Unmasking the Impact of COVID-19 on Businesses

Firm Level Evidence from Across the World

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Abstract

This paper provides a comprehensive assessment of the short-term impact of the COVID-19 pandemic on businesses worldwide with a focus on developing countries. The results are based on a novel data set collected by the World Bank Group and several partner institutions in 51 countries covering more than 100,000 businesses. The paper provides several stylized facts. First, the COVID-19 shock has been severe and widespread across firms, with persistent negative impact on sales. Second, the employment adjustment has operated mostly along the intensive margin (that is leave of absence and reduction in hours), with a small share of firms laying off workers. Third, smaller firms are disproportionately facing greater financial constraints. Fourth, firms are increasingly relying on digital solutions as a response to the shock. Fifth, there is great uncertainty about the future, especially among firms that have experienced a larger drop in sales, which is associated with job losses. These findings provide a better understanding of the magnitude and distribution of the shock, the main channels affecting businesses, and how firms are adjusting. The paper concludes by discussing some avenues for future research.

Unmasking the Impact of COVID-19 on Businesses: Firm Level Evidence from Across the World[*]

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1. Introduction

The COVID-19 pandemic is resulting in an unprecedented shock to the private sector, threatening the global progress in poverty reduction and shared prosperity made in recent years . The impact on firms and the destruction of existing productive capacities due to the pandemic could have large effects on the growth prospects of developed and developing economies, not only in the short-run but over the longer run; especially if this destruction also affects the more productive firms. Restrictions to mobility and economic activity, higher transaction costs and potential cross-country trade and currency disputes can limit the allocation of resources within countries and across sectors, worsening misallocation in the economy and lowering aggregate productivity growth.[1] Understanding the severity of the impact of the shock and its distribution, the adjustment mechanisms adopted by firms, and the uncertainty created, is critical to understand these reallocation channels and design better policies that can help smooth the impact of the shock and support recovery.

This paper provides the first comprehensive assessment at the global level of the short-term impact of the pandemic across the world relying on a novel dataset collected during the months of April through August 2020.[2] The data collected cover more than 100,000 businesses across 51 countries, primarily low- and middle-income countries across the world.[3] Data collection aimed at covering almost all sectors of the economy (i.e. manufacturing, services and agriculture) and a large range of countries with different income levels (i.e. ranging from Afghanistan to Italy) as well as different levels of exposure to the COVID-19 shock.[4] To the best of our knowledge, this is the most comprehensive assessment of the short-term impact of COVID-19 on businesses in terms of number of firms and countries covered.

Our paper contributes to the quickly expanding literature assessing the economic impact of COVID-19. Much of the early research attempts to draw parallels with previous crises or uses macro simulations in combination with some ex-ante measures of vulnerability to the pandemic. Ludvigson et al. (2020), for example, extrapolate from past natural disasters to model COVID-19 as a series of large, multiple-period exogenous shocks.[5] Bonadio et al. (2020) use a quantitative framework to simulate a global lockdown as a contraction in labor supply for 64 countries, where labor supply is assumed to change with the fraction of work in the sector that can be done from home, interacted with the stringency with which countries imposed lockdown measures. They find a major contraction in GDP, with a quarter of the impact attributed to disruptions in global supply chains.

Another strand of the literature uses high-frequency, unconventional data to monitor the pan-

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[1]At the same time, the shock could create pressures on firms to expand their use of digital technologies or increase competition which could also lead to higher productivity growth and better resource allocation.

[2]Data were collected jointly by World Bank, national authorities and partner organizations relying on an homogeneous questionnaire.

[3]Among richer countries, our dataset covers Cyprus, Greece, Italy, Poland, Romania and Slovenia. Data collected cover all regions where the World Bank is present: East Asia and Pacific (EAP), Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), Middle East and North-Africa (MNA), South Asia (SAR), and Sub-Saharan Africa (SSA).

[4]Twenty-eight countries included businesses in agriculture in the sample, and these observations account for around 5% of the sample. Most are in the Philippines, Tanzania, Ghana, Kenya, and Tunisia.

[5]Using a costly disaster index, the authors estimate that under fairly conservative assumptions, the pandemic could lead to a cumulative loss in industrial production of 20% and in service sector employment of nearly 55 million jobs over the next 12 months in the United States.

demic's impact in real time, including text data from earnings reports (Hassan et al., 2020), unemployment claims, and transaction data from credit or debit card purchases (Chetty et al., 2020). This diverse evidence all points towards a severe and immediate impact of the shock on firm revenue and employment. Existing evidence also suggests that the pandemic affected countries with different degrees of lockdown severity alike. Extrapolating estimates from the Republic of Korea, where no lockdown was implemented, Aum et al. (2020) hint at fear of infections rather than lockdown as the main driver of the drop in local employment, and suggests the pandemic has truck high-contact industries the hardest.

As the pandemic unfolds over time, more direct evidence, particularly using surveys, is emerging about its impact on jobs and business activities at different stages of the pandemic. In the short term, severe impacts have been documented across countries in terms of revenue loss, business closures, mass layoffs, and liquidity (see Dai et al. (2020b) for evidence in China and Bartik et al. (2020); Humphries et al. (2020a); Adams-Prassl et al. (2020); Fairlie (2020a,b) for evidence in the United Kingdom, United States and Germany). Firms are hit by multiple channels, with depressed demand being the most frequently reported concern in recent firm surveys and becoming more prominent over time (Dai et al., 2020a; Balleer et al., 2020). Acharya and Steffen (2020) find a sharp increase in US companies' cash holdings in March, as COVID-19 fears started to materialize. They attributed this increase in cash to a concern among managers that their firm's credit rating would be downgraded on account of pandemic-related business disruption, and that it would become more expensive or even impossible to raise cash after that. With falling revenue, most SMEs are now in major financial distress (Bartik et al., 2020; Zhang, 2020).

While there is much uncertainty about the longer term impact of the pandemic, evidence from past crises points to potential scarring effects in the long run. Reallocation effects of the COVID-19 shock are likely to persist long after the pandemic recedes (Barrero et al., 2020). All firms are vulnerable to persistently low demand, but in large systemic crises good and bad firms may be weeded out alike (Hallward-Driemeier and Rijkers, 2013; Foster et al., 2016). More recent estimates from Bosio et al. (2020) using Enterprise Survey data suggest that in multiple shock scenarios, firms suffer liquidity shortages regardless of age, size and productivity levels. Uncertainty can further deter economic activities. Balla-Elliott et al. (2020) find that post-lockdown delays in business reopening in the United States can be explained by low levels of expected demand rather than by health concerns. During past crises, firms were less likely to undertake radical innovation and disproportionately cut back on intangible investment Granja and Moreira (2019); Duval et al. (2020). There has been an unprecedented level of uncertainty documented during this pandemic and firms have been found to respond by significantly cutting expenditures on innovation and general management improvements, which will likely affect future productivity growth (Baker et al., 2020).

Despite this quickly expanding literature, there has been no systematic cross-country evidence about the impact of the pandemic on firms. Some cross-country evidence exists but only focuses on small and relatively selected samples of firms. For example, using survey responses from early April across nearly 500 listed firms in 10 emerging markets, Beck et al. (2020) find that the vast majority of firms have been negatively affected by COVID-19 and reacted by reducing investment rather than payrolls. Surveys of businesses on e-commerce platforms have similarly found widespread

negative impacts on sales and employment among SMEs (Facebook et al., 2020). The limitations of these studies is that they rely on narrow samples of firms, and are less likely to provide an accurate assessment of overall impact at the country level. Besides filling this evidence gap on the impact of the pandemic, our paper is also the first to document systematic evidence on policies to support firms in response to the pandemic. While there have been multiple efforts to take stock of current government policies on COVID-19 (for example, the IMF Policy Tracker and the Oxford COVID-19 Government Response Tracker), not much is known about firm-level access to government support globally. Evidence from past crises suggests that temporary support to firms can be effective. Mexican wage subsidies after the global financial crisis helped speed up employment recovery, especially for smaller firms (Bruhn, 2020). In Sri Lanka, cash grants helped micro-firms survive the crisis and accelerated their recovery following the 2004 Tsunami (De Mel et al., 2012). Nevertheless, as the crisis continues to deepen and the need for support intensifies, it is critical to better understand how accessible and effective current support policies are. In the United States, the Paycheck Protection Program has been found to be associated with increased employment and business survival probability (Bartlett and Morse, 2020; Humphries et al., 2020b). At the same time, its first-come first-serve design skewed its resources towards larger firms and may have reduced its effectiveness (Humphries et al., 2020b). In China, support in the form of payment deferrals and exemptions appear to improve SMEs' cash flows. Yet loans do not appear to be effective in alleviating SMEs' cash constraints or encouraging the reopening of small businesses, potentially due to difficulties in accessing policy-oriented loans and misallocation of credit (Chen et al., 2020). More systematic and timely evidence is needed to inform policy debates on how to best support firms during the COVID-19 pandemic, especially when countries are running out of the fiscal policy space to sustain stimulus packages.

We show several stylized facts that allow us to understand the magnitude of the shock, the main channels affecting businesses, how firms are adjusting, and a potential role for policy interventions. First, while most businesses are likely to be already open 6 weeks after the peak of the shock, the negative impact on their sales has been large and persistent, with significant heterogeneity across firms. Second, the short-term adjustment on employment has been mostly on the intensive margin, with firms in the short-term more likely to grant leave, reduce hours of work, or reduce wages, compared to lay-offs. Third, we find a large degree of heterogeneity in liquidity constraints across countries, but smaller firms are disproportionately affected by financial constraints. Fourth, firms' main response consisted in increasing the use of digital technologies, although this varies greatly across countries and is significantly lower among smaller firms. Fifth, uncertainty is very high especially for businesses that were hit harder. Finally, we conclude by pointing to various avenues for future research.

The remaining part of the paper is structured as follows. Section 2 briefly describes the data. Section 3 describes the impact of the crisis with a focus on operations, sales and employment. Section 4 focuses on liquidity and survival of firms, while section 5 discusses firms' responses. Section 6 addresses the issue of uncertainty relying on a novel measure which builds on Altig et al. (2020a) and Barrero et al. (2020). Finally, section 7 concludes discussing avenues for future research.

2. Description of the survey and the dataset

The World Bank Group (WBG) has developed a brief firm survey instrument to collect data measuring the impact of the COVID-19 pandemic on the private sector. The questionnaire *checks the pulse* of businesses measuring the impact on some critical dimensions: operations of the business, sales, liquidity and insolvency, labor adjustments, firms responses, expectations and uncertainty about the future, and preferred mechanisms of public support. The appendix shows the standard version of the questionnaire.

In this paper we describe the results using harmonized data based on the implementation of the first wave of the business pulse survey in 51 countries over 6 regions.[6] In most countries interviews were conducted over the phone, but in a few countries such as Colombia or Turkey, the questionnaire was administered online. In 31 of these countries, a fresh sample of businesses was collected and the survey was implemented in collaboration with private sector associations, statistical agencies, and other government agencies (mainly Ministries of Finance and Economy). Data for the remaining 20 countries were collected as a follow-up of the World Bank Enterprise Survey, using a questionnaire that excluded some questions from the standard version.[7]

The data include micro, small, medium, and large businesses, across all main sectors (i.e. agriculture, manufacturing, retail, and other services, including construction). Micro-businesses account for 51% of observations in the cross-country data; only around 8% of observations report more than 100 employees before the COVID-19 shock (January 2020; Figure A2). Most businesses in the data are in wholesale and retail (28%), manufacturing (17%), and food preparation services (15%; Figure A3). The sampling frame in some countries excluded micro-firms and/or businesses in agriculture (see Table A2 and Table A3) and in some countries, when micro-businesses were included, the survey instrument offered simplified versions of some questions in order to facilitate data collection.[8]

The sampling frame in most countries where the pulse survey was not a follow-up of the Enterprise Survey was based on censuses from Statistics Agencies, Ministries of Finance or Economy, or business listings from Business Associations, and typically only included registered businesses. In the case of the Enterprise Survey, by design the implementation covers only formal firms. Only Cambodia, Gabon, Ghana, Pakistan, the Philippines, Senegal, South Africa, Sudan, and Tunisia include informal firms in their sample.

Given some of the heterogeneity related to the differences in country samples, implementation strategy, and timing of the surveys, we introduce different controls in the analysis. To control for differences in the composition of the sample, we include in the analysis dummies for size and sub-sector (10 groups), in addition to country fixed-effects. The timing of implementation of the

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[6]In Brazil, the standard pulse survey was implemented not at the national level but on two representative states; Ceara, one of the poorest states located in the North-East, and São Paulo, the largest and richest of the country, concentrating almost one third of Brazil's GDP.

[7]Source: Enterprise Surveys, The World Bank, http://www.enterprisesurveys.org. The two instruments, the standard pulse survey and the Enterprise Survey follow-up, were implemented in Togo. In Bangladesh, the standard pulse survey was implemented on different samples and at different times of the shock. The survey instrument differed across countries but in most cases the Enterprise Survey COVID-19 follow-up excludes some questions on the adjustment to employment and the channels affecting the operations of the business, the module on expectations, and most questions on the adoption of technology as a response to the crisis.

[8]As a result, in some areas when there is no equivalent question, micro firms are excluded from the analysis.

first wave of the pulse survey differed across countries–collection time averaged around 4 weeks per country and spanned from mid-April through the end of August. The survey captures businesses at different stages of the COVID-19 shock in each country (see Figure A1) and to correct for these differences in the timing of the survey, we also include dummies for the number of weeks before or after the peak of the COVID-19 shock, which we proxy using Google mobility data around transit stations (Google, 2020). For each country, we identify the date when mobility reached the trough and then count the number of weeks between the date of the interview and the trough. For countries where Google mobility data are not available, we predict mobility using the stringency of the lockdown restrictions provided in Hale et al. (2020). We describe this exercise and detail on the harmonization and trimming of variables in the appendix. Finally, to control for differences in the number of observations in each sample, we weight our results using the inverse of the number of observations in each country, that is, each country has the same weight in our summary statistics.[9]

3. Impact of the crisis

The COVID-19 outbreak led many firms to close or reduce operations, with large drop in sales, and significant adjustments in employment, but with large heterogeneity in effects across firms. This section assesses the impact of the outbreak across these three dimensions: operation status, sales, and employment. While operation status (e.g. open or temporary closed) refers to the status of the business at the moment of the interview, the results on sales and employment refer to changes in these variables 30 days before the interview compared to the same period of 2019. Because the survey was implemented in different countries at different time, and those countries were facing diverse stages of the COVID-19 outbreak, the data provide a comprehensive picture of the way businesses have been performing and adjusting under the current crisis.

3.1 Operations of the business

The likelihood of a business being open at the peak of COVID-19 crisis and up to 4 weeks after the peak is under 30%, but it significantly increases to almost 75% or more 6 weeks after the peak. Figure 1 presents the results based on the predicted probability of a firm to be open or partially open, controlling for country, size category, sector, and timing fixed effects.

Yet, tourism and small businesses in general are more likely to be closed. 6 weeks after the peak of the COVID-19 outbreak the predicted probability of being open is still under or around 75% for tourism related businesses, such as accommodation (58%) and food and beverage services (73%) (Figure 2). These are the businesses with lowest probability of being open. There are also differences in terms of size after week 6, with large firms being more likely to be open (89%) compared to micro (79%), small (82%), and medium sized (86%) firms.[10]

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[9]In some countries, sampling weights are available in order to produce nationally representative results at the country level, but for comparison purposes, we do not include these weights in the analysis and only weight observations by the inverse of the number of businesses in each sample.

[10]The differences between size groups are statistically significant.

3.2 Impact on sales

The negative impact on sales has been large and widespread across firms. About 84% of firms on average, across countries, have reported a reduction in sales in the last 30 days before the interview, compared to the same period in the previous year. The cross-country average suggests a reduction in sales of about 49% compared to the same period in the last year, with a standard deviation of 0.25.

While the biggest impact of the COVID shock is around the peak of the crisis, the drop in sales is persistently large even 10 weeks later. Figure 3 shows that the average drop in sales in the first 4 weeks following the peak of the shock is between 60% and 75%. In the following months, the drop in sales reduces to 47% in week 8, 47% in week 12, and 43% after week 16. The results show that despite almost 90% of business are open after 10 weeks from the peak of the outbreak, the negative impact on sales is still looming large.

There are significant differences across countries in the impact of the shock on sales, even when controlling for the sector and size composition of the sample. Figure 4 shows that in some countries, such as South Africa, Bangladesh, Sri Lanka, Tunisia, and Nepal, the average drop in sales in our sample is beyond 60%, with significant dispersion between the 10th and the 90th percentiles. However, because the interview was conducted in different periods across countries with different sectoral and size distribution of firms, it is important to control for these characteristics.[11] Once we control for the size, sector, timing of survey, and country fixed effects, we observe some important changes on the expected value of changes in sales. South Africa is still the country with the largest expected drop in sales, followed by Bangladesh, Nepal, Honduras, India, and Jordan, all with average estimates larger than 60% for the drop in sales. Senegal, Sri Lanka, and Côte d'Ivoire exhibit a significant difference between the unconditional and the predicted mean once we control for the characteristics previously mentioned. Figure 4 shows significant dispersion in the change in sales even after we control for differences in the composition of the sample. In other words, both the between-country and the within-country variation in the drop in sales is significant.

There are also important differences across sectors with tourism related activities being the most negatively affected. These results are in line with fact that these activities usually require more face-to-face interactions and are more likely to be closed even after six weeks following the peak of the outbreak. Moreover, these activities have been widely facing more constraints for operation related to containment measures.

Despite differences across countries, sectors, and firm size, there is a large heterogeneity effect across firms within these groups, which implies that the shock is affecting similar firms differently. Figure 5 compares the distribution of the variation of changes in sales between and within country-size-sector groups. The results show that there is significant variation in the percentage change in sales that is not explained by the interaction of country, size, and sector effects. Indeed, only about 19% of the variation in sales relative to the same period in the previous year is explained by country, sector, size group, number of weeks before and after the COVID-19 outbreak peak, and severity of the crisis. Among these variables, country effects are the most significant variable, explaining about 14% of the variation observed in sales. In other words, almost 80% of the variation in sales

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[11]Part of these differences stem from survey implementation as well as by real differences across countries.

drops are to be explained by unobservable factors, such as firm capabilities related to management practices and technologies, among others. As an example, there are 6 retail firms with initially 10 full-time employees in Senegal for which data were collected in the same week. Their sales dropped 73% on average, with a standard deviation of 43.7. These findings suggest that well established knowledge regarding large heterogeneity in the performance of firms within country, sector, and size variation is also evident during the COVID-19 outbreak. These results have relevant implications for policy decisions because they suggest that in a crisis of this magnitude, targeting variables that are relatively easy to observe might be a poor proxy to identify the firms that need most.

3.3 Impact on employment

The employment response to the shock has been dominated by adjustments along the intensive margin, with many firms providing granted leave or reducing hours of workers or wages, and a small share of firms laying-off workers. This is in line with previous findings in the literature suggesting that an adverse shock has little effects on established employment relationships, without bulge of job loss on the onset of a recession (Hall, 2005). Figure 6 shows that around 57% of businesses adjusted their employment levels either on the intensive (44%), the extensive and intensive margin (12%), or only the extensive margin (7%).

Firms that experienced larger sales drops also experienced a larger reduction in employment. Figure 7 shows a positive association between percentage change in sales in the last month, compared to the same period in the previous year, and the average percentage change in employment, as a fraction of the number of workers in January 2020. The estimated elasticity is 0.077, suggesting that for every 1 percentage point in sales reduction, there is a 0.077 percentage point reduction in employment.[12] This number reflects only the adjustment along the extensive margin, which is not the main channel of adjustment in the short-term, and already suggests a significant negative effect in the short term given the average drop in sales experienced by firms in the first 4-6 weeks around the peak of the shock.

Larger firms are significantly more likely to lay off workers and grant leave. Figure 8 shows that the predicted probability of larger firms to reduce workers is about 26%, and this is statistically significantly larger than micro (12%), small (19%), and medium sized (22%) firms. When it comes to granting leave, large firms have a probability of 53%, against 27% for micro firms, 45% for small firms, and 50% for medium sized firms. These differences in terms of size are not as marked when considering the likelihood of reducing wages or hours of working, which are on average about 30%-40% for firms independently of their size (except relative to micro firms).

Tourism related activities, specially accommodation, are also comparatively more likely to lay off workers and grant leave. On average, firms in the accommodation sector exhibit the highest probability of granting leave (52%), and cutting wages (32%). For reduction in hours worked, retail and wholesale exhibit the highest predicted probability with 38%.

An important finding is that firms that are adjusting labor, are doing so through multiple channels at the same time. Businesses that adjust on the intensive margin are also more likely to lay

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[12] As an example, a firm with initially 100 employees that faced an average reduction in sales of about 53%, compared to the same period in the last year, has reduced its size to about 96 employees.

off workers (Figure 10). These findings, combined with the strong association between changes in employment and changes in sales, suggest that firms that were most negatively affected by the shock are relying on multiple mechanism of adjustments of their workforce and driving the adjustments on employment.

4. Liquidity and survival

Sharp increases in corporate and personal insolvency typically follow a crisis period. Firms in developing economies with shallower financial markets are most vulnerable to liquidity problems and insolvency risks (WBG, 2020). The slowdown of economic activity caused by the COVID-19 outbreak and related lock-down measures implemented to tackle the health crisis have led to severe difficulties for companies to meet their financial obligations. Fixed operating costs for firms, such as rents and interest payments, still need to be paid while the cash flow and sales that meet these obligations has contracted substantially (OECD, 2020). Not surprisingly, many otherwise sound companies are facing acute liquidity constraints that eventually might become solvency problems. Our data allows us to assess liquidity constraints and the extent to which COVID-19 has worsened the firm liquidity and risks pushing businesses into bankruptcy.[13]

Consistent with the growing literature on the impact of COVID-19 on bankruptcy and liquidity challenges among firms (e.g. Bircan et al. (2020)), we find a significant degree of heterogeneity in liquidity constraints across countries. Nearly 88% of firms in South Africa have fallen or expect to fall into debt, while only 13% report so in Indonesia (Figure 11). In general, it appears that the problem is more acute among countries where financial development is lower (e.g. Nepal and Bangladesh). We observe instead less cross-country variation when assessing the liquidity of firms using the cash at hand measure. Interestingly, while firms in upper-middle income or high income countries (e.g. the Russian Federation and Greece) are less likely to fall into arrears, they do not have large cash at hand to cover their costs (Figure 12). It should be noted that cash availability among firms captures their liquidity position but does not imply insolvency because firms with no cash may still be able to survive by selling out their non-liquid assets when in need. It is possible that firms in upper-middle income countries with developed financial systems usually do not need to maintain a lot of cash at hand to handle their operations and instead rely on financial market transactions, given their efficiency during regular times.

Within country, differences between firms facing liquidity problems are larger than those between countries. For instance, the bottom 10 percentile of firms in Côte d'Ivoire can expect to cover only 14 days relative to the top 10 percentile, which can cover as much as 112 days of costs. Likewise, in Kenya, Senegal and Tanzania the bottom 10 percentile of firms can cover none, while the top 10 percentile of the firms can cover about a year of costs (Table 1). This finding is similar to Bircan et al. (2020) who use data on 16 emerging economies and three Western European countries to suggest similar within- country variation. Their work suggests that, for instance, about half of all small businesses in Ukraine have cash reserves of less than one month's wages, while around 20% of

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[13]The surveys measure liquidity constraints among firms through two questions: (i) Is it expected that this establishment will fall in arrears in any of its outstanding liabilities in the next 6 months? (ii) As of today, for how many days could this establishment continue paying all costs and payments with the cash available? See appendix for details.

them have the liquidity to pay more than six months' wages. Within- country heterogeneity points to the huge inequality among firms in terms of their access to finance and therefore their likelihood of managing to survive through the crisis.

Smaller firms tend to face more severe financial constraints during COVID-19 even in advanced countries. For example, in the United States 50% of small businesses have fewer than 15 days in buffer cash and even healthy SMEs have less that two months of cash reserves (NYFED, 2020). The OECD also finds that there is a risk of otherwise solvent SMEs going bankrupt while containment measures are in force (OECD, 2020). Consistent with this fact, our results suggest that larger firms have a lower probability of falling into arrears and can cover their costs with cash at hand for a longer period (Figure 13). Larger firms can cover up to 65 days as compared to 59 days in medium-sized firms, 53 and 50 days in small and micro firms respectively. While 36% of large firms and 45% of medium sized firms expect to fall into arrears, a significantly lower probability than other firms, the differences between micro and small firms are not statistically significant, as the probability of falling into arrears for these firms is respectively 53% and 50%.

We also find that firms in sectors that faced larger reductions in demand tend to have bigger financial woes. About 62% and 56% of firms in the accommodation and food preparation services sector expect to fall into arrears as compared to 35% and 43% of firms in financial services and information and communication technology (Figure 14). This sectoral result is in line with the finding that businesses experiencing a larger drop in sales are more likely to fall into arrears during the next 6 months and can cover their costs for fewer days (Figure 15).[14]

5. Firms responses

Overall around 49% of firms made greater use of technology, changed the product mix, or both.[15]. The most common firm response to the pandemic shock has been to expand the use of digital platforms; although this response differs across countries, sectors and firms. A critical challenge of the pandemic has been the fact that lockdown measures and fear about contagion have restricted mobility and social interactions leading both to a large shock to demand, while restricting the ability of firms to perform key business activities such as onsite (i.e. in person) sales. Figure 16 shows that around 34% of firms have increased (around 22%) or started (around 8%) to use the internet, social media and digital platforms; and 17% of firms have invested in new equipment, software or digital solutions in response to the pandemic. The shock has clearly accelerated digital adoption and this could lead to productivity gains in the future.

The survey also measures two types of adjustment related to product innovation (i.e. changes in the product and services mix of the firm). Around 5% of firms sought the occasion to diversify towards some health related products or services. More importantly, around 21% of firms opted for changing some of their products or services, or by adding new ones. This suggests that one in four

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[14]This is consistent with Schivardi and Romano (2020) who determine the set of Italian firms that will be liquidity constrained using changes in sales as one of the three main ingredients determining a firm's financial position.

[15]In most countries the surveys ask about some key firm's responses to the crisis, the increase in use of digital platforms, investment in digital technologies, the introduction of changes in the product/services mix. Some of the countries where the questions were not included are India, Côte d'Ivoire, Mali and Colombia. We also exclude the Philippines due to the very high non-response rate. In some countries, micro firms were not asked these questions and, therefore, we also exclude them from the analysis.

firms performed some kind of product innovation, either by introducing a new product or service or by changing some of the products or services attributes.

This increase in the use of digital platforms is quite heterogeneous across countries and correlated with firm size. The use of digital solutions is much lower among smaller firms. Figure 17 shows the predicted probabilities of each firm size group for different responses to the shock. The probability of using and increasing use of digital technologies and also the probability of investing in digital solutions is increasing in firm size. On the other hand, the probabilities of diversifying towards health products and changing the product bundle are similar across firm sizes. In addition, responses differ largely across countries. For example, the fraction of businesses that increased their use of online platforms ranges from 11% in Ghana to 81% in Indonesia.[16]

One interesting element that emerges from the analysis is the evidence of potential complementarities across the different responses as we observe evidence of bundling of responses. For example, firms that expand the use of digital technologies, diversify into health and health related products, or change the product or services bundle are also more likely to invest in digital solutions (Figure 18). In the case of increased use of and investments in digital technologies, the complementarity with investments in digital equipment is evident, since firms may need to upgrade their digital infrastructure in order to expand its use. More surprising is the bundling with other responses such as changes in the product mix, which suggests that some firms are responding more actively in changing key elements of their business model.

6. Uncertainty

As discussed in recent work by Altig et al. (2020a); Barrero et al. (2020), COVID-19 represents a fundamental shock to the economy through the uncertainty that it injected among economic actors.[17] This uncertainty depends primarily on health related aspects (i.e. mortality rate associated with the virus and expectation regarding time to find a successful vaccine) but also to policy responses (i.e. type and length of government support), as well as behavioral responses of economic actors (i.e. consumption and travel patterns).

To quantify the uncertainty generated by the COVID-19 shock, we rely on a measure that builds on Altig et al. (2020b). This measure collects subjective probability distributions over own-firm future anticipated outcomes and allows us to measure subjective micro-level uncertainty, which is likely to drive firms' decisions in the future. To build this measure, we asked firms to provide their expected changes in sales for the next six months, compared to the same period last year, with the probability that they believe this would happen (regular scenario). We then follow up with questions on two additional scenarios, one more optimistic and one more pessimistic, with their respective subjective probabilities. We use the average of these three scenarios, weighted by their respective subjective probability, to measure expectation of sales growth. We then calculate the

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[16]Similarly, the fraction of firms that increased their investment in digital solutions is 3% in Bangladesh, 10% in Romania, and 25% in Colombia.

[17]Policy makers have emphasized the importance of this uncertainty channel as highlighted by the speech of FED Chairman Jerome Powell: "We are now experiencing a whole new level of uncertainty, as questions only the virus can answer complicate the outlook. Indeed, there is massive uncertainty about almost every aspect of the COVID-19 crisis" (May 21 2020).

standard deviation of this prediction as a measure of uncertainty.

Our measure differs from the original one developed by Altig et al. (2020b) in two ways. First, it elicits only three scenarios with subjective probability distributions over the establishment's future sales growth instead of five scenarios. Second, it focuses on a shorter horizon of 6 months instead of 12 months.[18]

Previous research showed that this measure of uncertainty is predictive of future growth and significantly correlated with recent news about the firm's growth expectations. We report here five main findings based on our results.

First, we find that on average businesses expectations are three times more pessimistic than those in the United States (US) with an average expected sales growth of about -9% in the cross-country dataset and -3% in the United States. Moreover, businesses are significantly more uncertain than businesses in the United States as the average growth rate of uncertainty is close to 21% which is about 4 times larger than uncertainty among US businesses.[19]

Second, a striking finding is that uncertainty is broad-based and cuts across all firms irrespective of their size, and strikingly similar across sectors too, as shown in Figure 19 and Figure 20, with the exception of the hospitality industry (food preparation services and accommodation) where the situation is significantly worse.

Third, expectations and uncertainty clearly reflect the firm-level experience at the micro level as firms that experienced larger sales drop in the last 30 days are both more pessimistic (i.e. expect lower sales growth in the future) and have higher uncertainty (Figure 21). Similarly, at the macro level, the size of the shock experienced at the country level is correlated with both expectations and uncertainty as businesses in those countries hit by a larger crisis (as measured by the magnitude of the mobility drop) are significantly more pessimistic and have higher uncertainty (Figure 22).[20]

Fourth, while country characteristics, proximity to the peak of the crisis, and sectoral characteristics all matter to explain expectations, these are much less important in explaining uncertainty which is largely explained by firm-level unobserved characteristics (Figure 23 and Figure 24). In other words, as shown by Figure 24, the variation in the uncertainty between country-size-subsector groups is smaller than the variation between firms within these groups.

Finally, expectations and uncertainty have an immediate connection with jobs and welfare. In fact, we find that those businesses that are pessimistic or have higher uncertainty are significantly more likely to have fired more workers (Figure 25).

7. Conclusions

The results from the business pulse surveys draw a sobering picture on the impact of the shock. Firms have been severely affected by the COVID-19 pandemic, often through multiple shocks at the same time. Not only do firms report a significant drop in sales, but the financial situation is

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[18]The reasons for these differences are due mainly to the fact that we implemented our survey over the phone and with many entrepreneurs that had varying levels of literacy, and we had more stringent needs in terms of simplification and time.

[19]The comparison with the United States is relative to expected sales growth ranging between -3% and 0% as reported by Atlanta FED Uncertainty Survey available here.

[20]To measure severity, countries in the dataset are sorted into quartiles based on the drop in mobility at the peak of the crisis.

worsening by reduced access to finance, and firms face significant uncertainties about the future. A substantial group of firms indicate that they are on the brink of insolvency, potentially leading to more employment losses, and uncertainty is exceptionally high which also is likely to lead to lower investments and more job losses. Against this backdrop, public policies play a key role to mitigate these negative impacts, help firms weather the initial storm, and support recovery.

In response to the shock countries have introduced a wide variety of support programs for firms and workers, varying from covering wage payments for workers (e.g., Brazil's *MP936* scheme or South Africa's *Temporary Employer-Employee Relief Scheme*), offering subsidized loans (e.g., Ghana's *Adom* and *Anidaso* loans scheme) to allowing deferrals of tax payments (e.g., deferral of corporate taxation in Brazil and Mexico).[21] Many of these early stage policies are aimed to help firms in "keeping the lights on" by improving cash flow, often with limited targeting.

Cirera et al. (2020) show that despite these efforts, access to support programs is very limited, especially in poorer countries and among smaller firms. Their results also highlight a critical challenge for policy makers: it is difficult to identify which firms should be targeted. We show that in a crisis of this magnitude, targeting variables that are relatively easy to observe, such as size and sector, might be a poor proxy to identify the firms most in need of support. This is because most of the variations in sales drops are not explained by the variables we can usually observe in a data set. Given how widespread the shock is across the economy, similar cautions regarding targeting criteria for policy interventions supporting businesses pre-COVID19 are needed, by taking into account the large heterogeneity between firms belonging to the same sector and of similar size. In future research, it is very important to assess the distribution of policy support programs and how these interventions can support the recovery, or even further spurring technological adoption and productivity growth.

With COVID-19 cases still increasing globally, countries and their firms will continue to be affected by health and economic shocks in the foreseeable future. As this survey was conducted during the initial stages of the pandemic, the ability of firms to adapt to the new reality will become a more important factor determining performance and survival. For this reason, continued and high-frequency data collection efforts have a crucial role to play in helping us to better understand longer-term effects of the crisis.

Finally, a concern for many countries is the extent to which the crisis could have scarring effects and worsen growth prospects. We think productivity growth could be an especially important channel to analyze as the crisis could effectively impair productivity growth through different mechanisms, by reducing incentives or resources for investment in innovation as well as by worsening misallocation of resources between firms and sectors (Di Mauro and Syverson, 2020).

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[21] As shown by World Bank (2020) more than 140 countries had announced some sort of policy to support SMEs by end of April 2020.

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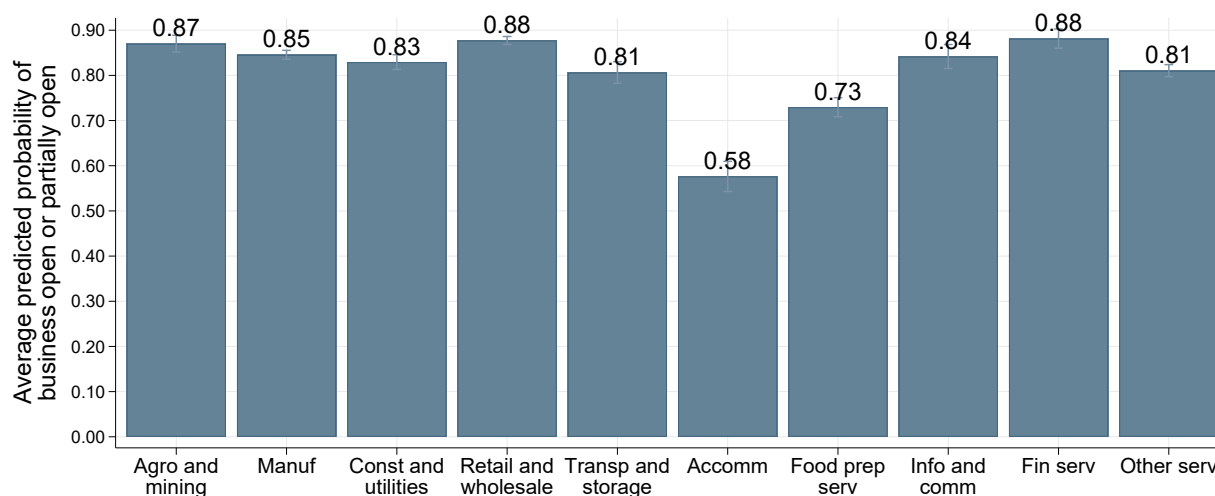
APPENDIX

A. Figures

Figure 1: Average predicted probability of business open or partially open.
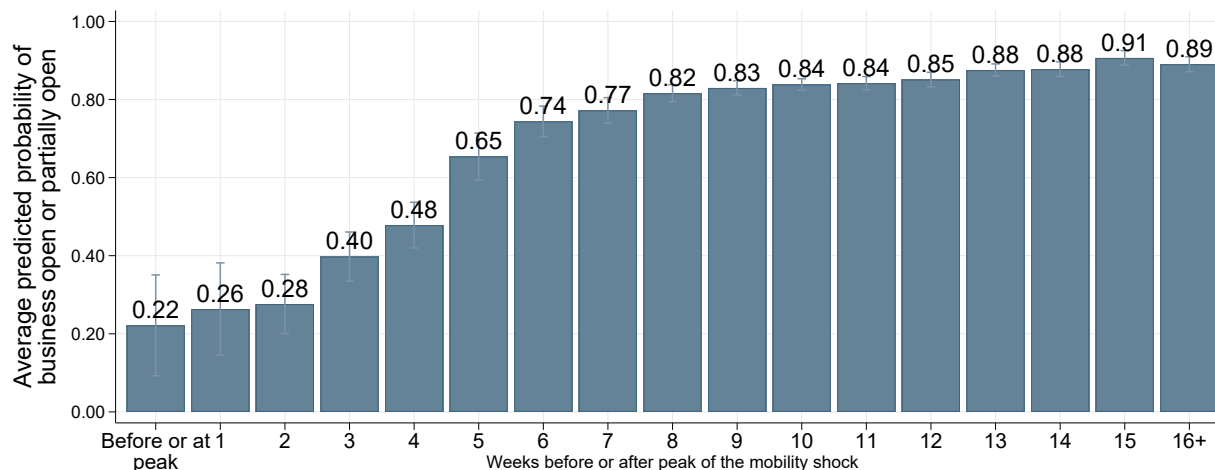
Note: Average predicted probability of being open/partially open across number of weeks before or after the peak in the shock (proxied using mobility data) from a Probit that controls also for country, size, and sector fixed effects.

Figure 2: Average predicted probability of business open or partially open after 6 weeks from the peak of the COVID-19 shock.


Note: Average predicted probability of being open/partially open across number of weeks before or after the peak in the shock (proxied using mobility data) from a Probit that controls for country, size, and sector fixed effects.

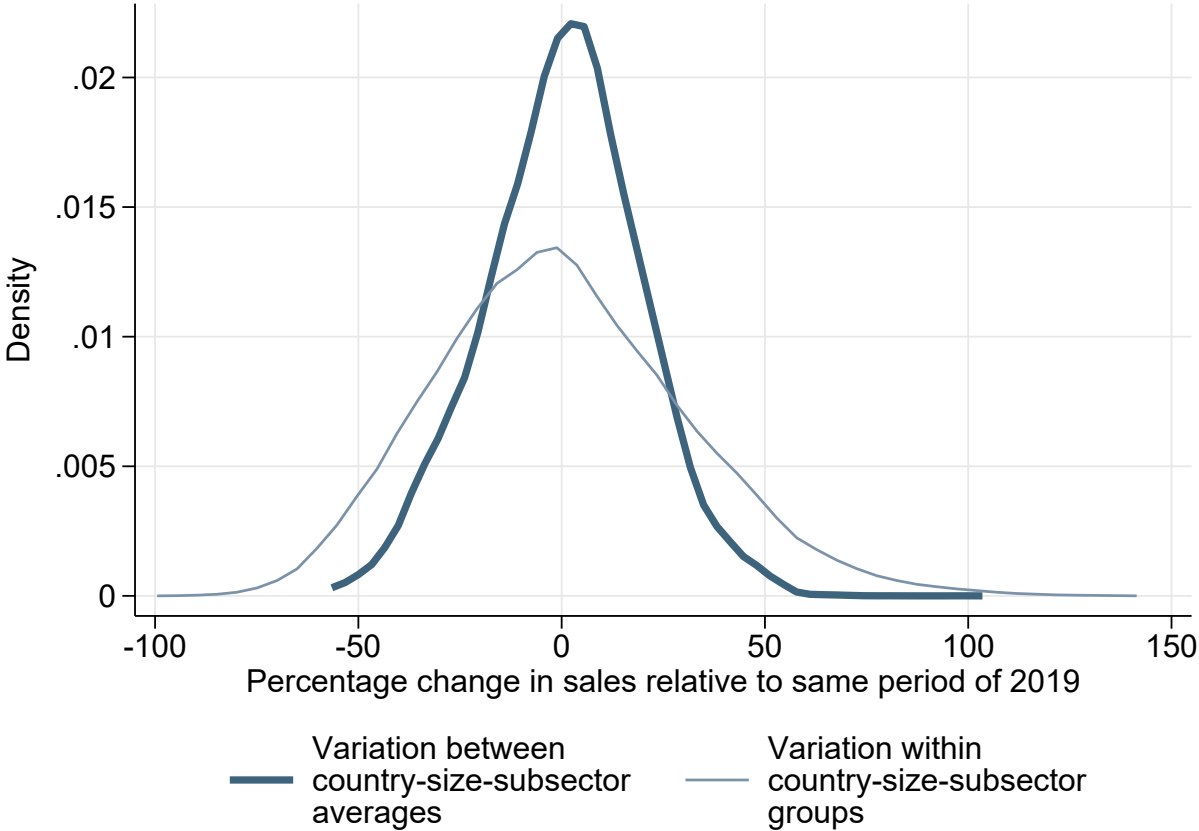Figure 3: Average changes in sales after the peak of the COVID-19 shock.
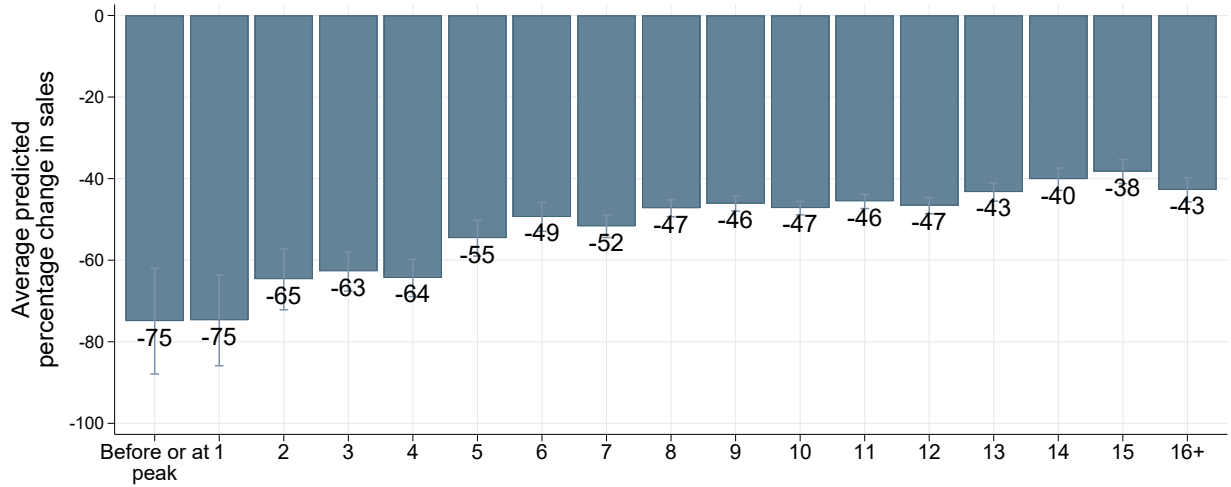
Note: Average predicted mean conditioning on weeks from the peak from a linear regression controlling for country, size, sector, and weeks before and after peak of the shock.

Figure 4: Average changes in sales across countries.


Mean ├───┤ 10th and 90th percentile
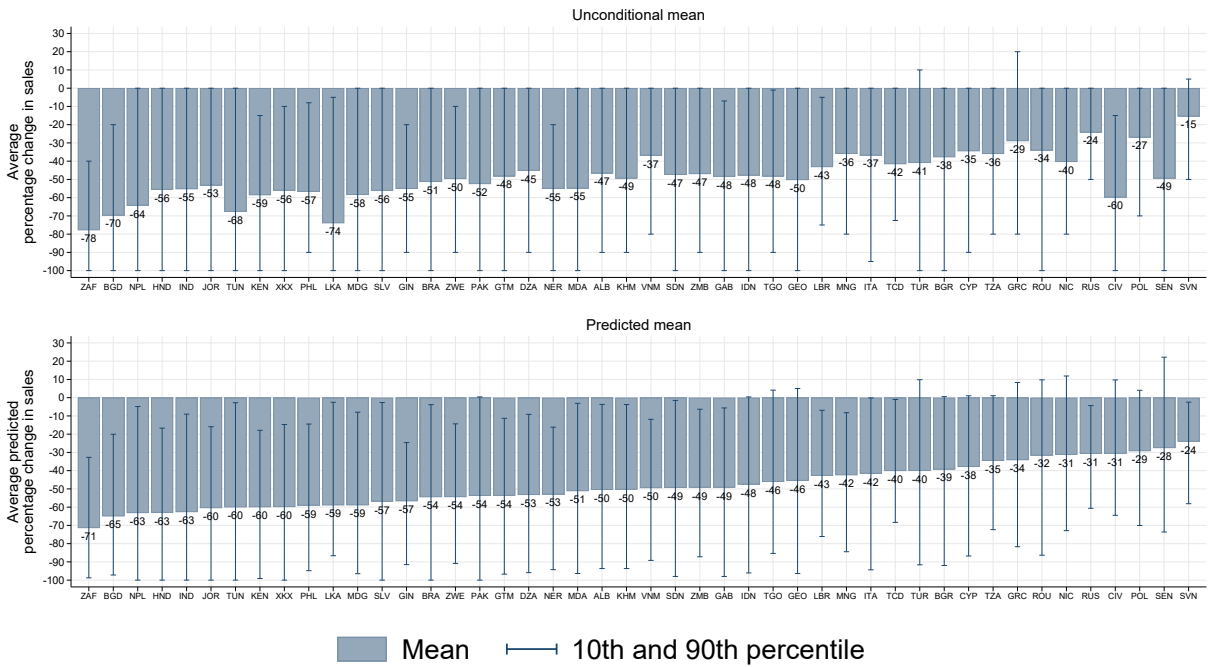
Note: The predicted change conditions on country comes from a linear regression controlling also for size, sector, and weeks before and after the peak of the shock.

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Figure 5: Distribution of the percentage change in sales. Between firms in same country-size-sector vs. between country-size-sectors.


Note: The between variation shows the distribution of the average change in sales in each country-size-sector group. The within variation shows the distribution in change in sales after removing the country-size-sector mean.

Figure 6: Fraction of businesses in each margin of adjustment in employment.
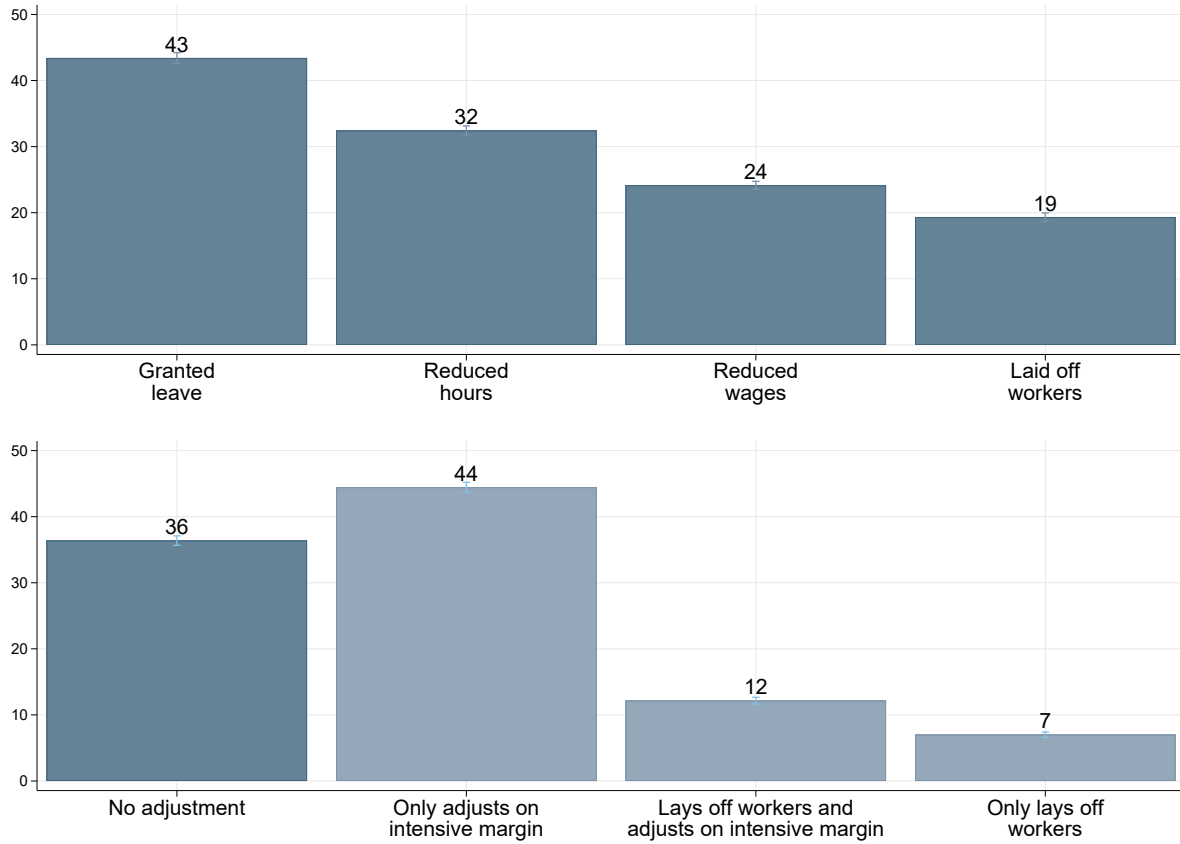
Note: Unconditional mean. Businesses can adjust on one or more margins at the same time. Leave of absence includes both paid and unpaid.

Figure 7: Average percentage change in employment and change in sales.
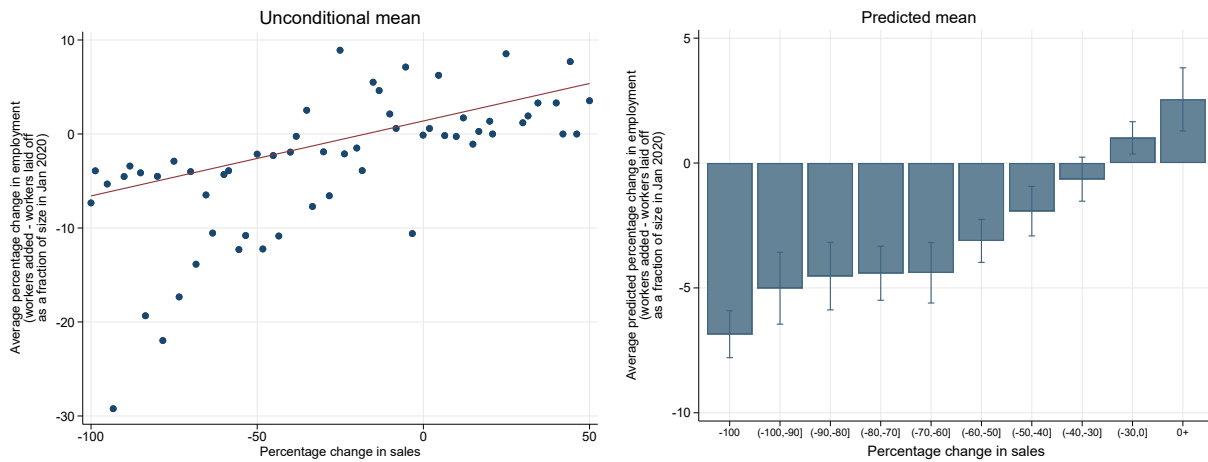
Note: The left panel groups the percentage change in sales into bins and computes the average percentage change in employment for each bin. The right panel shows the average predicted change conditioning on sales bin from a linear regression that controls also for country, size, sector, and weeks before/after peak of the crisis.

Figure 8: Average predicted probability for each adjustment margin across size of the firm.
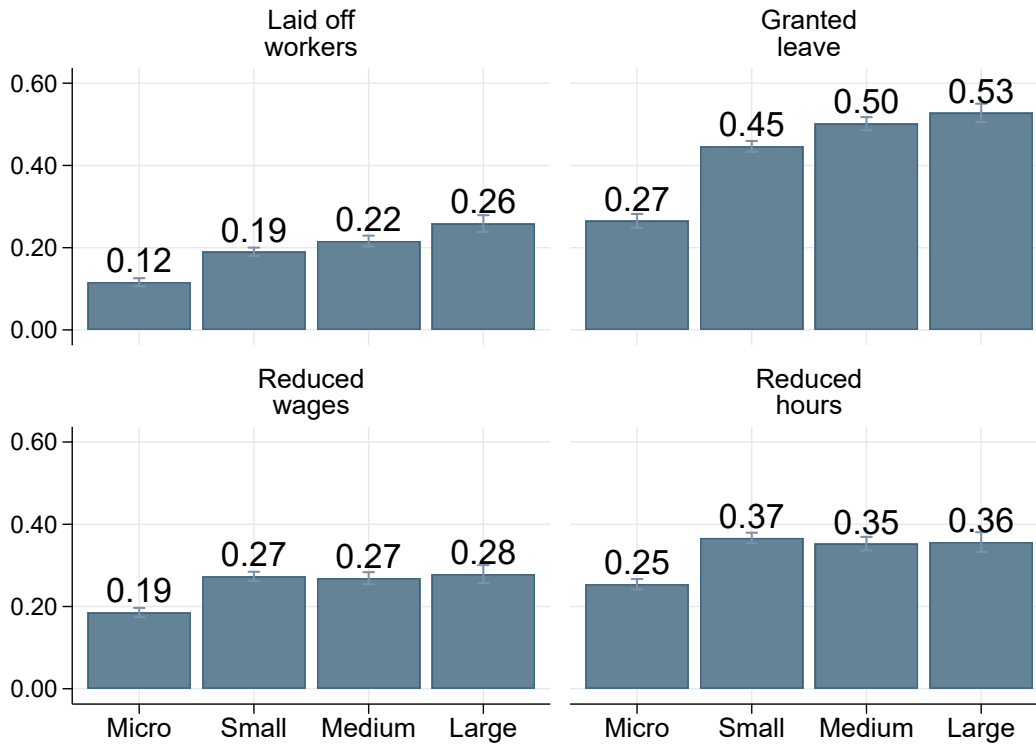
Note: Average predicted probability for size from a Probit that controls for change in sales, dummies for country, size, sector, and weeks before and after the peak of the mobility shock.

Figure 9: Average predicted probability for each adjustment margin across sectors.
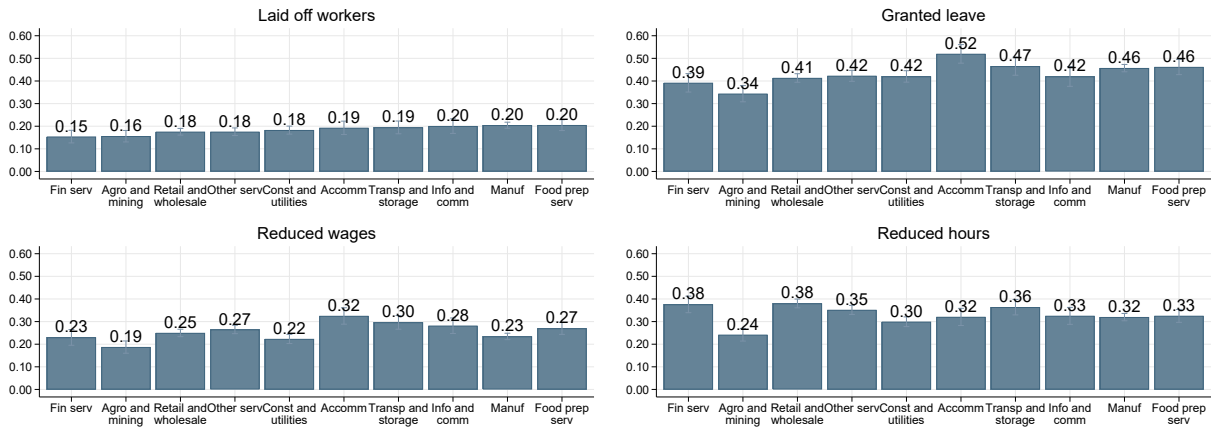
Note: Average predicted probability for sector from a Probit that controls for change in sales and dummies for country, size, sector, and weeks before and after the peak of the mobility shock.

Figure 10: Average predicted probability of laying off workers across predicted probabilities of adjusting on the intensive margin.
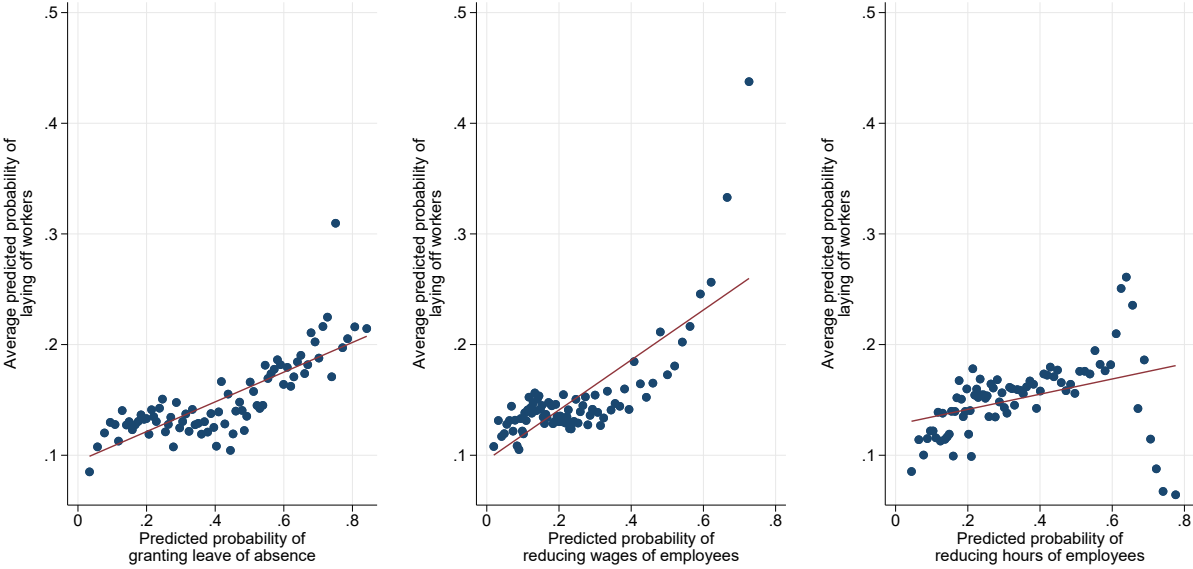

Note: Predicted probabilities from Probit models that control for change in sales, and dummies for country, size, sector, and weeks before and after the peak of the mobility shock. The analysis first conditions on the probability on the x-axis and computes the average probability of businesses in that category in the y-axis.

Figure 11: Fraction of businesses in arrears or expected to fall in arrears.
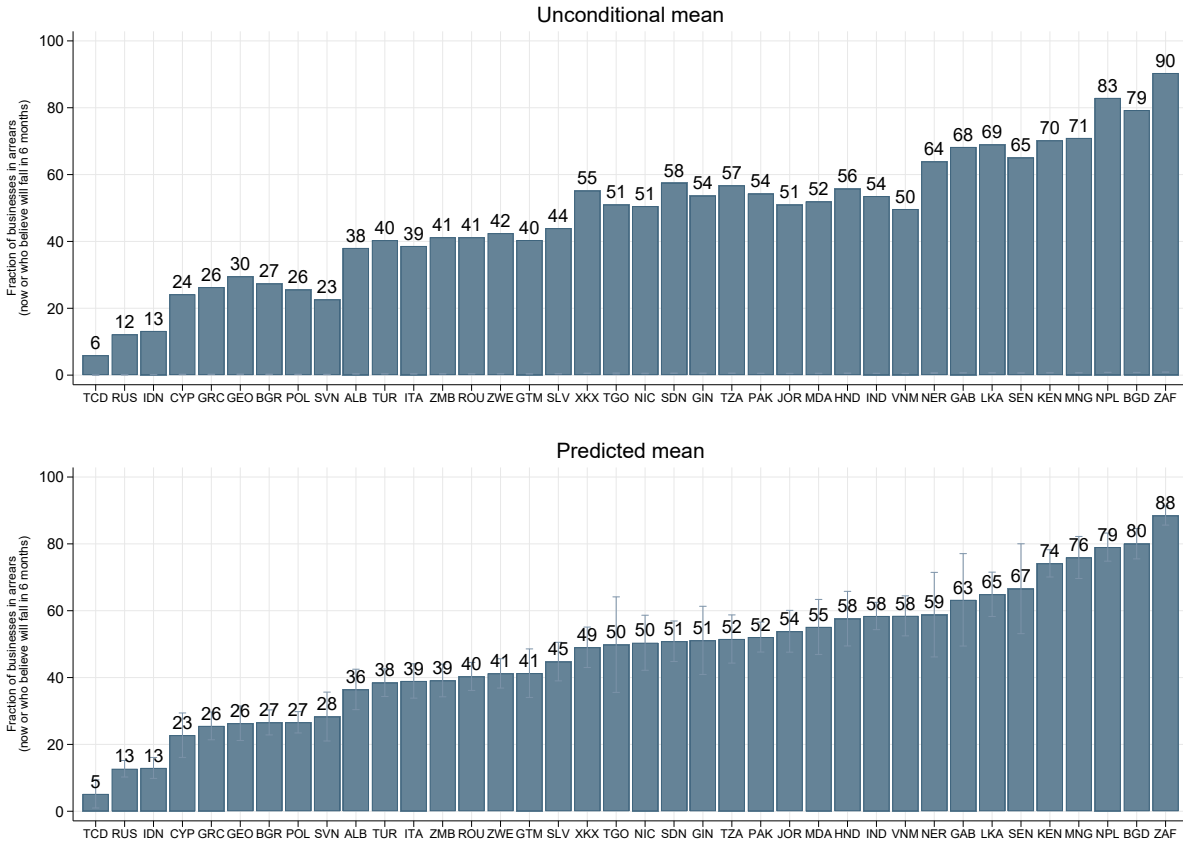
Note: Predicted probability from a Probit model that controls for country, size, sector, and weeks before and after the peak of the mobility shock.

Figure 12: Available liquidity - Number of days during which establishment can cover its costs with cash on hand.
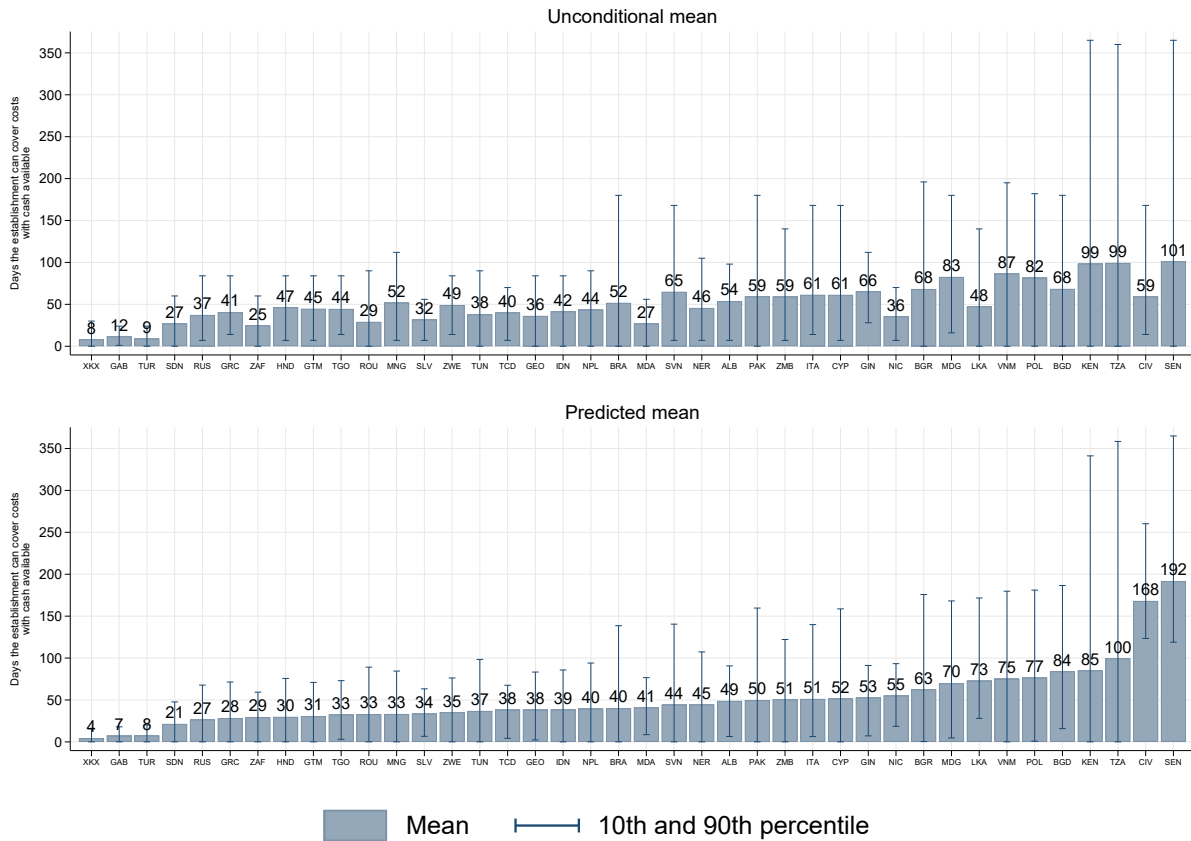
Note: The predicted mean comes from a linear regression that controls for country, size, sector, and weeks before and after the peak of the mobility shock.

Figure 13: Probability of falling in arrears and available liquidity: Differences across businesses with different sizes.

Note: The left panel shows the predicted probability from a Probit that controls for country, size, sector, and weeks before and after the peak of the mobility shock. The right panel shows the predicted mean from a linear regression on the same controls.

Figure 14: Probability of falling in arrears and available liquidity: Differences across sectors.

Fraction in arrears

Available liquidity

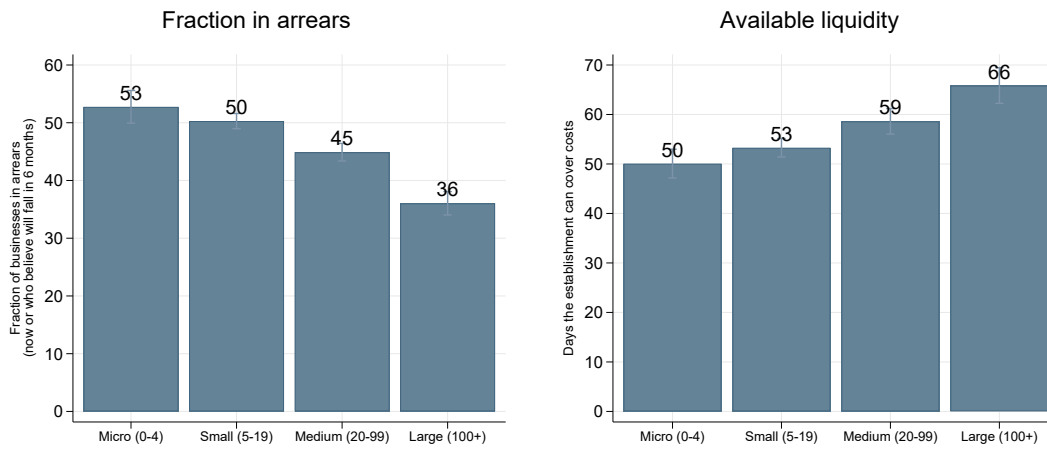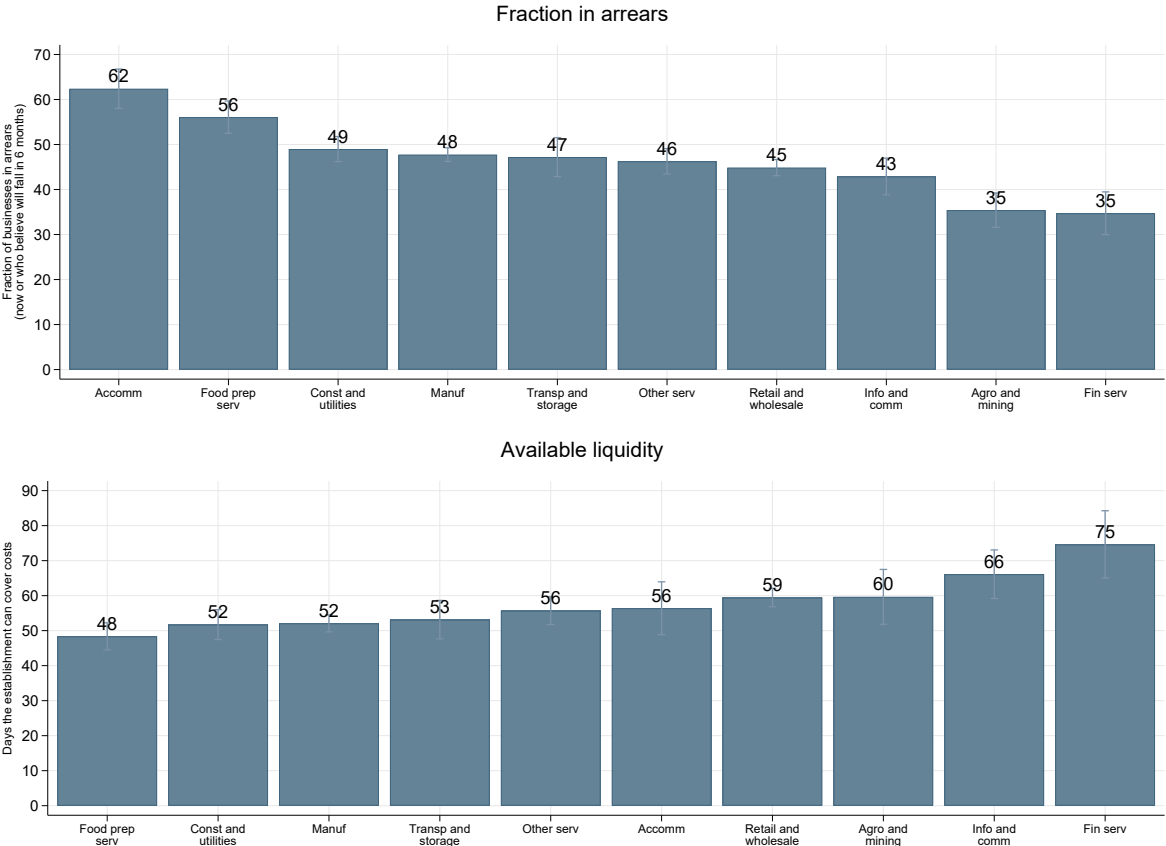Note: The top panel shows the predicted probability from a Probit that controls for country, size, sector, and weeks before and after the peak of the mobility shock. The bottom panel shows the predicted mean from a linear regression on the same controls.

Table 1: 10th and 90th percentile of the distribution of available liquidity in each country.

		10th percentile	90th percentile			10th percentile	90th percentile
EAP	IDN	0	84	MNA	TUN	0	90
EAP	MNG	7	112	SAR	BGD	0	180
EAP	VNM	0	195	SAR	LKA	0	140
ECA	ALB	7	98	SAR	NPL	0	90
ECA	ARM	0	70	SAR	PAK	0	180
ECA	BGR	0	196	SSA	CIV	14	112
ECA	CYP	7	168	SSA	GAB	3	20
ECA	GEO	0	84	SSA	GHA	0	90
ECA	GRC	14	84	SSA	GIN	28	112
ECA	ITA	14	154	SSA	KEN	0	365
ECA	MDA	0	56	SSA	MDG	20	180
ECA	POL	0	182	SSA	NER	7	105
ECA	ROU	0	90	SSA	SDN	0	60
ECA	RUS	7	84	SSA	SEN	0	365
ECA	SVN	7	168	SSA	TCD	7	70
ECA	TUR	0	24	SSA	TGO	14	84
ECA	XKX	0	30	SSA	TZA	0	360
LAC	BRA	0	180	SSA	ZAF	0	60
LAC	COL	7	280	SSA	ZMB	7	140
LAC	GTM	7	84	SSA	ZWE	14	84
LAC	HND	7	84				
LAC	NIC	7	84				
LAC	SLV	7	56				

Figure 15: Change in sales and available liquidity: number of days to cover costs and average predicted probability of falling in arrears.
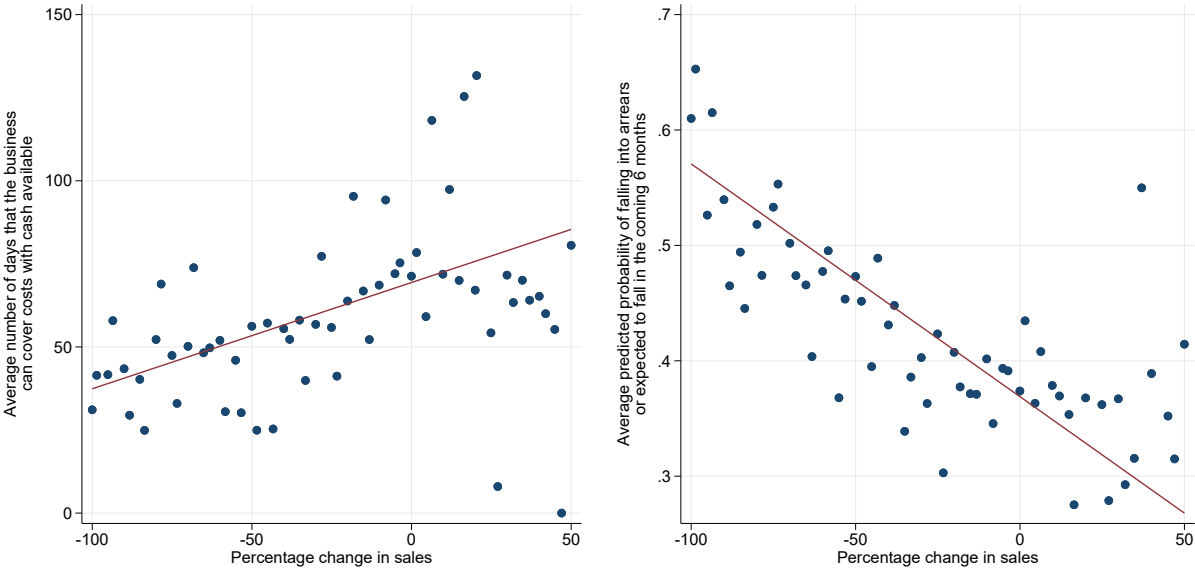
Note: Predicted probability from Probit models that control for change in sales, and dummies for country, size, sector, and weeks before and after the peak of the mobility shock. The analysis first conditions on the variable on the x-axis and computes the average over businesses in that category in the y-axis.

Figure 16: Fraction of businesses across responses to the shock.
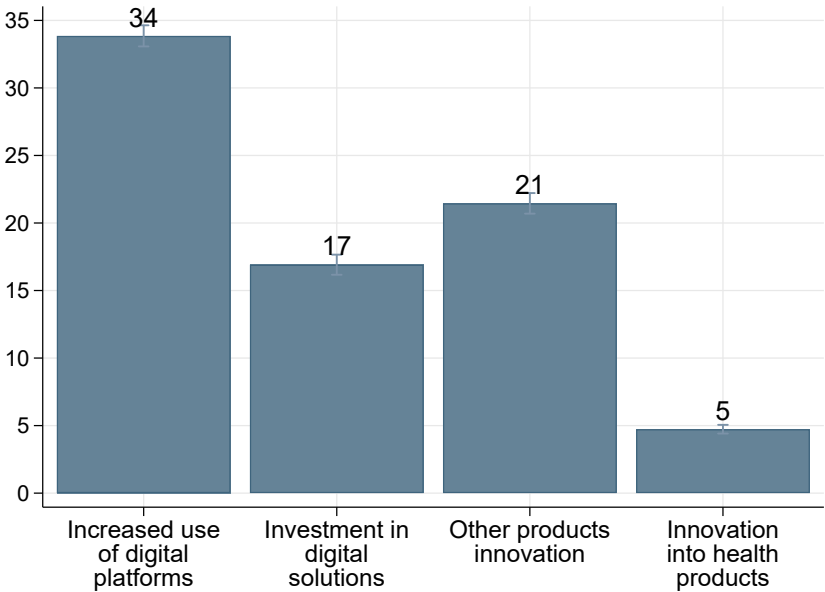
Note: Unconditional mean.

Figure 17: Average predicted probability of implementing change.
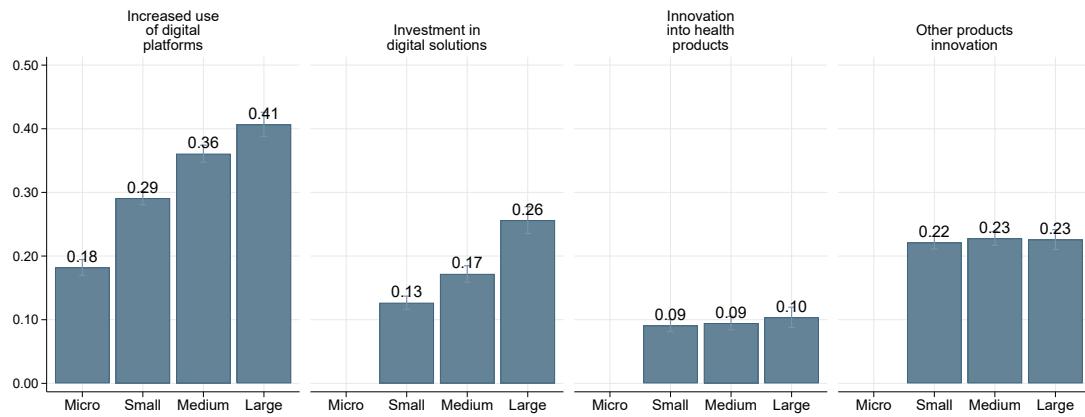
Note: Average predicted probability for size from a Probit analysis that controls for country, size, subsector, and weeks before and after the peak of the mobility shock.

Figure 18: Correlation between average predicted probability of implementing each solution.
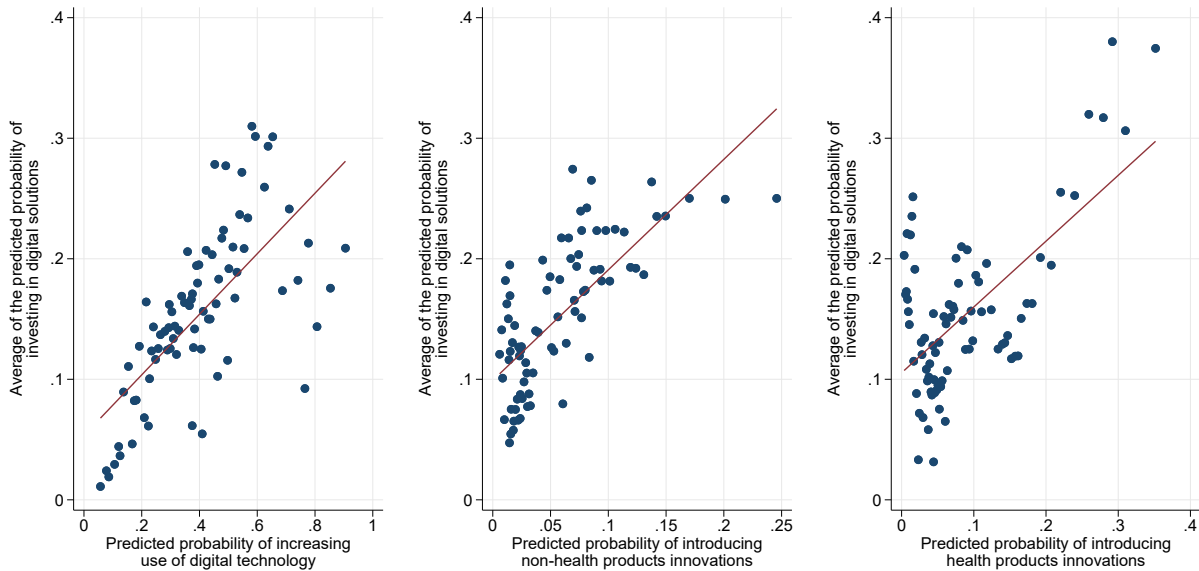
Note: Average predicted probabilities from Probits that control for country, size, sector, and weeks before and after the peak of the mobility shock. The analysis first conditions on the variable on the x-axis and computes the average over businesses in that category in the y-axis.

Figure 19: Average expected sales growth for the coming 6 months and average uncertainty of the prediction. Differences across sizes.
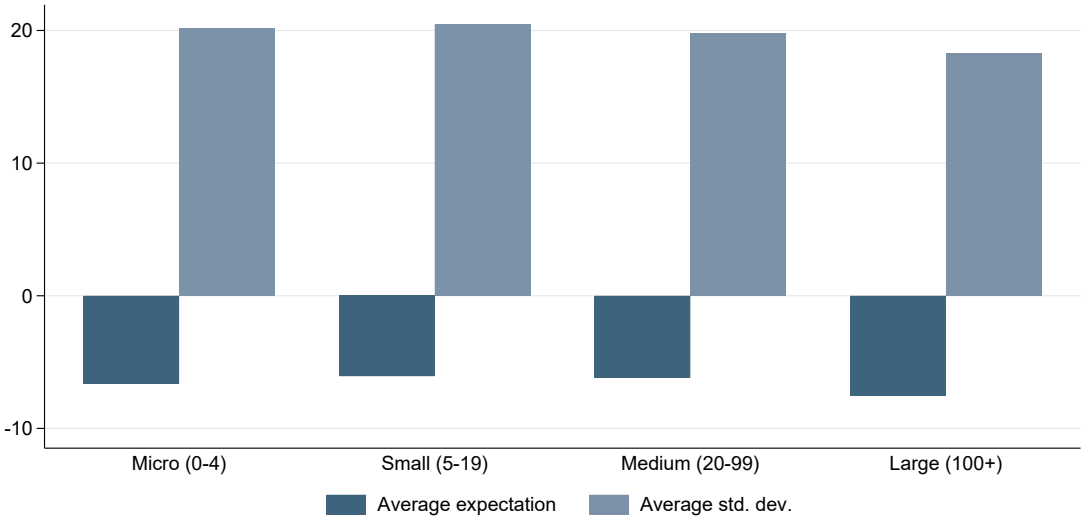
Note: Predicted expectation and predicted standard deviation for size from a linear regression controlling for country, size, sector, and weeks before and after the peak of the mobility shock.

Figure 20: Average expected sales growth for the coming 6 months and average uncertainty. Differences across sectors.
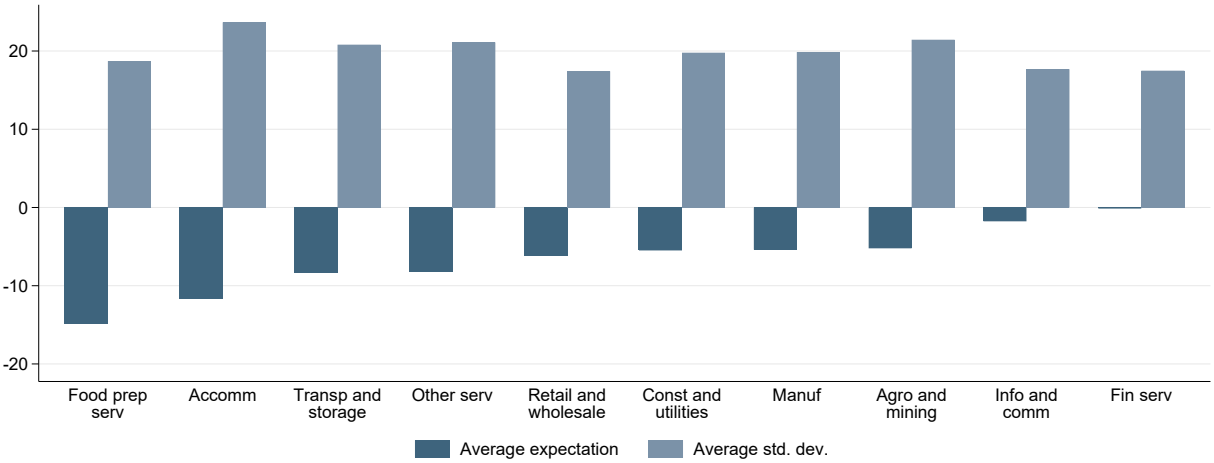
Note: Predicted expectation and predicted standard deviation for sector from a linear regression controlling for country, size, sector, and weeks before and after the peak of the mobility shock.

Figure 21: Average expectations and uncertainty about the future and change in sales.
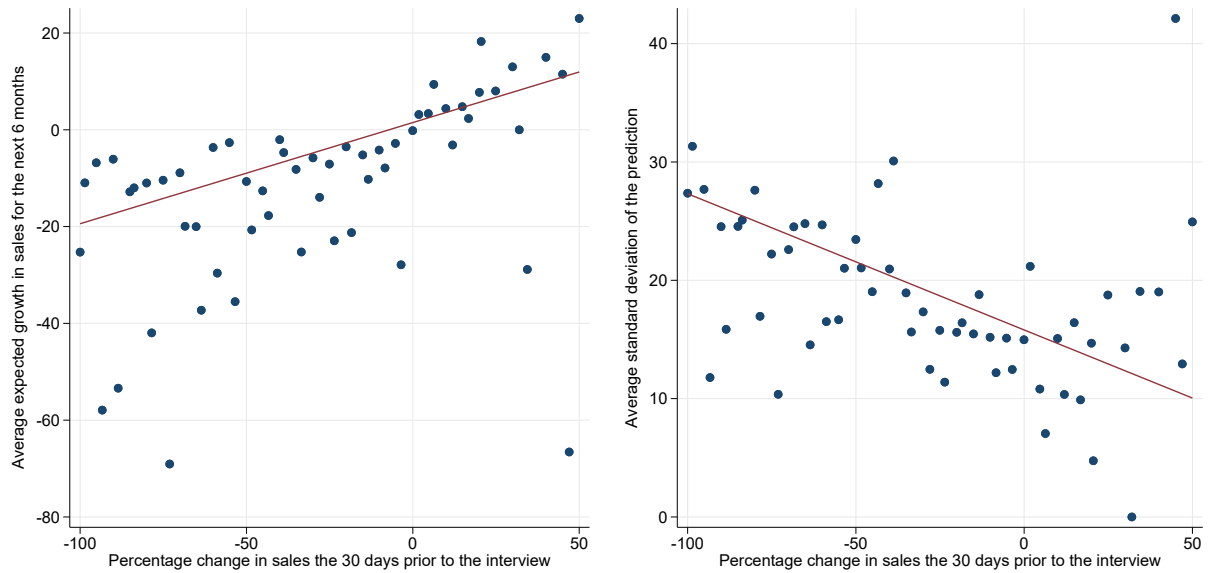
Note: The analysis first conditions on the variable on the x-axis and computes the average over businesses in that category in the y-axis.

Figure 22: Average expected sales growth for the coming 6 months and average standard deviation of the prediction. Differences across severity of the shock.
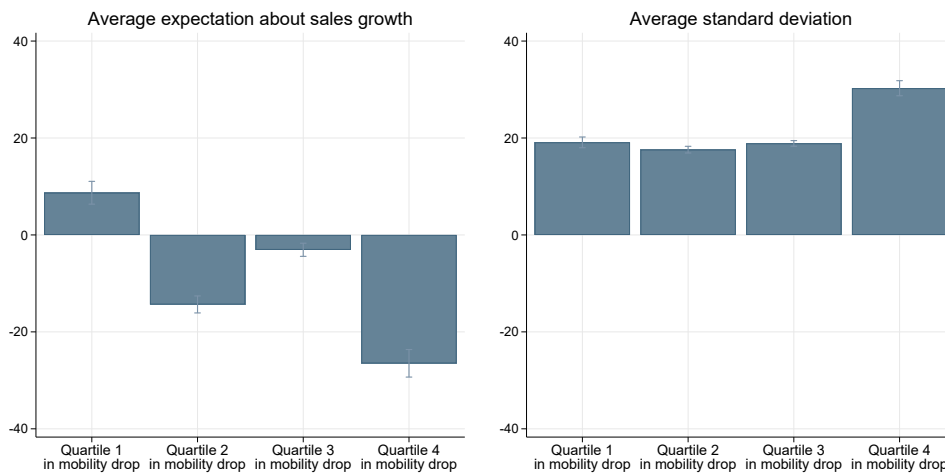
Note: Average predicted expectation and predicted standard deviation for severity of the shock from a linear regression controlling for severity, size, sector, and weeks before and after the peak of the mobility shock. To measure severity, countries in the sample are divided into quartiles based on the magnitude of the drop in mobility at the peak of the crisis.

Figure 23: Fraction of the variation in expectations and uncertainty explained by variation in each observable.
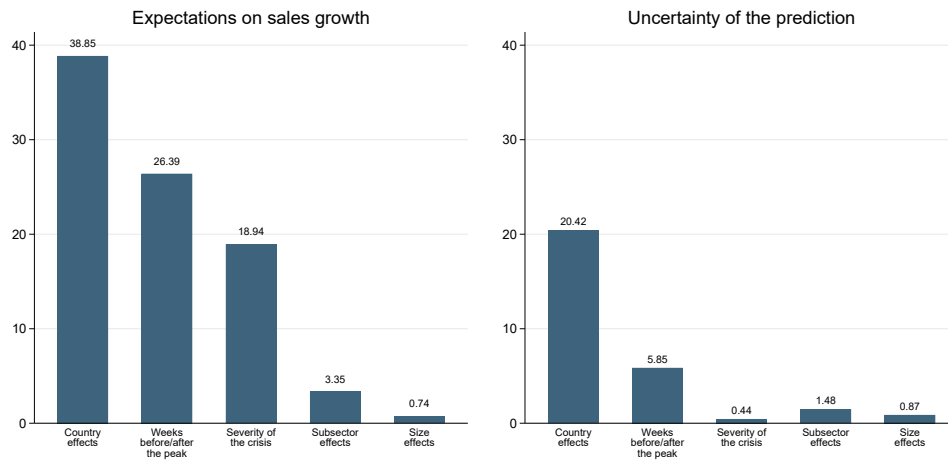
Note: R-squared from separate linear regressions of the dependent variable (expectations or uncertainty) to each observable.

Figure 24: Distribution of the expectation for sales growth and the uncertainty of the prediction.
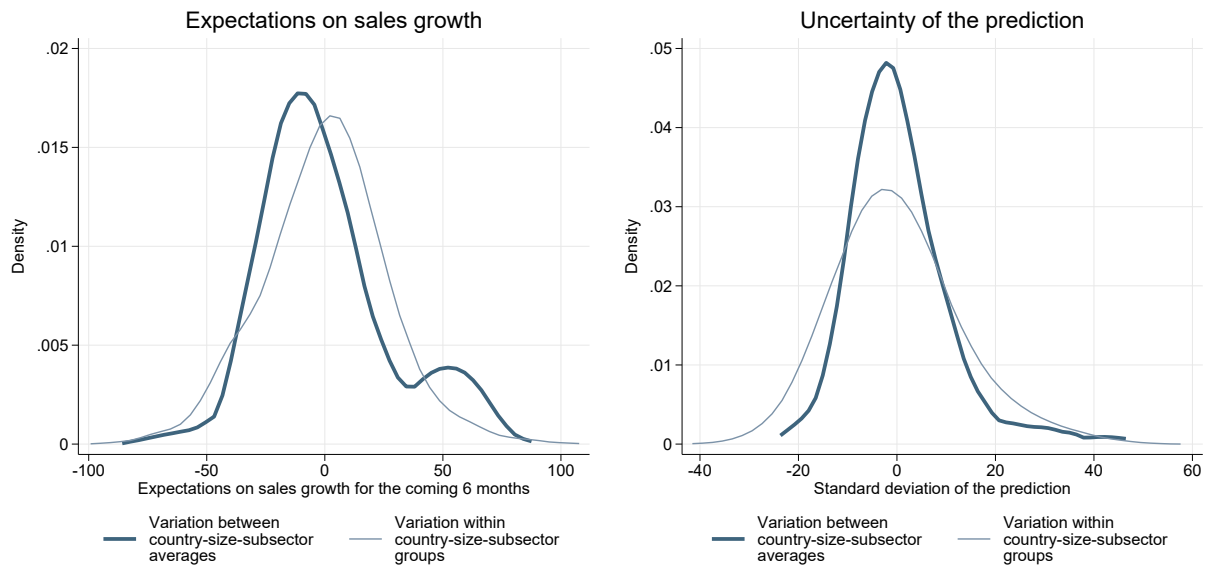
Note: The between variation shows the distribution of the dependent variable in each country-size-sector group. The within variation shows the distribution in the dependent variable after removing the country-size-sector mean. In the left panel the dependent variable is the expectation for sales growth for the coming 6 months; in the right panel the dependent variable is the standard deviation of the prediction.

Figure 25: Average percentage change in employment and expectations about the future.
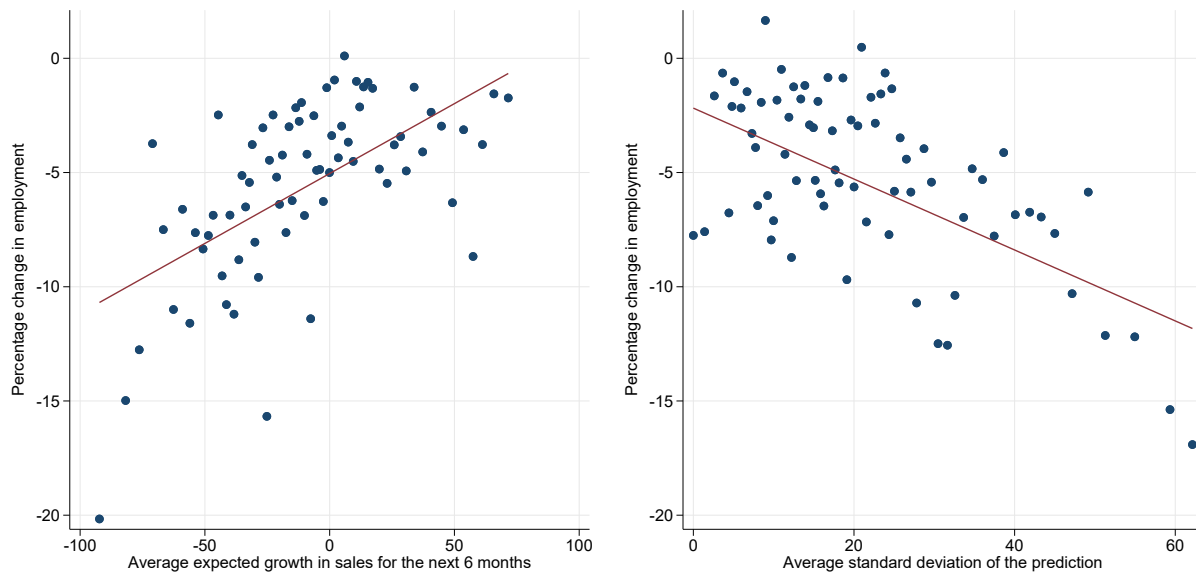
Note: The analysis first conditions on the variable on the x-axis and computes the average over businesses in that category in the y-axis.

B. Description of the data

B.1 Countries covered in the analysis

Table A1: Countries covered in the analysis

|			Number of firms				Number of firms
EAP	IDN	BPS	865	MNA	DZA	BPS	427
EAP	KHM	BPS	501	MNA	TUN	BPS	3,659
EAP	PHL	BPS	63,193	MNA	JOR	WBES	535
EAP	VNM	BPS	497	SAR	AFG	BPS	386
EAP	MNG	WBES	330	SAR	BGD	BPS	900
ECA	BGR	BPS	940	SAR	IND	BPS	715
ECA	POL	BPS	1,335	SAR	LKA	BPS	500
ECA	ROU	BPS	937	SAR	NPL	BPS	504
ECA	TUR	BPS	1,424	SAR	PAK	BPS	1,293
ECA	XKX	BPS	2,083	SSA	CIV	BPS	529
ECA	ALB	WBES	374	SSA	GAB	BPS	865
ECA	ARM	WBES	116	SSA	GHA	BPS	3,928
ECA	CYP	WBES	236	SSA	KEN	BPS	1,752
ECA	GEO	WBES	684	SSA	LBR	BPS	474
ECA	GRC	WBES	598	SSA	MDG	BPS	865
ECA	ITA	WBES	726	SSA	MLI	BPS	292
ECA	MDA	WBES	357	SSA	SDN	BPS	1,376
ECA	RUS	WBES	1,277	SSA	SEN	BPS	487
ECA	SVN	WBES	409	SSA	TGO	BPS	157
LAC	BRA	BPS	1,981	SSA	TZA	BPS	978
LAC	COL	BPS	3,684	SSA	ZAF	BPS	2,022
LAC	GTM	WBES	341	SSA	GIN	WBES	149
LAC	HND	WBES	326	SSA	NER	WBES	147
LAC	NIC	WBES	327	SSA	TCD	WBES	147
LAC	SLV	WBES	705	SSA	TGO	WBES	145
				SSA	ZMB	WBES	571
				SSA	ZWE	WBES	935

B.2 Survey period in context

Figure A1: Survey period in context.

Data from Google (2020) for the mobility trends and Hale et al. (2020) for the lockdown restrictions. The mobility trends are smoothed using 7-day moving averages.

Figure A1: Survey period in context–contd.

Period of interview   Stringency of lockdown restrictions   Mobility around transit stations

Data from Google (2020) for the mobility trends and Hale et al. (2020) for the lockdown restrictions. The mobility trends are smoothed using 7-day moving averages.

Figure A1: Survey period in context–contd.

Data from Google (2020) for the mobility trends and Hale et al. (2020) for the lockdown restrictions. The mobility trends are smoothed using 7-day moving averages.

Figure A1: Survey period in context–contd.

Data from Google (2020) for the mobility trends and Hale et al. (2020) for the lockdown restrictions. The mobility trends are smoothed using 7-day moving averages.

Figure A1: Survey period in context–contd.

Data from Google (2020) for the mobility trends and Hale et al. (2020) for the lockdown restrictions.
The mobility trends are smoothed using 7-day moving averages.

Figure A1: Survey period in context–contd.

Data from Google (2020) for the mobility trends and Hale et al. (2020) for the lockdown restrictions.
The mobility trends are smoothed using 7-day moving averages.

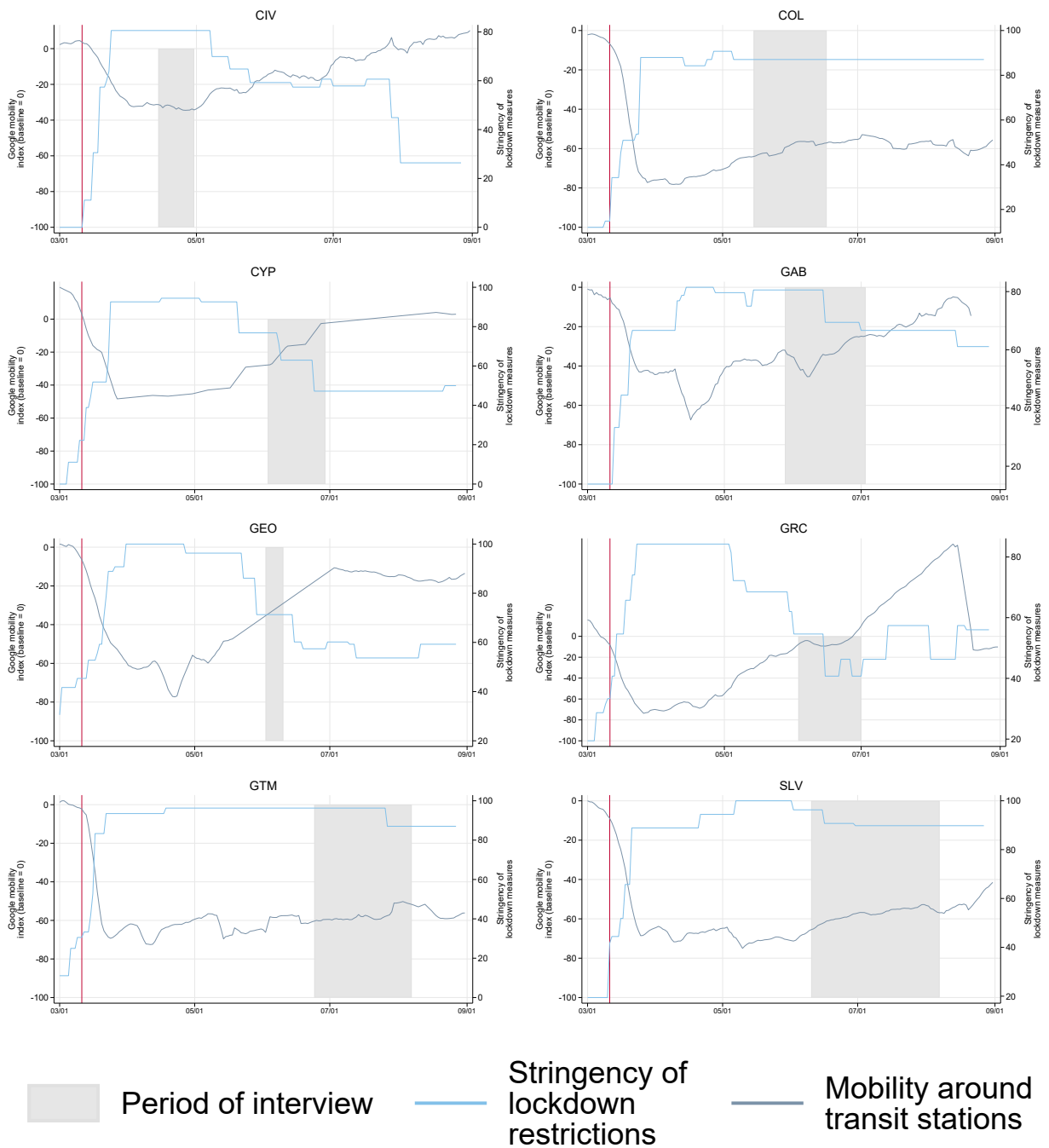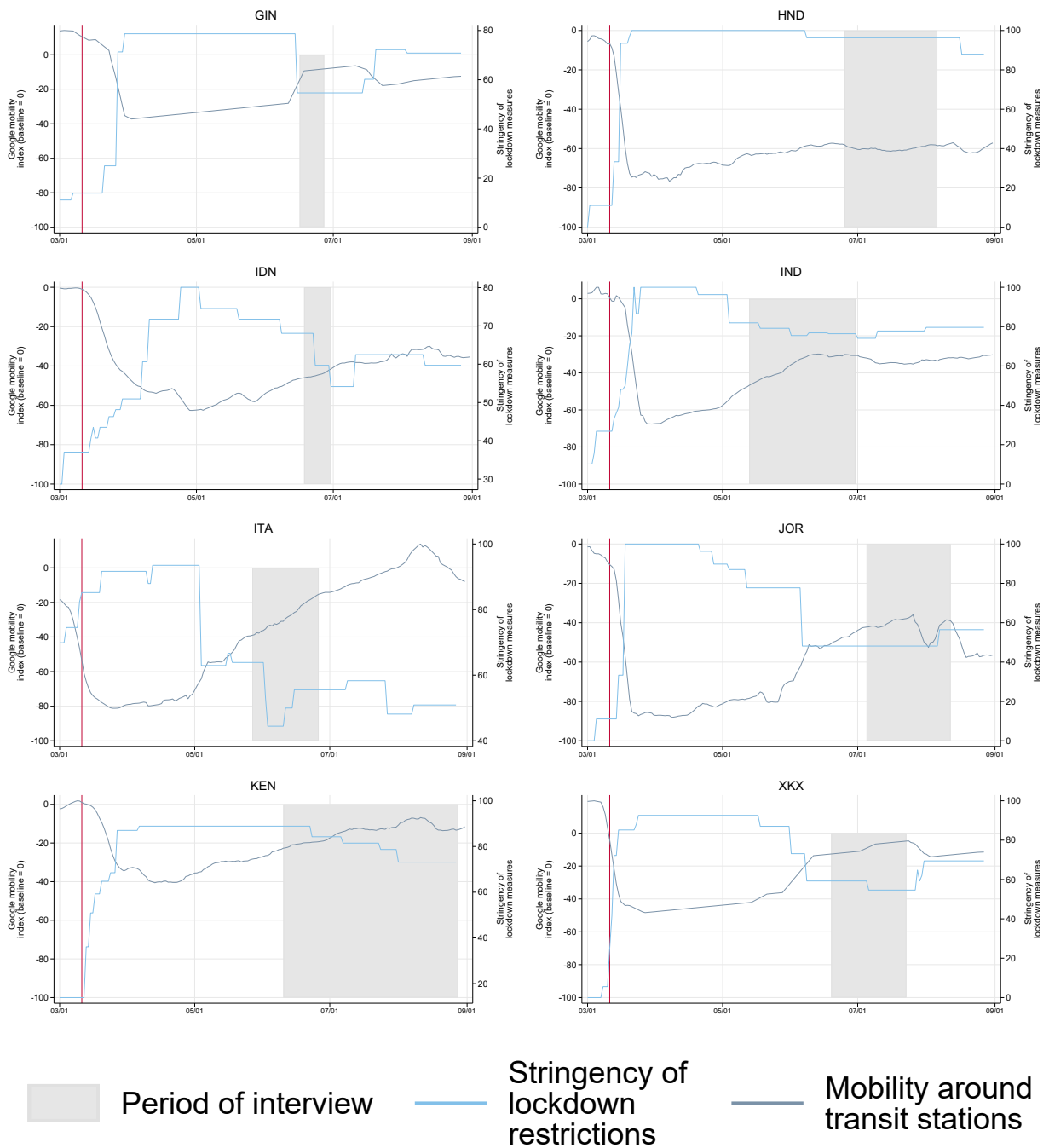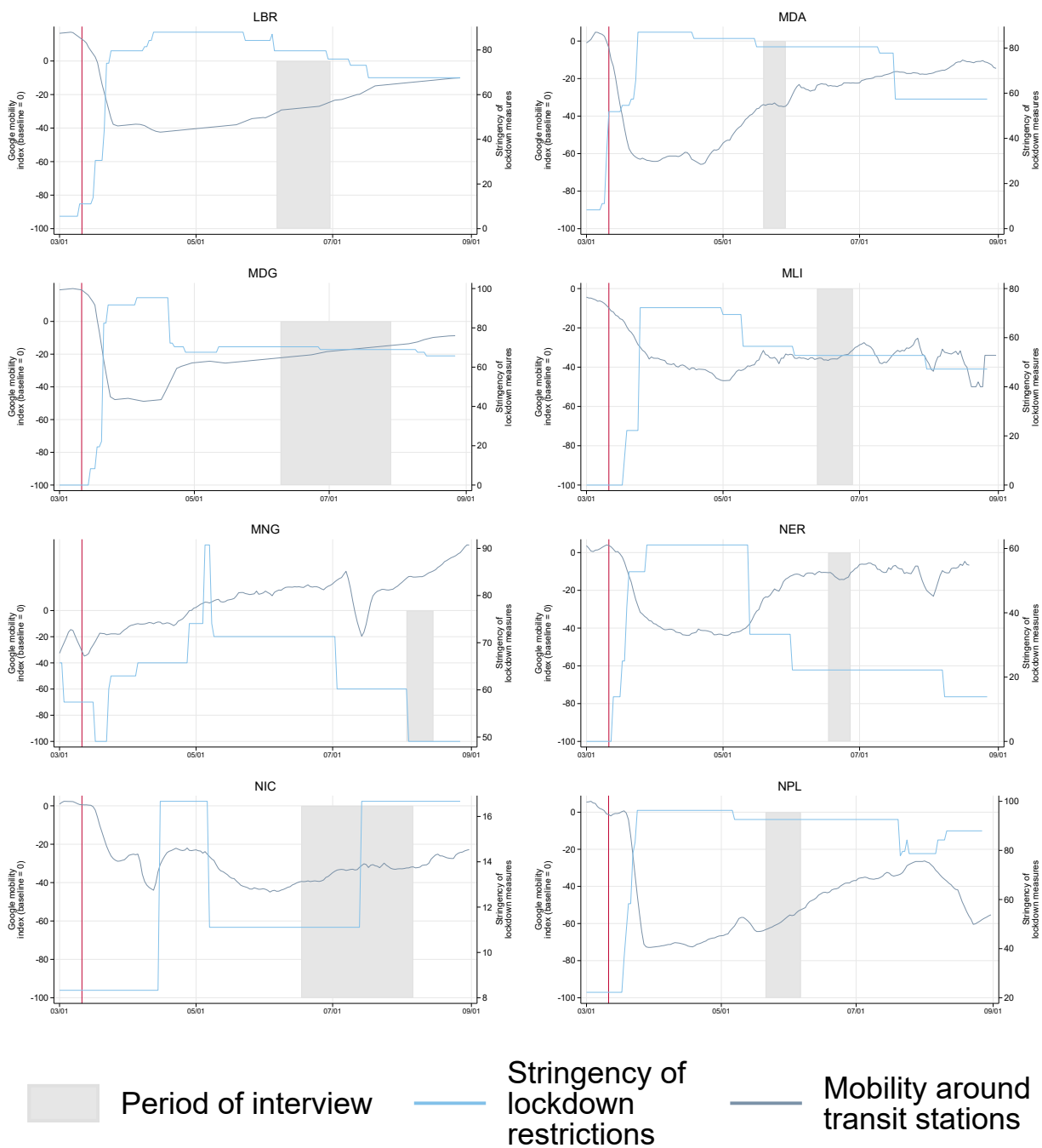## B.3 Distribution of the sample across sizes and sectors

Table A2: Frequencies by size; unweighted

	Micro (0-4)	Small (5-19)	Med (20-99)	Large (100+)	Missing	Total
AFG	0.0	52.8	36.0	10.9	0.3	100.0
ALB	5.1	29.9	39.6	25.4	0.0	100.0
ARM	100.0	0.0	0.0	0.0	0.0	100.0
BGD	32.2	35.2	18.2	13.8	0.6	100.0
BGR	28.1	34.6	25.9	9.8	1.7	100.0
BRA	54.5	28.0	9.5	5.6	2.4	100.0
CIV	21.4	51.0	20.8	5.5	1.3	100.0
COL	0.0	0.0	0.0	0.0	100.0	100.0
CYP	10.2	45.8	29.2	14.0	0.8	100.0
DZA	3.5	27.9	43.3	23.9	1.4	100.0
GAB	57.7	21.6	12.9	7.1	0.7	100.0
GEO	19.2	37.0	31.3	12.4	0.1	100.0
GHA	70.3	20.6	6.4	1.2	1.6	100.0
GIN	12.1	57.0	19.5	11.4	0.0	100.0
GRC	3.7	42.3	34.8	19.2	0.0	100.0
GTM	5.3	36.1	30.8	27.9	0.0	100.0
HND	6.7	49.7	28.5	14.4	0.6	100.0
IDN	20.8	31.6	26.1	19.9	1.6	100.0
IND	4.8	24.9	39.3	30.6	0.4	100.0
ITA	1.4	43.4	30.7	24.4	0.1	100.0
JOR	17.0	38.3	30.7	14.0	0.0	100.0
KEN	43.4	28.3	17.6	9.6	1.2	100.0
KHM	20.0	33.9	25.9	19.8	0.4	100.0
LBR	84.8	12.9	2.1	0.2	0.0	100.0
LKA	52.0	26.0	11.0	10.0	1.0	100.0
MDA	6.2	34.2	37.8	21.8	0.0	100.0
MDG	53.5	22.4	13.1	9.2	1.7	100.0
MLI	20.9	42.5	26.0	9.6	1.0	100.0
MNG	5.2	42.4	38.2	14.2	0.0	100.0
NER	6.8	53.7	32.0	6.8	0.7	100.0
NIC	5.5	36.7	39.4	17.7	0.6	100.0
NPL	41.3	40.7	12.5	3.8	1.8	100.0
PAK	45.6	29.6	16.4	6.8	1.5	100.0
PHL	56.1	21.3	8.6	6.0	8.0	100.0
POL	25.2	26.1	33.1	14.5	1.1	100.0

Table A2: Frequencies by size; unweighted

	Micro (0-4)	Small (5-19)	Med (20-99)	Large (100+)	Missing	Total
ROU	22.8	31.7	33.4	11.3	0.7	100.0
RUS	0.9	36.7	32.7	29.4	0.3	100.0
SDN	24.6	5.8	1.3	0.6	67.7	100.0
SEN	8.0	55.0	24.6	10.9	1.4	100.0
SLV	5.2	44.1	29.5	20.6	0.6	100.0
SVN	3.9	37.9	43.0	14.9	0.2	100.0
TCD	15.0	57.1	22.4	5.4	0.0	100.0
TGO	7.6	51.0	28.5	11.6	1.3	100.0
TUN	60.6	22.7	6.8	7.9	2.0	100.0
TUR	31.4	30.6	23.6	11.7	2.7	100.0
TZA	48.8	38.0	9.0	1.9	2.2	100.0
VNM	6.8	45.3	27.2	20.1	0.6	100.0
XKX	46.2	36.9	14.0	2.4	0.6	100.0
ZAF	33.2	43.7	18.0	2.2	2.9	100.0
ZMB	4.9	45.9	31.7	17.5	0.0	100.0
ZWE	24.6	43.2	23.0	9.2	0.0	100.0
Total	46.0	24.7	12.5	7.5	9.3	100.0

Table A3: Frequencies by sector; unweighted

	Agro	Manuf	Retail	Other serv	Missing	Total
AFG	8.8	36.8	0.0	0.0	54.4	100.0
ALB	0.0	36.4	34.5	29.1	0.0	100.0
ARM	0.0	30.2	54.3	15.5	0.0	100.0
BGD	8.6	69.7	8.6	13.2	0.0	100.0
BGR	2.8	26.3	23.2	47.7	0.1	100.0
BRA	2.9	17.5	46.1	28.0	5.5	100.0
CIV	10.0	8.9	22.3	58.8	0.0	100.0
COL	0.0	22.2	40.7	37.2	0.0	100.0
CYP	0.0	31.4	35.6	33.1	0.0	100.0
DZA	0.0	61.8	0.0	35.4	2.8	100.0
GAB	4.3	7.5	10.3	24.6	53.3	100.0
GEO	0.0	35.2	30.3	34.1	0.4	100.0
GHA	5.0	21.4	19.9	53.7	0.0	100.0
GIN	0.0	13.4	34.2	52.3	0.0	100.0
GRC	0.0	51.3	28.3	20.1	0.3	100.0
GTM	0.0	38.7	30.5	30.2	0.6	100.0
HND	0.0	23.3	48.8	27.9	0.0	100.0

Table A3: Frequencies by sector; unweighted

	Agro	Manuf	Retail	Other serv	Missing	Total
IDN	0.6	32.7	4.9	57.6	4.3	100.0
IND	5.3	62.1	0.8	31.3	0.4	100.0
ITA	0.0	58.8	21.2	18.7	1.2	100.0
JOR	0.0	47.5	20.0	31.8	0.7	100.0
KEN	9.5	3.2	14.0	72.4	0.9	100.0
KHM	0.2	33.7	23.8	42.3	0.0	100.0
LBR	0.4	9.9	70.5	19.2	0.0	100.0
LKA	6.0	15.6	30.2	48.2	0.0	100.0
MDA	0.0	36.4	40.1	23.2	0.3	100.0
MDG	5.5	7.4	15.3	71.8	0.0	100.0
MLI	2.7	9.6	36.6	48.3	2.7	100.0
MNG	0.0	32.1	31.8	36.1	0.0	100.0
NER	0.0	21.1	38.8	40.1	0.0	100.0
NIC	0.0	27.8	37.9	33.9	0.3	100.0
NPL	6.5	12.3	48.2	32.9	0.0	100.0
PAK	4.8	18.7	12.8	63.7	0.0	100.0
PHL	5.2	9.9	29.1	48.9	7.0	100.0
POL	1.1	29.1	24.6	45.2	0.0	100.0
ROU	1.0	19.3	19.0	60.4	0.3	100.0
RUS	0.0	63.8	24.0	11.5	0.7	100.0
SDN	0.0	1.7	21.4	9.3	67.6	100.0
SEN	19.5	32.6	23.4	24.4	0.0	100.0
SLV	0.0	52.5	29.8	17.3	0.4	100.0
SVN	0.0	39.9	29.8	29.3	1.0	100.0
TCD	0.0	40.8	20.4	38.1	0.7	100.0
TGO	4.3	19.5	13.9	62.3	0.0	100.0
TUN	3.9	2.7	2.2	91.2	0.0	100.0
TUR	6.5	30.9	12.1	49.8	0.7	100.0
TZA	20.1	22.7	21.9	35.3	0.0	100.0
VNM	12.7	39.4	23.1	24.7	0.0	100.0
XKX	0.8	14.5	28.2	56.5	0.0	100.0
ZAF	1.8	14.5	11.0	72.7	0.0	100.0
ZMB	0.0	25.9	36.6	37.5	0.0	100.0
ZWE	0.0	37.5	31.2	31.0	0.2	100.0
Total	4.4	16.0	26.4	47.4	5.7	100.0

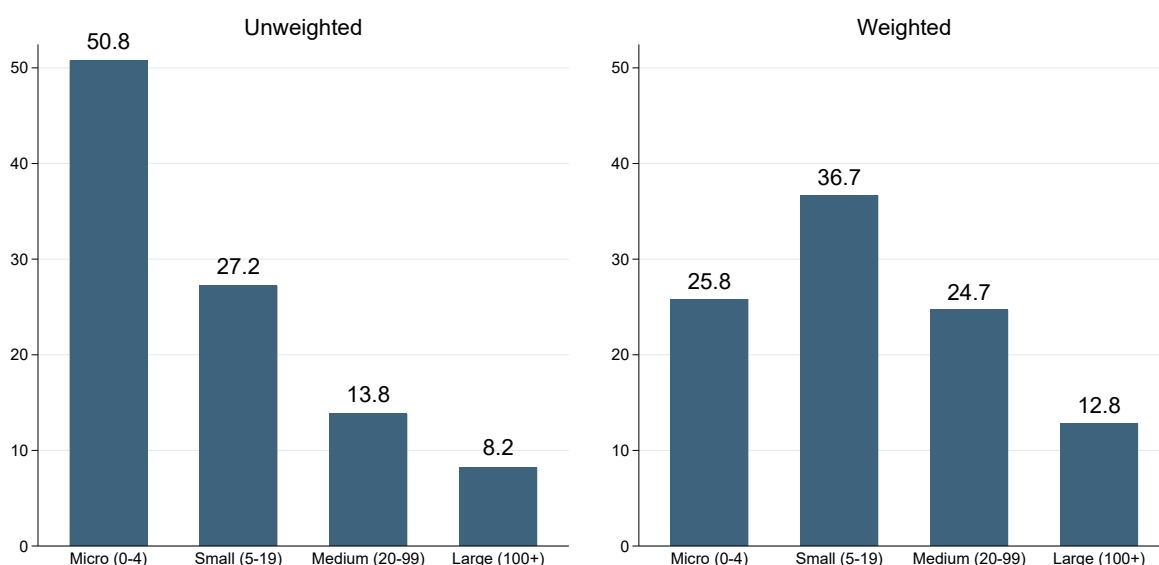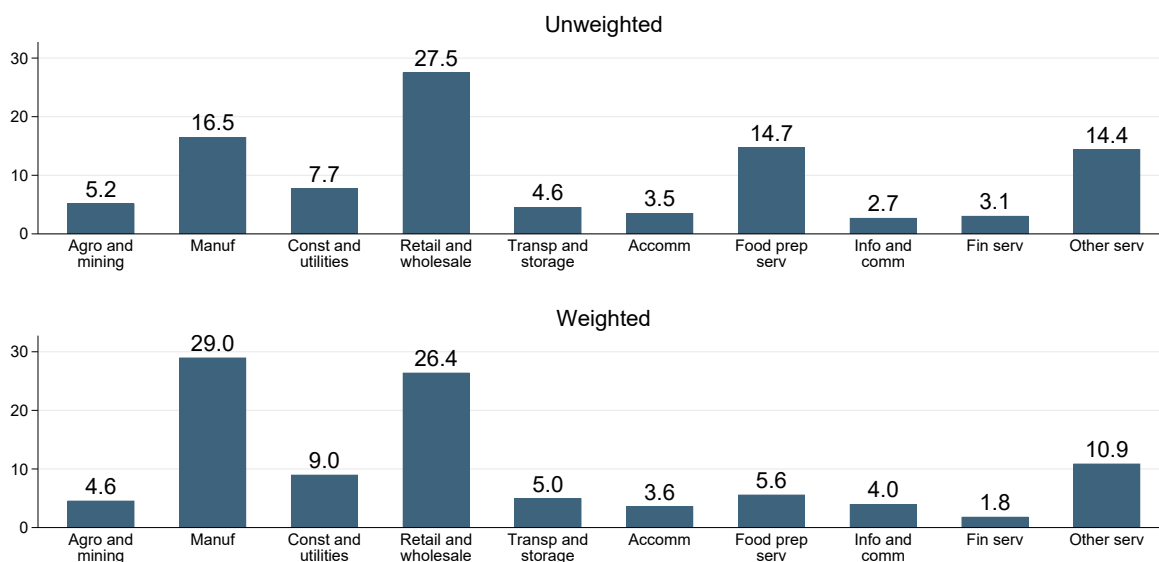Figure A2: Distribution across sizes in cross-country database.

Figure A3: Distribution across sectors in cross-country database.

B.4 Data harmonization and cleaning

The analysis excludes observations of businesses contacted but that reported their status as permanently closed at the time of the interview. We also exclude businesses in Education and Health services.

The implementation of the survey in some countries presented the respondent with a different menu of options for the status of the operations of the business and the adjustments to their labor force on the intensive and the extensive margin. We group open and partially open businesses into

one category; and temporarily closed by mandate and choice into a second one. Similarly, we group plants that granted leave without pay and with pay into one group.

Change in sales is only available for businesses open or partially open, or that closed less than 4 weeks prior to the time of the survey (temporarily or permanently). We set change in sales -100 for businesses that have been temporarily closed for more than four weeks at the time of the interview.

For comparison purposes, size and sector in each country is obtained from the pulse survey data, even if in some countries these variables are available from the sampling frame. In some countries where the survey was a follow-up from the Enterprise Survey, size excludes part-time workers. To compute the percentage change in employment, we subtract workers laid off from workers hired, but we exclude observations with measurement error in the question on workers hired (number identical or higher than the size of the firm).

We trim the top 1% in the number of workers hired and in the percentage change in sales relative to the same period of last year. We also trim the top and bottom 2% in the predicted changes to sales in the three scenarios (pessimistic, regular, optimistic). To study expectations and uncertainty, We only use subjective probability distributions where the probabilities for the three scenarios total 100.

B.5   Predicting mobility trends

For countries not covered in the Google mobility reports (Google, 2020), we use the stringency of lockdown restrictions in Hale et al. (2020) to predict mobility trends. Mobility around transit stations is highly correlated but not only explained by the stringency of lockdown restrictions (Figure A4). We fit a linear regression model of mobility on stringency of lockdown restrictions including a dummy for whether the observation is before or after COVID-19 was officially declared a pandemic by the World Health Organization (March 11th), the interaction of the two variables, and country and date fixed effects. We then smooth the predicted time series using moving averages. Figure A5 illustrates the goodness of fit of the prediction for a group of selected countries, whereas Figure A6 shows the relation between the stringency of lockdown restrictions and mobility trends in Algeria and Tunisia, which are not covered in the Google mobility reports.

Figure A4: Stringency of lockdown restrictions and Google mobility trends around transit stations. Selected countries.
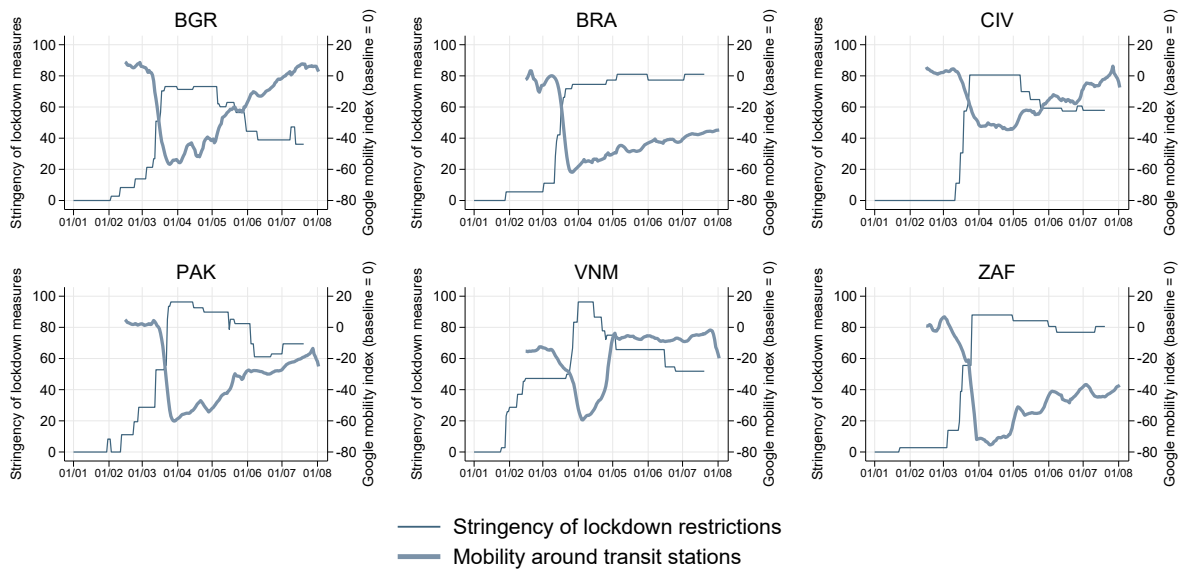

Figure A5: Actual and predicted mobility trends around transit stations. Selected countries.
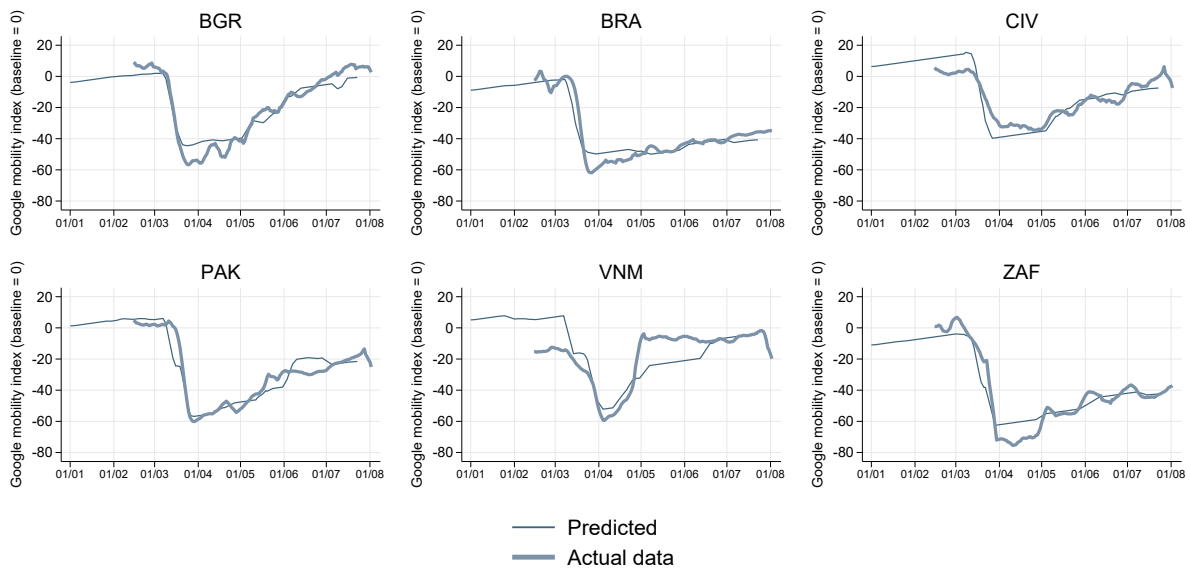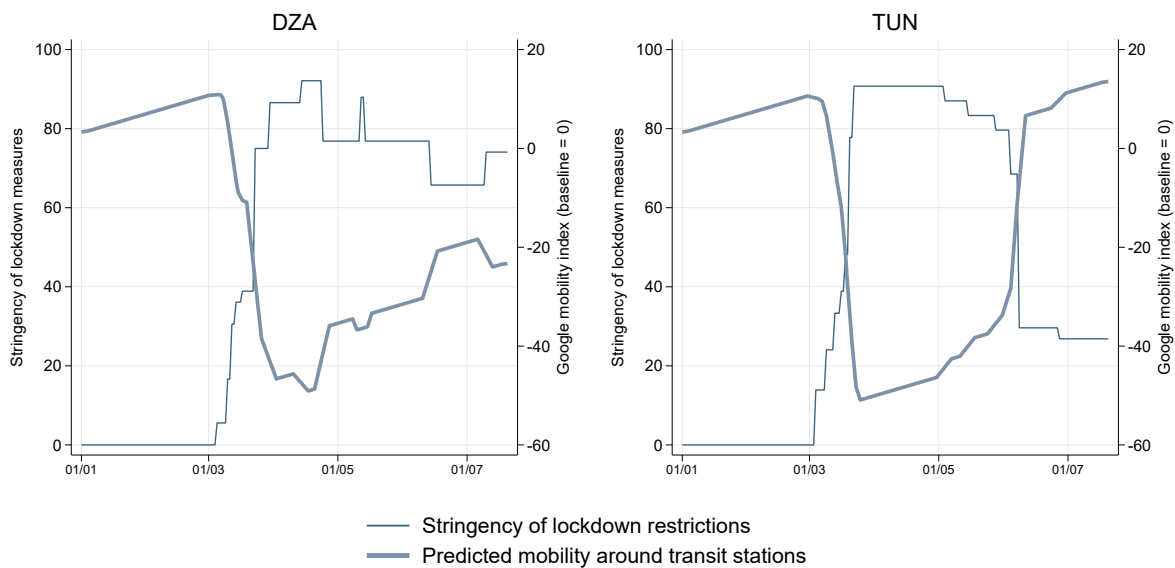
Figure A6: Predicted mobility around transit stations in countries not covered by Google trends.

COVID-19 – BUSINESS PULSE SURVEY (COV-BPS)

The World Bank

2020

Phone interview introduction:

Good morning/afternoon/evening.

I am calling from [insert implementing contractor], on behalf of the World Bank. This establishment was randomly selected to participate in a survey to better understand the impact of the COVID-19 pandemic on businesses in [insert country name].

The results of the survey will be used to inform government responses aiming to support businesses during the crisis. All information and opinions you provide will be anonymized. Neither your name nor the name of your establishment will be used in any document based on this survey.

Online interview invitation email:

From: [insert implementing contractor]

Subject: "Help [your country] design a COVID-19 response package for companies like yours"

Hello,

We are contacting you on behalf of the World Bank. This establishment was randomly selected to participate in a survey to better understand the impact of the COVID-19 pandemic on businesses in [insert country name].

The results of the survey will be used to inform government responses aiming to support businesses during the crisis. All information and opinions you provide will be anonymized. Neither your name nor the name of your establishment will be used in any document based on this survey.

The survey is expected to take no more than 10 minutes of your time. Please follow this link to take the survey: [insert link]

Online interview landing page text:

This survey is being implemented by [insert implementing contractor] on behalf of the World Bank. This establishment was randomly selected to participate in a survey to better understand the impact of the COVID-19 pandemic on businesses in [insert country name].

The results of the survey will be used to inform government responses aiming to support businesses during the crisis. All information and opinions you provide will be anonymized. Neither your name nor the name of your establishment will be used in any document based on this survey.

The survey is expected to take no more than 10 minutes of your time. Please click here to begin the survey: [insert link]

QUESTIONNAIRE

Firm ID	**id**	Unique identifier
Date and time of the interview (start)	**cov0**	Date and time

COV0. General characteristics/Screener

Question	Variable	Answer
What is the main sector of activity of your establishment? SKIP: Go to question **cov0c1** if this is a follow up interview and sector information is available.	**cov0a**	1 = Agriculture, fishing, or mining 2 = Manufacturing 3= Construction or utilities 4= Retail or Wholesale 5= Transportation and storage 6= Accommodation 7= Food services 8 = Information and communication 9= Financial activities or real state 10= Education 11= Health 12=Other services
What type of product or service represents this establishment's largest share of annual sales?	**cov0b**	Text (Product with largest share of annual sales)
How many paid full-time and part-time workers did this establishment have on Jan 15, 2020?[1] INSTRUCTION: Include all full time and part time paid workers	**cov0c1** **cov0c2**	_____ Number full-time workers ____ Number part-time workers
What was the total share of female workers on Jan 15, 2020?	**cov0d**	_____% Women
In what year did this establishment begin operations?	**cov0e**	Year

COV1. Operation status: Impact of COVID

Question	Variable	Answer
What is the current status of this establishment? INSTRUCTION: If business is partially open without government restrictions on operation due to COVID19, it should be considered as open.	**cov1a**	0=Open 1 = Partially open (cannot operate normally due to government regulations) 2= Temporary closed (mandated by government) 3 = Temporary closed (own choice) 4= Permanently closed

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[1] Make sure that this date is not a holiday or otherwise "particular" day in your country's calendar. If yes, please choose the closest appropriate date. cov2c.

For how many weeks has this establishment been closed? **CONDITION: Ask only if cov1a=2 OR cov1a=3 OR cov1a=4**	**cov1b1**	Number of weeks Still closed -9 = Don't know
Do you expect this establishment will resume operation? **CONDITION: Ask only if cov1a = 4**	**cov1b2**	1 = Yes 2 = No **SKIP: If cov1b2=2 go to cov4a**
When are you expecting that this business will resume operations? **CONDITION: Ask only if cov1a =2 OR if cov1a =3**	**cov1b3**	1 = Less than 2 weeks 2 = Between 2 and 4 weeks 3 = Between 1 and 2 months 4 = Between 2 and 6 months 5 = More than 6 months -9 = Don't know (spontaneous)
For how many more weeks this establishment can remain open in the current circumstances? **CONDITION: Ask only if cov1a =0 OR cov1a =1**	**cov1b4**	# of weeks -9 = Don't know
Comparing this establishment sales for the last 30 days (before this interview) with the same period in 2019, did the sales? **CONDITION: Ask only if cov1a =0 OR cov1a=1 OR cov1b1<4**	**cov1c**	1= Increase 2=Remain the same 3=Decrease -9=Don't know (spontaneous)
Increased by how much? **CONDITION: Ask only if cov1c =1**	**cov1c1**	(%) change
Decreased by how much? **CONDITION: Ask only if cov1c =3**	**cov1c2**	(%) change

Question: In the last 30 days (before this interview), how many workers (were/have):[2] INSTRUCTION: Consider all workers (full time and part time). Use absolute values (number of workers), more than one condition may apply to the same worker (e.g., salary AND hours reduced)	Variable	Answer
Hired	**cov1d1**	Numbers

---

[2] This question refers to all workers (full- and part-time) and separates them. If tracking part-time workers is not particularly important in your country context, you may consider simplifying these questions and only asking for total number of workers (sum of full-time and part-time). It can be beneficial to reduce the length of the questionnaire and simplify it.

Laid off	**cov1d2**	Numbers
Granted leave of absence without payment	**cov1d3a**	Numbers
Granted leave of absence with payment	**cov1d3b**	Numbers
Had their salary, wages, or benefits reduced	**cov1d4**	Numbers
Had their hours reduced	**cov1d5**	Numbers

COV2. Channels affecting operations

Question: **In the last 30 days (before this interview), what happened to this establishment with respect to:[3]** CONDITION: Ask only if **cov1a =0 OR cov1a=1 OR cov1b1<4**	Variable	Answer
Total hours worked per week?	**cov2a**	1 = Increase 2 = Decrease 3 = Remain the same
Demand for products and services?	**cov2b**	1 = Increase 2 = Decrease 3 = Remain the same
Cash flow availability?	**cov2c**	1 = Increase 2 = Decrease 3 = Remain the same
Supply of financial services normally available?	**cov2d**	1 = Increase 2 = Decrease 3 = Remain the same
Supply of inputs, raw materials, or finished goods and materials purchased to resell?	**cov2e**	1 = Increase 2 = Decrease 3 = Remain the same
What was the main reason for the reduction in the supply of inputs, raw materials, or goods to resell? INSTRUCTION: choose all that apply CONDITION: Ask only if **cov2e =2**	**cov2f**	1 = Not available 2 = Cost increased 3 = Lower quality 4 = Others (Please specify - **cov2f1**)

Question	Variable	Answer
As of today, for how many days could this establishment continue paying all costs and payments (such as payroll, suppliers, taxes or loan repayment) with the cash available?	**cov2g**	Number of days 0 = No cash available

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[3] If there is a shutdown longer than a month, consider using a 30 days before the shutdown as a reference period.

COV3. Expectations and uncertainty

Question: **Regular scenario (most likely/probable scenario)**	Variables	Answer
Looking ahead to the next 6 months,[4] do you expect that your sales will increase, decrease, or remain the same, compared to the same period last year?	**cov3a_1**	1= Increase 2=Decrease 3=Remain the same
Increase by how much? CONDITION: Ask only if **cov3a_1**=1	**cov3a_1a**	change %
Decrease by how much? CONDITION: Ask only if **cov3a_1**=2	**cov3a_1b**	change %
In the same scenario, do you expect that the number of full-time workers in this establishment will increase, decrease, or remain the same, compared to the same period last year?	**cov3b_1**	1= Increase 2=Decrease 3=Remain the same
Increase by how much? CONDITION: Ask only if **cov3b_1**=1	**cov3b_1a**	change %
Decrease by how much? CONDITION: Ask only if **cov3b_1**=2	**cov3b_1b**	change %
On a scale of 0 to 100, what is the chance (probability) you believe this will happen?	**cov3a_1L**	probability % (between 0 and 100)

INSTRUCTION: As you know, sometimes businesses don't go as we expect, given that businesses can go better or worse, let us talk about these possible alternative situations:

Question: **Optimistic scenario/alternative**	Scenarios	Variables
In a more optimistic (better) scenario, do you expect that your sales for the next 6 months will increase, decrease, or remain the same, compared to the same period last year?	**cov3a_2**	1= Increase 2=Decrease 3=Remain the same
Increase by how much? CONDITION: Ask only if **cov3a_2**=1	**cov3a_2a**	change %
Decrease by how much? CONDITION: Ask only if **cov3a_2**=2	**cov3a_2b**	change %
In the same optimistic scenario, do you expect that the number of full-time workers in this establishment will increase, decrease, or remain the same, compared to the same period last year?	**cov3b_2**	1= Increase 2=Decrease 3=Remain the same
Increase by how much? CONDITION: Ask only if **cov3b_2**=1	**cov3b_2a**	change %
Decrease by how much? CONDITION: Ask only if **cov3b_2**=2	**cov3b_2b**	change %
On a scale of 0 to 100, what is the chance (probability) you believe this will happen?	**cov3a_2L**	probability % (between 0 and 100)

---

[4] If the survey is planned to be repeated in a short period, use 3 months instead of 6 months for questions **cov3a**, **cov3b**, **cov3c**, and **cov3d**.

Question: **Pessimistic scenario/alternative**	Scenarios	Variables
In a more pessimistic (worse) scenario, do you expect that your sales for the next 6 months will increase, decrease, or remain the same, compared to the same period last year?	**cov3a_3**	1= Increase 2=Decrease 3=Remain the same
Increase by how much? CONDITION: Ask only if **cov3a_3**=1	**cov3a_3a**	change %
Decrease by how much? CONDITION: Ask only if **cov3a_3**=2	**cov3a_3b**	change %
In the same pessimistic scenario, do you expect that the number of full-time workers in this establishment will increase, decrease, or remain the same, compared to the same period last year?	**cov3b_3**	1= Increase 2=Decrease 3=Remain the same
Increase by how much? CONDITION: Ask only if **cov3b_3**=1	**cov3b_3a**	change %
Decrease by how much? CONDITION: Ask only if **cov3b_3**=2	**cov3b_3b**	change %
In a scale from 0 to 100, what is the chance (probability) you believe this will happen?	**cov3a_3L**	probability % (between 0 and 100)

Is it expected that this establishment will fall in s in any of its outstanding liabilities in the next 6 months? [OPTIONAL]	**cov3d** 1 = Yes. It is already in arrears. 2 = Yes. It will fall in arrears. 2 = No

COV3M. Expectations and uncertainty (FOR MICRO FIRMS ONLY)

CONDITION: This section applies if the establishment has less than 5 workers **cov0c1 < 5**

Looking ahead to the next **3 months** do you expect that your sales will increase, decrease, or remain the same, compared to the same period last year? ALTERNATIVE FORMULATION IF FIRM HAS BEEN IN EXISTENCE FOR LESS THAN 12 MONTHS **(covm3b)** *Looking ahead to the next **3 months** do you expect that your sales will increase, decrease, or remain the same, compared to the last 3 months?*	**covm3a**	1= Increase 2=Decrease 3=Remain the same -9=Don't know
Looking ahead to the next **3 months,** what is the expected change in sales that you anticipate for this establishment compared to the same period last year?	**covm3c**	% change

  (covm3d) *Looking ahead to the next __3 months__ what is the expected change in sales that you anticipate for this establishment compared to the last 3 months?*		

COV4. Policies

Question	Variable	Answer
What would be the most needed policies to support this business over the COVID-19 crisis? CONDITION: Choose up to three options	**cov4a**	1 = Cash Transfer 2= Deferral of rent, mortgage, or utilities 3 = Deferral of credit payments, suspension of interest payments, or rollover of debt. 4 = Access to new credit 5= Loans with subsidized interest rates 6 = Fiscal exemptions or reductions 7= Tax deferral 8 = Wage subsidies 9=Others [Please specify - **cov4a1**]
Since the outbreak of COVID-19, has this establishment received any national or local government measures issued in response to the crisis?	**cov4b**	1 = Yes 2 = No
Did any of these measures involve any of the following: INSTRUCTION: Choose all that apply **CONDITION: Ask only if cov4b=1**	**cov4c**	1 = Cash Transfer 2= Deferral of rent, mortgage, or utilities 3 = Deferral of credit payments, suspension of interest payments, or rollover of debt. 4 = Access to new credit 5= Loans with subsidized interest rates 6 = Fiscal exemptions or reductions 7= Tax deferral 8 = Wage subsidies 9=Others [Please specify - **cov4c1**]
What of the follow options best describe the reason why this establishment did not receive any national or local government measures issued in response to the crisis? **CONDITION: Ask only if cov4b=2**	**cov4d**	1 = I was not aware 2 = To difficult to apply 3 = I am not eligible. 4 = I have applied but not received it 5 = Other (specify) **SKIP: If cov1a=4 go to cov0e**

COV5 - Adjustment mechanisms

Has this establishment started using or increased the use of internet, online social media, specialized apps, or digital platforms in response to COVID-19 outbreak?	cov5a1	1 = Yes. It started. 2 = Yes. it increased. 3 = No
For which of the following business functions has this establishment started using or increased the use of internet, online social media, specialized apps or digital platforms in response to COVID-19 outbreak? INSTRUCTION: Choose all options that apply CONDITION: Ask only if cov5a1=1 OR cov5a1=2	cov5a2	1 = Business Administration 2 = Production planning 3 = Supply Chain Management 4 = Marketing 5 = Sale 6= Payment methods 7= Service delivery
What is the current share of sales of this establishment using external digital platforms, apps, or own website?	cov5b	Share (%) -9 = Don't know
In the last 30 days, has the share of sales of this establishment using digital platforms increased or decreased? CONDITION: Ask only if cov5b > 0	cov5c	1 = Increased 2= Decreased 3 = No change
Has this establishment invested in any new equipment, software or digital solution in response to COVID-19?	cov5d	1 = Yes 2 = No
What is the share of workers currently working remotely from home?	cov5e	Share (%) -9 = Don't know
In the last 30 days, has the share of workers working from home increased or decreased?	cov5f	1 = Increased 2= Decreased 3 = No change
Has this establishment changed or is in the process of changing its products or services in response to COVID-19?	cov5g	1 = Yes 2 = No
What is the main change in the product or service mix? CONDITION: Ask only if cov5g =1	cov5h	1 = Changed towards health products/services 2 = Other (Please specify - cov5h1)

COV5M - Adjustment mechanisms ((FOR MICRO FIRMS ONLY)

Question	Variable	Answer
Has this establishment adjusted its business model in response to the COVID-19 outbreak?	covm5a	1 = Yes 2 = No
What adjustments have been made? Condition: Ask only if covm5a==1	covm5b	1= Use of phone for marketing, placing order etc.

		2= Use of Internet, online social media, specialized apps or digital platforms 3 =Switched product 4=others
In the last 30 days (before the interview), has the share of sales of this establishment using phone, email, or online services increased, decreased, or remained the same? CONDITION: Ask only if **covm5b** ==2	**covm5c**	1 = Increased 2 = Decreased 3 = Remained the same

COV6 – Baseline (revenue and investment)
CONDITION: This section applies if the establishment has 5+ workers (cov0c1>=5)

What was the value of total sales of this establishment in 2019?	**cov6a**	Number (value of sales) -9 = Don't know
What was the share of exports over sales in 2019?	**cov6b**	Share (%) -9 = Don't know
What was the total value of investment, including equipment, machines, software and buildings of this establishment in 2019?	**cov6c**	Number (value of investment) -9 = Don't know

COV6M – Baseline (FOR MICRO FIRMS ONLY)
CONDITION: This section applies if the establishment has less than 5 workers cov0c1 < 5

What was the average value of total sales per month of this establishment in 2019? CONDITION: Ask if less than 5 workers	**cov6a**	Number (value of sales) -9 = Don't know -7 = Does not apply

The survey ends here. I would like to gather a few final details.
Thank you for your time and cooperation.

Control questions

Question	Variable	Answer
What option best reflect your main occupation in this establishment?	**cov0f**	1= Owner, CEO, or CFO 2= Manager 3 = Accountant or lawyer 4 = Other (Please specify – **cov0f1**)
Gender of the respondent	**cov0g**	Gender
Contact information (phone)	**cov0h**	Phone
Contact information (email)	**cov0i**	Email
Alternative contact information (phone)	**cov0j**	Phone
Main city of operations	**cov0k**	City

For interviewers/supervisors

Country	cov0l	Country
Language of the interview	cov0m	Language
Number of calls attempted (for phone interview)	cov0n	# of call attempted
Date and time of the interview (end)	cov0o	Date and time

Additional consent information to add in invitation:

- Participation is voluntary and does not affect access to any benefits. You can stop the participation at any time. If you have any questions or concerns regarding this survey, please contact [name of the responsible for the implementation, at _____@worldbank.org.]

Additional consent information to add at the end of the survey:

- If survey is going to be a panel, please request the consent for future contact.

C. Detailed acknowledgements