***<br>(0.826) | -0.252<br>(0.207)    | -0.180<br>(0.214)   | -0.0375<br>(0.0962) | -0.436**<br>(0.190)  |                   |  |
|   | Production process                           | 13.44<br>(8.435)                           | 18.12<br>(14.78)    | -12.24*<br>(6.919)   | -26.21**<br>(12.96)  | -1.729<br>(1.793)    | -16.85*<br>(8.910)   | 1.666**<br>(0.720)   | 6.531***<br>(1.769) | -0.708<br>(0.430)    | -0.328<br>(0.436)   | -0.0886<br>(0.196)  | -0.553<br>(0.388)    |                   |  |
|   | Feasibility studies                          | 4.072**<br>(1.751)                         | 5.364<br>(3.591)    | -3.646***<br>(1.267) | -7.616***<br>(1.690) | -0.479<br>(0.477)    | -5.035***<br>(1.445) | 0.855**<br>(0.361)   | 3.466***<br>(0.862) | -0.341<br>(0.217)    | -0.176<br>(0.225)   | -0.0444<br>(0.101)  | -0.333*<br>(0.200)   |                   |  |
|   | Legal fees                                   | 37.80<br>(23.40)                           | 51.16<br>(42.59)    | -34.42*<br>(19.73)   | -72.61**<br>(36.45)  | -4.654<br>(4.968)    | -47.49*<br>(25.63)   | 5.623**<br>(2.867)   | 20.89***<br>(7.308) | -1.377<br>(1.629)    | -1.437<br>(1.672)   | -0.247<br>(0.746)   | -4.089**<br>(1.667)  |                   |  |
|   | General and other Financial Support          | 6.378**<br>(3.198)                         | 8.550<br>(6.150)    | -5.650**<br>(2.462)  | -11.71***<br>(3.888) | -0.726<br>(0.762)    | -7.809***<br>(2.985) | 1.744**<br>(0.767)   | 6.725***<br>(1.841) | -0.823*<br>(0.452)   | -0.319<br>(0.461)   | -0.0972<br>(0.207)  | -0.405<br>(0.409)    |                   |  |
|   | General financial support                    | 4.370**<br>(1.981)                         | 5.804<br>(3.942)    | -3.980***<br>(1.426) | -8.455***<br>(1.992) | -0.549<br>(0.523)    | -5.485***<br>(1.679) | 1.061**<br>(0.488)   | 4.489***<br>(1.208) | -0.283<br>(0.291)    | -0.261<br>(0.302)   | -0.0476<br>(0.136)  | -0.709***<br>(0.270) |                   |  |
|   | Payback old state dues                       | 31.71<br>(35.93)                           | 21.84<br>(45.95)    | -32.16<br>(32.84)    | -75.57<br>(74.44)    | -5.793<br>(7.146)    | -43.77<br>(44.29)    | 2.509**<br>(1.277)   | 9.933***<br>(3.217) | -0.501<br>(0.747)    | -0.671<br>(0.775)   | -0.104<br>(0.347)   | -2.047***<br>(0.720) |                   |  |
|   | Exports drawback                             | 2.634**<br>(1.166)                         | 3.366<br>(2.377)    | -2.441***<br>(0.829) | -5.249***<br>(1.117) | -0.349<br>(0.320)    | -3.359***<br>(0.940) | 2.523*<br>(1.314)    | 9.009***<br>(3.068) | -1.645**<br>(0.792)  | -0.319<br>(0.771)   | -0.164<br>(0.347)   | 0.390<br>(0.685)     |                   |  |
|   | Other Support                                | Postponement of loan installment repayment | 0.766**<br>(0.313)  | 1.297*<br>(0.690)    | -0.600***<br>(0.213) | -1.048***<br>(0.259) | -0.0405<br>(0.0826)  | -0.844***<br>(0.243) | 0.678<br>(0.470)    | 2.372**<br>(1.099)   | -0.612**<br>(0.288) | -0.0385<br>(0.287)  | -0.0537<br>(0.129)   | 0.449*<br>(0.256) |  |
| Reduction & discount on loans             |  | 1.120**<br>(0.485)                         | 1.612<br>(1.080)    | -1.051***<br>(0.337) | -2.289***<br>(0.410) | -0.156<br>(0.137)    | -1.444***<br>(0.371) | 0.944*<br>(0.504)    | 3.552***<br>(1.188) | -0.666**<br>(0.303)  | -0.106<br>(0.309)   | -0.0645<br>(0.139)  | 0.244<br>(0.274)     |                   |  |
| Exemptions & Deferments                   |  | 1.352**<br>(0.541)                         | 2.309**<br>(1.117)  | -0.963**<br>(0.376)  | -1.458***<br>(0.415) | -0.0232<br>(0.148)   | -1.372***<br>(0.437) | 0.934<br>(0.705)     | 3.177**<br>(1.562)  | -0.901**<br>(0.438)  | -0.0383<br>(0.426)  | -0.0773<br>(0.192)  | 0.730*<br>(0.385)    |                   |  |
| Delay loan service payment                |  | 1.216<br>(0.760)                           | 1.303<br>(1.119)    | -1.384**<br>(0.562)  | -3.493***<br>(0.875) | -0.294<br>(0.214)    | -1.865***<br>(0.643) | 1.104**<br>(0.483)   | 4.200***<br>(1.135) | -0.439<br>(0.282)    | -0.221<br>(0.288)   | -0.0566<br>(0.128)  | -0.407<br>(0.257)    |                   |  |
| Tax payment deferral                      |  | 1.175**<br>(0.557)                         | 1.368<br>(1.275)    | -1.167***<br>(0.389) | -2.670***<br>(0.486) | -0.197<br>(0.156)    | -1.593***<br>(0.435) | 1.051**<br>(0.519)   | 4.101***<br>(1.274) | -0.221<br>(0.307)    | -0.275<br>(0.318)   | -0.0439<br>(0.143)  | -0.825***<br>(0.291) |                   |  |
| Tax exemption/reduction                   |  |  |                     |                      |                      |                      |                      |                      |                     |                      |                     |                     |                      |                   |  |

Notes: (i) Robust standard errors in parentheses. (ii) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. (iii) Each cell represents an IV regression where the dependent variable is the one mentioned in the column and the independent variables are whether the firm is formal or not, private or not, its

age, whether it is located in an industrial zone, whether the firm provides training to its workers or not, uses technology or not, spends on R&D or not, uses good management practices or not, governorate and sector dummies, in addition to the government support presented in each row.

**Table A4: Effect of Government Support on Firm Performance – by ownership**

| Type of Government Support Measure        |                                    | Private                                    |                     |                      |                      |                      |                      | Public               |                     |                     |                      |                     |                   |
|---|------------------------------------|--|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|----------------------|---------------------|-------------------|
|   |                                    | Ln (Employ.)                               | Ln(Monthly Revenue) | Decrease in Profits  | Reduced Hours        | Lay-offs             | Ever-closed          | Ln (Employ.)         | Ln(Monthly Revenue) | Decrease in Profits | Reduced Hours        | Lay-offs            | Ever-closed       |
| Overall                                   | Government Support                 | 0.370***<br>(0.117)                        | 0.888***<br>(0.257) | -0.357***<br>(0.076) | -0.357***<br>(0.080) | -0.068**<br>(0.033)  | -0.336***<br>(0.079) | 0.141<br>(0.205)     | 0.370<br>(0.416)    | -0.163*<br>(0.084)  | -0.235**<br>(0.095)  | -0.045**<br>(0.022) | -0.079<br>(0.064) |
| Sub-regressions                           | Financial Support                  | 0.806***<br>(0.251)                        | 2.049***<br>(0.562) | -0.754***<br>(0.165) | -0.707***<br>(0.172) | -0.143**<br>(0.0722) | -0.747***<br>(0.168) | 0.120<br>(0.194)     | 0.400<br>(0.389)    | -0.161**<br>(0.079) | -0.230**<br>(0.091)  | -0.042**<br>(0.021) | -0.073<br>(0.061) |
|   | Exemptions & Deferments            | 0.507***<br>(0.166)                        | 1.176***<br>(0.361) | -0.503***<br>(0.110) | -0.532***<br>(0.115) | -0.097**<br>(0.047)  | -0.453***<br>(0.112) | 0.076<br>(0.669)     | 2.040<br>(1.458)    | -0.634**<br>(0.282) | -0.871**<br>(0.376)  | -0.116<br>(0.075)   | -0.184<br>(0.214) |
| Disaggregated Government Support Measures |                                    |  |                     |                      |                      |                      |                      |                      |                     |                     |                      |                     |                   |
| Financial Support                         | Purchasing & renting land Workers' | 11.37***<br>(4.397)                        | 25.87***<br>(9.881) | -11.48***<br>(3.456) | -12.85***<br>(3.613) | -2.220*<br>(1.154)   | -9.818***<br>(3.216) | -0.332<br>(1.086)    | 3.793*<br>(2.220)   | -1.045**<br>(0.473) | -1.395**<br>(0.638)  | -0.134<br>(0.123)   | -0.184<br>(0.344) |
|   | Insurance                          | 2.136***<br>(0.795)                        | 6.831***<br>(1.841) | -1.669***<br>(0.518) | -0.762<br>(0.532)    | -0.300<br>(0.226)    | -2.249***<br>(0.549) | 0.087<br>(0.415)     | 1.338<br>(0.867)    | -0.390**<br>(0.168) | -0.539**<br>(0.215)  | -0.076*<br>(0.044)  | -0.124<br>(0.130) |
|   | Tenders, bids & auctions           | 6.523***<br>(2.387)                        | 14.84***<br>(5.489) | -6.567***<br>(1.818) | -7.304***<br>(1.893) | -1.269**<br>(0.646)  | -5.656***<br>(1.690) | 0.118<br>(0.565)     | 1.741<br>(1.180)    | -0.530**<br>(0.228) | -0.733**<br>(0.295)  | -0.104*<br>(0.062)  | -0.168<br>(0.176) |
|   | Production process                 | 2.579***<br>(0.816)                        | 6.750***<br>(1.831) | -2.364***<br>(0.545) | -2.095***<br>(0.571) | -0.446*<br>(0.233)   | -2.432***<br>(0.563) | 0.099<br>(0.383)     | 1.231<br>(0.798)    | -0.357**<br>(0.158) | -0.496***<br>(0.190) | -0.072*<br>(0.040)  | -0.119<br>(0.120) |
|   | Feasibility studies                | 47.82**<br>(23.38)                         | 112.2**<br>(55.11)  | -47.50**<br>(20.70)  | -50.59**<br>(21.67)  | -9.133<br>(5.571)    | -42.58**<br>(19.14)  | 1.239<br>(2.486)     | 9.401<br>(8.398)    | -2.121<br>(1.317)   | -3.000*<br>(1.685)   | -0.510<br>(0.331)   | -0.873<br>(0.833) |
|   | Legal fees                         | 6.226***<br>(2.247)                        | 14.87***<br>(5.129) | -6.036***<br>(1.672) | -6.221***<br>(1.727) | -1.156*<br>(0.598)   | -5.564***<br>(1.631) | 0.248<br>(0.428)     | 0.885<br>(0.830)    | -0.355**<br>(0.175) | -0.505**<br>(0.209)  | -0.090*<br>(0.047)  | -0.157<br>(0.133) |
|   | General financial support          | 2.266***<br>(0.874)                        | 7.398***<br>(2.004) | -1.724***<br>(0.565) | -0.654<br>(0.582)    | -0.307<br>(0.248)    | -2.423***<br>(0.601) | 0.031<br>(0.530)     | 1.808<br>(1.100)    | -0.507**<br>(0.213) | -0.694**<br>(0.280)  | -0.089<br>(0.056)   | -0.139<br>(0.165) |
|   | Payback old state dues             | 11.24**<br>(4.708)                         | 42.31***<br>(15.63) | -9.011***<br>(3.235) | -4.760<br>(2.898)    | -1.632<br>(1.212)    | -11.66***<br>(3.698) | -0.316<br>(1.330)    | 4.539*<br>(2.688)   | -1.281**<br>(0.578) | -1.718**<br>(0.784)  | -0.176<br>(0.150)   | -0.249<br>(0.419) |
|   | Exports drawback                   | 2.793***<br>(0.941)                        | 6.371***<br>(2.083) | -2.789***<br>(0.651) | -3.030***<br>(0.685) | -0.538**<br>(0.263)  | -2.456***<br>(0.643) | 1.431<br>(2.131)     | 4.572<br>(4.824)    | -1.690<br>(1.030)   | -2.429*<br>(1.251)   | -0.461*<br>(0.272)  | -0.811<br>(0.691) |
|   | Other Support                      | Postponement of loan installment repayment | 0.793***<br>(0.265) | 1.967***<br>(0.626)  | -0.776***<br>(0.178) | -0.791***<br>(0.186) | -0.148**<br>(0.073)  | -0.721***<br>(0.183) | 6.835<br>(7.598)    | -11.67<br>(11.04)   | 0.795<br>(2.192)     | 0.485<br>(2.417)    | -0.714<br>(0.808) |
| Reduction & discount on loans             |                                    | 0.985***<br>(0.319)                        | 2.368***<br>(0.755) | -0.991***<br>(0.210) | -1.086***<br>(0.224) | -0.191**<br>(0.092)  | -0.865***<br>(0.213) | 14.90<br>(25.16)     | -22.42<br>(41.37)   | -0.478<br>(4.487)   | -1.957<br>(5.769)    | -1.927<br>(3.273)   | -4.010<br>(6.976) |
| Delay loan service payment                |                                    | 1.529***<br>(0.511)                        | 3.870***<br>(1.137) | -1.447***<br>(0.358) | -1.348***<br>(0.355) | -0.274*<br>(0.141)   | -1.439***<br>(0.377) | 0.554<br>(4.801)     | -15.58<br>(10.73)   | 4.618<br>(3.316)    | 6.246<br>(4.202)     | 0.707<br>(0.639)    | 1.052<br>(1.638)  |
| Tax payment deferral                      |                                    | 1.316***<br>(0.449)                        | 2.866***<br>(0.872) | -1.324***<br>(0.313) | -1.471***<br>(0.331) | -0.256**<br>(0.127)  | -1.142***<br>(0.307) | -0.053<br>(0.703)    | 2.297<br>(1.485)    | -0.678**<br>(0.302) | -0.920**<br>(0.398)  | -0.107<br>(0.079)   | -0.162<br>(0.226) |
| Tax exemption/reduction                   |                                    | 1.512***<br>(0.482)                        | 4.219***<br>(1.227) | -1.424***<br>(0.324) | -1.358***<br>(0.334) | -0.271*<br>(0.138)   | -1.394***<br>(0.331) | -0.104<br>(0.605)    | 2.095*<br>(1.256)   | -0.584**<br>(0.246) | -0.787**<br>(0.324)  | -0.0857<br>(0.067)  | -0.124<br>(0.191) |

Notes: (i) Robust standard errors in parentheses. (ii) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. (iii) Each cell represents an IV regression where the dependent variable is the one mentioned in the column and the independent variables are whether the firm is formal or not, private or not, its age, whether it is located in an industrial zone, whether the firm provides

training to its workers or not, uses technology or not, spends on R&D or not, uses good management practices or not, governorate and sector dummies, in addition to the government support presented in each row.

**Table A5: most used and most effective measures**

|   | Pre- COVID | Post- COVID | cumulative frequency | rank in terms of usage | rank of effectiveness in pooled sample estimates* |
|---|------------|-------------|----------------------|------------------------|---|
| <b>Most frequently used measures (89%)</b>  |            |             |                      |                        |   |
| Postponement loans installment repay.       | 25%        | 42%         | 42%                  | 1                      | 6   |
| Delay loan service payment                  | 21%        | 17%         | 59%                  | 2                      | 2   |
| Reduction/discount on loans                 | 16%        | 11%         | 69%                  | 3                      | 5   |
| Tax payment deferral                        | 3%         | 10%         | 79%                  | 4                      | 3   |
| Tax exemption/reduction                     | 2%         | 5%          | 84%                  | 5                      | 4   |
| Export drawback                             | 9%         | 5%          | 89%                  | 6                      | 1   |
| <b>Least frequently used measures (11%)</b> |            |             |                      |                        |   |
| FS workers' insurance                       | 4%         | 2%          | 91%                  | 1                      | 8   |
| FS production process                       | 3%         | 2%          | 93%                  | 2                      | 7   |
| FS legal fees                               | 3%         | 2%          | 95%                  | 3                      | 4 repeat  |
| FS tenders, bids & auctions                 | 2%         | 2%          | 97%                  | 4                      | 4 repeat  |
| General FS                                  | 3%         | 1%          | 98%                  | 5                      | 6   |
| Payback old state dues                      | 1%         | 1%          | 99%                  | 6                      | 3   |
| FS purchasing/renting land                  | 7%         | 1%          | 99%                  | 7                      | 2   |
| FS feasibility studies                      | 1%         | 1%          | 100%                 | 8                      | 1   |

Source: Authors' own elaboration using the EIFBS.

\*Note: the rank of effectiveness in pooled sample estimates is calculated as the average rank in effectiveness on all 6 indicators given in Table 4.