

Pandemic-motivated lockdowns can expose firms to a vicious cycle: they cannot borrow enough to keep paying wages and are forced to dismiss workers; the dismissal of workers in turn reduces future productivity, sales, and profits; and those bleak prospects are precisely what keeps firms from being able to borrow in the first place. To prevent this cycle, a robust policy intervention is called for. In response to COVID-19, debt finance—including subsidized credit programs, debt relief and credit guarantees—has accounted for a sizeable share of the relief measures aimed at firms. Preliminary macro evidence suggests that these programmes are having an impact: the size of liquidity support policies is positively correlated with the extent of credit expansion, firm value, employment and GDP. Micro-economic data for a number of countries points in the same direction: financial support programs for firms can be effective at preventing job losses during and after a pandemic.

Keywords: Pandemic policy response; Loan guarantee programmes; Job retention schemes; Multiple equilibria

1. Introduction

The COVID-19 pandemic has generated a sizable policy reaction around the world—especially in the realm of fiscal policy. According to the Fiscal Monitor published by the International Monetary Fund, 2020 fiscal deficits reached nearly 12 percent of world GDP, and global public debt, at nearly 100 percent of GDP, was the highest on record.¹

The worldwide numbers mask substantial heterogeneity in the fiscal response across countries and regions. Advanced economies enacted much larger fiscal programs than did developing countries: the IMF estimates that in 2020 advanced countries ran fiscal deficits of 13.3 percent of GDP, while the estimate for low-income developing economies is less than half of that, at 5.7 percent of GDP. Emerging economies come out in between, at 10.3 percent of GDP. This divergence is even more remarkable given that, when the pandemic hit, public debts in the advanced world were much larger than in the developing world. At the end of 2019, the public debts of advanced nations stood at nearly 105 percent of their GDP, while the equivalent figure was 54 percent for emerging nations and just 43 percent of GDP for low-income countries.²

In spite of the heterogeneity, governments appear to agree on one aspect of the policy response: the need to prevent the destruction of jobs, primarily by ensuring the flow of credit to private firms. In the United States the April 2020 CARES Act, a US$ 2 trillion package, allocated US$ 850 billion to loans going to firms of all sizes.³ Loayza finds that, worldwide, debt finance—including subsidized credit programs, debt relief and credit guarantees—accounted for 37 percent of the fiscal response measures intended to help small and medium enterprises during the pandemic [1].³

The emphasis on policies to prevent job losses appears sensible. COVID-19 is a huge shock that has lasted longer than many had anticipated, but in all likelihood it will be temporary. In contrast, job losses have long-lasting effects. A firm holds much of its productive capital in the workers it has recruited, hired, trained and assembled into teams. If the crisis forces an entrepreneur to fire those workers, that productive capital is largely lost (re-hiring the same workers is likely to prove difficult) and may take a long time to rebuild.

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¹ Fiscal Monitor Update, January 2021. Available at https://www.imf.org/en/Publications/FM/Issues/2021/01/20/fiscal-monitor-update-january-2021.
² Of these, US$ 350 billion were assigned to small firms, and US$ 500 billion to large corporations. For a summary, see https://www.npr.org/2020/03/26/821457551/whats-inside-the-senate-s-2-trillion-coronavirus-aid-package.
³ Based on World Bank data. Loayza notes that debt finance measures have been prevalent regardless of region and income level. They accounted for about one-third of the fiscal packages to assist small and medium enterprises in both high-income countries and low-income countries. For middle-income countries, the number is closer to forty percent.
The fact that job destruction is associated with permanent damage to firm’s human capital and productivity is well documented. Several empirical papers have shown that mass layoffs can generate short- and long-run losses in earnings [2–9], especially when those layoffs occur in a downturn.4

So, preserving jobs is crucial. But three questions arise. First, why do private firms need subsidies or other forms of government aid to preserve jobs? If job losses can permanently lower productivity, and therefore reduce profits, wouldn’t employers find it advantageous to avoid job destruction and the associated productivity drop, even if the resulting wage bill is large while the pandemic lasts? If not, what then is the market failure that prevents employers from acting in what would seem to be their own interest?

Second, why should government support come in the shape of debt finance? It is not hard to think of alternative ways of inducing firms to preserve jobs while the pandemic lasts—with one example being direct subsidies for the wage bill. Yet Loayza points out that wage subsidies and other employment support programs have been used almost exclusively in advanced countries, and that typically they have been much smaller than policies involving debt finance [1].

Third, what specific kinds of debt finance can be successful in forestalling massive job losses? The answer to this question depends on the answers to the previous two, for only after we understand the problem to be overcome can we spell out conditions for policy to be effective.

In recent research [10], we developed a very simple macroeconomic model—that is, a highly stylized representation of reality—that helps organize thinking and provide answers to these questions. Our account of the challenge faced by firms and governments emphasizes two crucial components. The first is productivity losses associated with massive layoffs: jobs eliminated during the pandemic cannot be restored immediately after the pandemic ends, impairing productivity in the recovery phase. The second component is a financial market failure: firms cannot borrow as much as they want in the middle of a large shock such as a pandemic.

These two factors interact and can give rise to a cycle of doom: firms cannot borrow enough and are forced to dismiss workers; the dismissal of workers in turn reduces future productivity, sales, and profits; and those bleak prospects are precisely what keeps firms from being able to borrow in the first place. To prevent this cycle of doom, a robust policy intervention is called for.

What kind of policy intervention? Conventional fiscal and monetary policies are not the right medicine, since firms’ main problem is not that they are lacking customers to buy their products. Rather, it is that because of lockdowns they cannot get workers to the workplace to make those products! In the jargon of economists, the central problem is not a shortage of aggregate demand, but a constraint on aggregate supply. Firms cannot do much about that, at least not as long as lockdowns persist. But firms do have to worry about productive scarring from the crisis, with layoffs in the short run reducing their productivity in the future, once lockdowns have ended. That is where unconventional policies (wage subsidies, equity injections, and especially targeted lending and loan guarantees), if sufficiently large, can make a difference and keep the economy on a high-employment, high-productivity trajectory in the aftermath of a pandemic.

But the implementation of financial support policies is tricky. Because they often entail channeling resources to firms beyond what market-determined borrowing limits would permit, financial policies are feasible insofar as government is willing and able to do what private agents cannot: deploy the power of the state to ensure the financial obligations arising from special pandemic support are fulfilled.

Financial support policies also require the government to spend resources upfront, at a time of crisis when revenues are down. To fight the economic fallout from the pandemic, governments need to run big fiscal deficits, albeit for reasons that are different from the traditional Keynesian reasons. And private sector firms, which have to keep paying wages while their sales and productivity are sharply down, will also be running deficits. Unless household savings (both voluntary and involuntary, due to lockdowns) rise sharply, a country that adopts robust anti-virus macroeconomic policies is therefore likely to run current account deficits, which will need to be financed by capital inflows from abroad. The capacity to borrow, for both the government and the nation as a whole, is therefore critical.

In the next section we explain our theoretical account and its main conclusions, while in section three we explore in more detail the associated policy implications. Then, in section four, we present some preliminary evidence suggesting that unconventional credit policies have been effective in containing job losses. The final section summarizes and proposes some policy lessons.

2. The basic macroeconomics of a pandemic

Suppose that when the economy is hit by a pandemic, offices and factories close. Workers must stay home in order to minimize the spread of the virus. But the pandemic is expected to be temporary. After it ends, productive activities can return to normal. So, one needs to think about two periods or phases: a pandemic period and a recovery phase.

In such a situation, employers would naturally want to respond by dismissing workers during the pandemic and rehiring them once the crisis is over. But this is not realistic. There are legal and regulatory barriers to rehiring recently

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4 This is consistent with theoretical models in which firms and workers learn about match quality over time (Jovanovic [1979]); models in which the acquisition of specific skills occurs through learning-by-doing on the job; and models with investment in job-specific training (Becker [1962]). See also Mincer and Jovanovic (1981), Jacobson et al. (1993), Farber (1999), Davis and Von Wachter (2011), Fujita and Moscarini (2017), and Albargli et al. (2019).
dismissed workers; some of those workers could become disgruntled and may not wish to be rehired; yet others may move on to other jobs. So, it is sensible to think of the layoff decision as an irreversible decision.

When the crisis begins, managers face a tough call. Each dismissal allows the firm to avoid paying a wage during the pandemic, when there is no production because of the lockdown. On the other hand, dismissed workers are not available in the recovery period, resulting in a reduction of output, sales, and profits.

The analysis in Céspedes, Chang, and Velasco [10], focuses on the case in which labor productivity is normally high enough so that, in the absence of financial difficulties, the firm would choose to retain all workers. This is the case if the output produced by labor in the recovery phase is greater than the value of wages in the pandemic and recovery phases. In that case firms would like to retain its existing labor force, even at the cost of paying wages while lockdowns last and workers are unable to produce. Intuitively, the firm will not want to fire a worker whose productivity, once the pandemic ends, is large enough to compensate the firm for having paid the worker throughout the crisis.

But even if a firm would like to keep workers employed, it may not be able to do so if it lacks the liquidity to pay the wage bill during the pandemic (recall retained workers must be paid but production and sales are zero). A firm that does not have sufficient liquidity when the pandemic hits will need to borrow if it is to avoid cutting back on the number of employees.

Here is where financial imperfections enter the picture. Without them, firms would be able to borrow the amounts they need to finance the required wage bill. Jobs would be preserved and the economy would return to full productivity levels after the crisis had ended. The outcome would be efficient, even though production had collapsed during the pandemic and firms had to keep paying wages to workers who were locked down.

The crucial financial imperfection is that the amount that a firm can borrow during the pandemic cannot exceed a credit limit which, in turn, depends on the firm’s expected future profits. The assumption of credit limits is realistic and easily justified on theoretical grounds. In particular, the standard assumption is that, because of enforcement problems or asymmetric information, the amount that a firm can credibly promise to repay—the firm’s “pledgeable value”—is a fixed fraction of the firm’s profits in the future [11]. That fraction is a natural measure of financial imperfections: less financial development is summarized by a smaller pledgeable ratio.

In the presence of this financial constraint, the pandemic can force firms to dismiss workers, eliminating jobs permanently, simply because managers are unable to borrow the necessary amount to pay wages while the crisis lasts. In such a financially-constrained equilibrium there is a key interaction among employment, credit limits, and the value of firms. Firms fire workers during the pandemic because their credit limit prevents them from borrowing enough to finance their payrolls. But layoffs reduce expected output and profits in the recovery phase which, in turn, is the reason why credit limits bind [12].

Financially constrained outcomes are highly inefficient. Intuitively, creditors would be happy to lend enough money to employers for the latter to finance their payrolls during the pandemic, if only lenders could be guaranteed repayment after the pandemic ends. In the recovery phase, firms would be able to repay on market terms the debts incurred during the pandemic, but only if they were to retain their initial workforce.

The possibility of financially constrained and inefficient outcomes provides a rationale for policy intervention. It is crucial to identify conditions under which firms are likely to be financially constrained:

- Firms are more likely to be financially constrained if their initial liquidity position is weak, in which case they need to borrow more to finance their payroll during the pandemic
- Credit limits during the pandemic are more stringent if the recovery is expected to be weak, implying that the expected pledgeable income of firms is smaller.
- For the same reason, credit limits will also be more stringent if the pandemic/lockdown phase is expected to last longer.

Two additional factors are important for the evaluation of policy options.

First, the interaction among employment, credit limits, liquidity, and the value of firms implies potentially large amplification effects. Consider, for example, a firm that enters the pandemic phase with one more dollar. The firm will be able to devote more than one dollar to increasing its wage bill, because each job that is preserved raises the firm’s profits during the recovery period. This, in turn, relaxes the firm’s credit limit, allowing the firm to borrow more. The converse happens if the firm enters the crisis with one fewer dollar in hand.

Second, confidence (or lack thereof) is paramount. In fact, pessimism can be self-fulfilling: if lenders expect that the firm will be in that situation after the pandemic, then they fail to lend, ensuring that is exactly where the firm will end up.

The sequence is as follows. If lenders are pessimistic, they will anticipate large job losses, low production and sales, and weak profits once the pandemic is over. This reduces the expected value of firms, leading to more stringent credit

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5 All of them in present discounted value terms.
6 This is the terminology of Holmstrom and Tirole (2011).
7 The model therefore exemplifies the possibility of a perverse loop of the type emphasized by Fornaro and Wolf (2020) and others.
limits, which in turn prevent firms from preserving jobs, justifying the initial pessimism. But conversely, if expectations become favorable, credit constraints are relaxed, allowing firms to avoid job destruction, which in turn leads to high levels of output and profits during the recovery phase, validating optimism.

While COVID-19 has implied unavoidable losses in the short term, a critical question is whether its effects, especially on productive capacity, will last well after the pandemic is over. Our paper shows that the answer is yes if firms are unable to borrow from financial markets and are forced to reduce employment beyond a certain threshold. The interaction of financial constraints with productivity-reducing job destruction can generate persistent losses in productive capacity, transforming viable but illiquid firms into insolvent ones. That is precisely the outcome public policies should try to prevent.

3. Policy implications

The main message from our theoretical work is that several unconventional policies can help ensure firms will remain productive in the aftermath of a pandemic. Throwing orthodoxy to the wind, that is exactly what many governments across the world did in response to the pandemic: adopt bold and, in some cases, novel policies.

It helps to divide the COVID-19 response into two broad categories. A first category includes policy actions aimed at making it cheaper for firms to keep workers on the payroll. Among them, wage subsidies and exceptional unemployment benefits designed to finance temporary suspensions of the relationship between a worker and a firm, plus tax cuts and temporary exemptions from social security contributions.

The second category encompasses policies to provide credit to firms. Among these actions we find direct lending, loan guarantee schemes, asset purchases and equity injections. Loayza reports that loan guarantee schemes—in which government provides support to “de-risk” lending to firms by banks and other financial intermediaries—were widely used, particularly in emerging market economies [1]. Some of these policies were designed to interact with liquidity provision by central banks. In a few cases, central banks themselves purchased corporate assets, thereby providing direct financing to private firms.

These are the kinds of policies that can make a difference. But they all face steep implementation challenges. A first challenge has to do with incentives for repayment. What government policies do is to provide entrepreneurs with resources in excess of what borrowing constraints would have allowed. After the crisis is over, business owners may have an incentive to leave debts unpaid (in the case of loans) or to fail to pay dividends (in the case of equity injections). Understanding this, private lenders do not lend. Reality is different for governments, which are capable of doing what private firms cannot: compel business owners to play by the rules.

In the case of loan guarantees, governments can seize tax refunds (or even assets) in case of non-payment. In the case of equity injections, a government can either limit ex ante certain actions by the firm (like paying large bonuses to management and depleting a firm’s cash reserves), or can become a large enough shareholder to prevent the company board from approving such actions.

The management of expectations is a second challenge. All these policies become more complex in the presence of potentially self-fulfilling optimism or pessimism. A large intervention may rule out the bad outcome, but it will necessarily be a more expensive intervention, which may not be affordable for governments with limited resources at hand. Alternatively, a smaller and affordable policy intervention may fail to forestall a confidence crisis that leaves the economy with lower employment and potentially lower productivity.

Cash-strapped governments may choose to stick to the smaller of the two policies (the one that leaves open the possibility of a bad outcome) but try actively to coordinate expectations on the good outcome. Optimistic talk alone will not do the trick, because a group of lenders will lend more if and only if they expect other lenders also will lend more. One possibility is to rely on large state-owned lenders—think of national development banks—that can lend enough to coordinate expectations on the good outcome. A few countries did exactly that during the great recession of 2007–09, and some of those countries (plus others) are doing it again today [13].

Ensuring that governments have enough fiscal space to act is also a key issue. All the policies considered require fiscal resources. In the model we assumed that the government could levy lump-sum taxes after the pandemic to finance whatever additional expenditures it undertook during the crisis. But this is unrealistic, of course: political constraints might limit any future tax increases, or taxes that are politically feasible could be costly for the efficient functioning of the economy.

The sequence of events in which government spends early and increases taxes later also assumes implicitly that the government can either borrow or sell assets during the crisis. That is not problematic for most advanced economies, but it can be difficult for many emerging market and developing country governments, whose ability to borrow large amounts is often limited, particularly during a pandemic.

Now, even if governments manage to stabilize expectations and gain access to the necessary resources, two additional complications deserve some attention.

The first one has to do with the length of the shock. We have assumed that if financially unconstrained, firms always wish to stay at the pre-crisis, high-employment level. For our purposes that assumption makes sense. But one can easily imagine scenarios in which the productivity shock lasts many periods, so that it does not make sense from an economic point of view for a firm to keep everyone employed. That could happen, for instance, if there are second, third or fourth...
waves of infection. Alternatively, in a number of sectors—air transport, tourism, other services—the pandemic itself could trigger either changes in demand or technological innovations that render firms insolvent or unprofitable over the long run. In such scenarios, the policy discussion would need to have a different focus: how to help firms reduce their scale or wind down operations.

The second difficulty is differences across firms. Firms are heterogeneous along many dimensions. How does recognizing this fact alter the policy analysis?

In the absence of policy intervention, firms might fall into different categories. Some firms would be solvent, in the sense of being profitable in the future if they have sufficient access to credit during the crisis. But only a subset of these firms would indeed be able to raise the credit they need to survive the pandemic. Other firms, potentially solvent, could become financially constrained. After borrowing up to their limits, financially-constrained firms would be forced to reduce their workforce or close altogether. A last set of firms would be left insolvent by the pandemic. These firms would have to close even if they had unfettered access to credit.

In practice, financially-constrained firms are more likely than not to be small and medium enterprises. Our analysis provides a rationale for the common practice of targeting financial support policies on them. Large firms probably had stronger liquidity positions at the start and better access to capital markets, so they needed less financial support from government.\(^8\)

Empirical support for this view is provided by Bartik et al., [14] who conducted a survey of more than 5,800 small businesses in the US. In their sample, by April 2020 (less than a month into the beginning of the pandemic in America) businesses had—on average—reduced employee counts by 40 percent relative to January. Bartik et al. also provide evidence suggesting that many small businesses were financially fragile, with less than one month of cash on hand [14].

So financial support in response to the pandemic is justified primarily for solvent but financially-constrained firms. Solvent and financially-unconstrained firms would not change their production and employment plans if they had access to additional finance. Therefore, financial support for those firms is unnecessary—a wasteful use of government resources. In practice, of course, the challenge is to identify these solvent, financially-unconstrained firms that can survive without government support. If financial support entails a subsidy component, all firms have an incentive to ask for help from government, meaning that self-identification would be naive.

And of course, support for insolvent firms could be justified by arguments other than efficiency—for instance, and most important, equity and distribution. Government may wish to keep insolvent firms alive if the owners are poor or belong to a disadvantaged group, for instance. But the question then arises of whether lending to firms is the right policy instrument, as opposed to direct transfers or subsidies to the disadvantaged groups or families.

4. The empirical scorecard

Do these emergency policies work? And in what sense do they work?

In this section we begin by describing changes in GDP and employment during the second quarter of 2020 and the third quarter of 2020, for a group of advanced and emerging market economies.\(^9\) This period includes the significant drop in economic activity due to social distancing restrictions in Q2 2020 and the rebound in Q3 2020 associated with the relaxation of those restrictions. We then connect the movements in stock prices, GDP, and employment to a variable that is crucial in our theoretical framework: credit provided to private firms.

As Table 1 shows, in advanced economies the GDP drop in the second quarter of 2020 was 10.8% in annual terms. For a group of emerging market economies, the fall in GDP in the same period was even larger, at 13.5%. Despite a significant recovery in the third quarter of 2020, by the end of that period economic activity remained significantly below its level one year before.

What about employment? The short-run employment losses associated to the COVID-19 shock were significant. The drop in total employment was less sharp than the drop in GDP, but it has been more persistent (see Table 2). In developed economies, employment fell 2.7% in annual terms in the second quarter of 2020 and 1.9% in the third quarter.

Table 1: GDP Growth.

| Number of countries | Year on year | Quarter on quarter (annualized) |
|---------------------|--------------|---------------------------------|
| Developed           | Q2 2020: −10.8 | Q3 2020: −3.7 | Q2 2020: −9.1 | Q3 2020: 8.3 |
| EME                 | Q2 2020: −13.5 | Q3 2020: −5.8 | Q2 2020: −11.8 | Q3 2020: 8.6 |

Source: OECD database and national statistical offices.

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\(^8\) It is interesting to note that in several countries, public funds available to help firms in the pandemic have not been exhausted, suggesting some kinds of firms do not need help or, for other reasons, prefer not to ask for help.

\(^9\) The list of countries included in the empirical discussion and the grouping of countries can be found in the Appendix.
In emerging market economies job losses were larger. Employment decreased 8.6% (annual terms) in the second quarter of 2020 and 5.2% in the third quarter.

In advanced economies, the picture for the total number of employees is similar to that of total employment. In emerging market economies, however, the decrease in total number of employees has been larger and longer-lasting (see Table 3). In fact, in the third quarter of 2020 the total number of employees decreased, in annual terms, even more than GDP. This underscores, once more, that job layoffs are more persistent than output losses— and down the road could generate a significant impact on productive capacity.

We have argued that access to external funds is crucial to reduce the negative impact of the COVID-19 shock on employment and on the value of firms. In that story, expected productivity and profits determine pledgeable value; in turn, pledgeable value limits borrowing. If firms are unable to borrow from financial markets when facing a negative shock, and if they are forced to reduce employment beyond a certain threshold, they suffer permanent productivity losses. This, in turn, generates permanent losses in the value of the firms, their productive capacity and employment.

Relevant to our analysis, therefore, is the empirical evidence on the relationships among credit provision to private non-financial corporations, the value of firms, and GDP and employment during the COVID-19 episode. We present some of the available evidence next. It is clearly preliminary, since the COVID-19 episode is still unfolding, but on the whole it is consistent with the thrust of our analysis.

We start with a look at the change in the value of firms’ vis-à-vis GDP and employment during the third quarter of 2020. Focusing on Q3 is warranted because this during this quarter the “initial” recovery started. If our story is right, countries in which loans to firms were larger during the second quarter of 2020 should have suffered smaller permanent productivity losses and, therefore, should have experienced a stronger recovery in asset prices, GDP, and employment in Q3 2020.

Figure 1 shows the scatter plot of the quarter-on-quarter change in stock prices in Q3 2020 relative to Q2 2020 against the growth in the stock of credit to private non-financial companies between December 2019 and June 2020, for all the countries included in our sample. The evidence suggests a positive relationship between the value of listed firms and the amount of credit provided to non-financial companies, as suggested by our theoretical framework. The straight line corresponds to a “fitted” or “trend” line (an OLS linear regression). The estimated slope of that line is positive and statistically significant.\footnote{10}

There is also evidence suggesting that the increase in the provision of credit to non-financial corporations between the last quarter of 2019 and the second quarter of 2020 is positively correlated with the change in GDP in the third quarter of 2020. Figure 2 shows the scatter plot of the two variables, as well as the regression line. The slope is again positive and significant. The positive correlation indicates that greater provision of credit to non-financial firms is associated with the smaller output losses in these economies.

Similarly, there is evidence of a positive association between employment and credit provision. We do not have seasonally-adjusted time series for total employment, so to overcome this limitation we compute the difference between the annual rate of growth of total employment in the third quarter of 2020 and the same rate in the second quarter of 2020.

Figure 3 shows the resulting evidence. The increase in the provision of credit to non-financial corporations between the last quarter of 2019 and the second quarter of 2020 is positively correlated with the recovery of total employment between the second quarter of 2020 and the third quarter of 2020. If layoffs are associated with losses in productivity, then, the provision of credit would be important to reduce permanent losses in productive capacity.

\section*{Table 2: Total Employment (year on year % change).}
\begin{table}[h]
\centering
\begin{tabular}{lll}
\hline
Number of countries & Q2 2020 & Q3 2020 \\
\hline
Developed & 34 & –2.7 & –1.9 \\
EME & 21 & –8.6 & –5.2 \\
\hline
\end{tabular}
\caption*{Source: ILO database and national statistical offices.}
\end{table}

\section*{Table 3: Total Number Employees (year on year % change).}
\begin{table}[h]
\centering
\begin{tabular}{lll}
\hline
Number of countries & Q2 2020 & Q3 2020 \\
\hline
Developed & 31 & –3.0 & –1.9 \\
EME & 16 & –9.1 & –6.9 \\
\hline
\end{tabular}
\caption*{Source: ILO database and national statistical offices.}
\end{table}

\footnote{10 A potential caveat to this analysis is that firms that are traded in stock markets are less likely to face credit constraints. Alfaro, Chari, Greenland and Schott (2020) find that COVID-19-related losses in market value at the firm level rise with capital intensity and leverage and are deeper in industries more conducive to disease transmission [15].}
Finally, our framework suggests that policies that channel credit to private firms affected by adverse shocks can reduce the impact of these shocks on firm’s asset prices, productive capacity, and employment. Figure 4 presents some evidence in favour of that view.

The horizontal axis measures liquidity support policies implemented by governments during the second quarter of 2020 to fight the impact of COVID-19, as documented by the IMF, the OECD and the European Commission. The increase in credit in the third quarter of 2020 with respect to the last quarter of 2019 appears in the vertical axis. The
resulting scatter plot suggests a positive association between the two variables, and a simple regression confirms that the slope is indeed positive and statistically different from zero.

Putting the figures together, we conclude that larger liquidity support policies are associated with higher growth in total credit and less depressed firm values, employment and GDP. These results are consistent with our theoretical analysis and with the policy implications of that analysis.
4.1 A look at some micro evidence

In addition to the informal macro evidence just reviewed, recent micro evidence can also shed light on these issues. Gourinchas, Kalemli-Ozcan, Pancialova, and Sander [16, 17], have studied the performance of small and medium enterprises (SMEs) in a group of European countries during the COVID crisis. Using firm-level data they conclude that in the absence of government support, the SME failure rate would have been 9.84 percentage points higher relative to a counterfactual non-COVID year. Government financial support programs, in their estimate, can save as many as seven percent of total jobs—though with widely different costs depending on how targeted those programs are.

Evidence from Chile—an emerging country that undertook large government-supported lending programs—suggests a similar conclusion. Using individual-firm-level data, Albagli, Fernández and Huneeus report that between March and June 2020, 22% of relationships with workers were severed, and an extraordinary 74% of the commercial relationships between firms and its suppliers were destroyed [18]. Of the supplier links, 41% were reestablished later, while only 22% of the worker links severed earlier were reestablished.

Albagli, Fernández and Huneeus argue that the provision of credit mitigated firms’ involuntary labor market adjustments [19]. Based on individual-firm-level data from the Chilean IRS and the Chile’s Financial Market Commission, together with job termination records from the Chilean Labor Bureau, they show that the provision of credit in the early phase of the COVID-19 shock systematically correlates with fewer bankruptcies and less job destruction at the firm level.

In particular, and in line with the data on supplier and worker linkages, Albagli et al. document that electronic invoice data for firms over the period March–July 2020 show significant reductions in sales [19]. Moreover, the firms with the steepest drop in sales are in the restaurant, hotel, personal services, housing, and construction sectors. By combining tax and financial data, Albagli et al. present evidence suggesting credit provision has allowed businesses that saw their sales plummet to continue operating [19]. In particular, they estimate that an increase of one percent in the debt to sales ratio reduces the probability of not reporting sales in the electronic invoice system by 0.5 percent. Additionally, they find that firms that received a new loan or entered into a refinancing operation increased employment by 0.6% relative to firms that did not.

5. Conclusions

Layoffs are extremely painful for the individuals involved, so there is a natural reason for firms and governments to try to prevent them. But in addition, there is an efficiency case to avoid mass layoffs: ample evidence from different sources suggests that if lack of liquidity forces a firm to fire many workers, that firm’s productivity will suffer—perhaps permanently.

This was precisely one of the many risks the pandemic brought to the fore. After March 2020, firms were told to stop production and workers were told to stay home, causing a sharp drop in revenues and the potential for a massive liquidity squeeze. But firms and workers could plausibly look forward to resuming business more-or-less-as-usual. The name of the game was to secure the funds to keep paying workers (and suppliers and creditors) while the pandemic lasted. If funds could not be secured, then layoffs and productivity losses would become inevitable.

With well-functioning capital markets, the problem would have had an easy solution. Firms that remained solvent, in the sense that they could once again be profitable in the post-pandemic economy, could borrow against those future profits and get over the hump. But capital markets do not work perfectly. Because of obvious incentive problems, lenders almost always require that borrowers supply collateral—and the value of that collateral in turn depends on the ability of firms to borrow and pay to keep valuable employees on board.

It may be the case that firms cannot borrow because their future productivity and profits are expected to be low, and therefore their collateral is not worth much; at the same time, pessimism about the future is self-fulfilling, in the sense that it hinges on firm’s inability to borrow. There is a prima facie case for government intervention. Government can lend beyond what conventional credit limits would allow precisely because it has powers that private firms lack to collect debts and make sure emergency support is reimbursed.

This logic helps explain the size and globally widespread nature of the support programs governments have undertaken—and of the importance of debt finance, accounting for over one-third of the fiscal packages to help small and medium enterprises during the pandemic.

Preliminary macro evidence suggests that these programmes are having an impact: the size of liquidity support policies is positively correlated with the extent of credit expansion, firm value, employment and GDP. Detailed micro-economic data for a large group of European countries and for Chile points in the same direction: financial support programs for firms can be effective at preventing job losses.

Of course, many caveats apply. One is that government support cannot go on forever, and that as government-provided loan guarantees run out the private sector may choose not to roll over those loans, causing a new and massive liquidity squeeze for medium and small firms. This has become known as the “time bomb” problem. Gourinchas et al. argue that, in their sample of European countries, simulations suggest that 2020 policy support has not, on its own, led to a “time bomb” of 2021 SME failures [17]. However, “a serious worry is that public loan guarantees have overburdened

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11 Belgium, Czech Republic, Finland, France, Greece, Hungary, Italy, Poland, Portugal, Romania, Slovakia, Slovenia, and Spain.
SMEs with debt” and that this might adversely affect their solvency and future access to private credit. If the banking system tightened credit and refused to roll-over pre-COVID loans, business failures and job losses (at 4.32% of employment) could balloon.

Perhaps the most important concern is that at the pandemic drags on and countries experience second and third waves of infection, which in turn require new lockdowns, more and more firms become insolvent—both because they exhaust their equity and, more importantly, because their products and skill sets may become obsolete in the new post-pandemic world. As that happens, governments will have to move from saving old jobs to retraining workers for the new jobs of the future.

**Appendix**

| Developed            | Emerging           |
|----------------------|--------------------|
| Luxembourg           | United Arab Emirates |
| Singapore            | Saudi Arabia       |
| Ireland              | Poland             |
| Switzerland          | Hungary            |
| Norway               | Romania            |
| United States        | Turkey             |
| Hong Kong            | Croatia            |
| Netherlands          | Malaysia           |
| Iceland              | Russia             |
| Denmark              | Kazakhstan         |
| Austria              | Chile              |
| Germany              | Argentina          |
| Sweden               | Mauritius          |
| Belgium              | Bulgaria           |
| Australia            | Mexico             |
| Canada               | Costa Rica         |
| Finland              | Thailand           |
| United Kingdom       | Botswana           |
| France               | Serbia             |
| New Zealand          | China              |
| Italy                | Brazil             |
| Korea                | Colombia           |
| Japan                | Georgia            |
| Spain                | Albania            |
| Israel               | Peru               |
| Czech Republic       | South Africa       |
| Cyprus               | Mongolia           |
| Slovenia             | Indonesia          |
| Lithuania            | Egypt              |
| Estonia              | Tunisia            |
| Portugal             | Philippines        |
| Slovak Republic      | Guatemala          |
| Latvia               | India              |
| Greece               | Pakistan           |

12 Barrero, Bloom, and Davis (2020) persuasively argue that “COVID-19 is also a reallocation shock” [20].
Acknowledgement
Paper prepared for the LSE Public Policy Review symposium on Policy Responses to the COVID Crisis. We are grateful to Tim Besley for comments. All errors and omissions are our own.

Competing Interests
The authors have no competing interests to declare.

Publisher’s Note
This paper underwent peer review using the Cross-Publisher COVID-19 Rapid Review Initiative.

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