Credit, employment and the COVID crisis[*]

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1. Introduction

The Covid-19 pandemic has generated a sizable policy reaction around the world —especially in the realm of fiscal policy. The latest *World Economic Outlook* shows the fiscal response had reached about 12 percent of world GDP by September 2020. This unprecedented expansion was associated with an increase in government deficits of 9 percent of GDP and projections for global public debt by the end of 2020 that, at 100 percent of GDP, were the highest on record.

The worldwide numbers mask substantial heterogeneity across countries and regions. Advanced economies enacted much larger fiscal programs than did developing countries: the IMF projected that G20 countries would increase their combined fiscal deficits by 11.5 percent of GDP, while the forecast for emerging economies was only about half of that, at 5.8 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 debt of G20 countries stood at 113 percent of their GDP, more than twice the level for emerging economies (52.6 percent of GDP).

In spite of the heterogeneity, governments appear to agree on one aspect of the policy response: the need to avoid 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.[1] Loayza (2021) 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.[2]

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 and fade away within months, not years. 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 capital is lost and may take a long time to rebuild.

The view that job destruction is associated with permanent damage to firm human capital and productivity is well documented. Several empirical papers have shown that mass layoffs can generate short- and long-run losses in earnings, especially when those layoffs occur in a downturn.[3] 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)).

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[1] 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.

[2] 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.

[3] See Mincer and Jovanovic (1981), Jacobson et al (1993), Farber (1999), Davis and Von Wachter (2011), Fujita and Moscarini (2017), and Albagli et al (2019).

So preserving jobs is crucial. But three questions arise regarding the role of public policy. First, why do private firms need subsidies or other forms of government aid to preserve jobs? If job losses can cause permanently lower productivity, and therefore lower profits, wouldn't employers find it advantageous to pay the current wage bill so as to avoid job destruction and the associated productivity drop, even if the resulting 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, even if there is a justification for government support, why should such support come in the shape of debt finance? It is not hard to think of alternative programs to induce firms to preserve jobs while the pandemic lasts —with one example being direct subsidies for the wage bill. Yet Loayza (2021) points out that wage subsidies and other employment support programs have been used almost exclusively in advanced countries, and typically they have been much smaller than policies involving debt finance.

Third, what specific kinds of debt-driven financial policies 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 what problems are to be overcome can we spell out necessary conditions for policy responses to be effective.

In recent research (Céspedes, Chang, and Velasco (2020), CCV henceforth) we develop a minimalist macroeconomic model that provides answers to these questions. The model is built on two components. The first is labor adjustment costs: 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 what looks like a Catch-22: firms cannot borrow enough and are forced to dismiss workers; the dismissal of workers reduces productivity, sales, and profits productive in the future; but those bleak prospects are precisely what causes the inability to borrow. To prevent the economy from settling into that bad equilibrium, a robust policy intervention is called for.

Our work shows that when financial constraints are binding, equilibrium outcomes are inefficient, which opens the door for policy intervention. But conventional fiscal and monetary policies are ineffective, since the central problem is not a shortage of aggregate demand. Rather, there are several unconventional policies —wage subsidies, helicopter drops of liquid assets, equity injections, and loan guarantees— that, if sufficiently large, can keep the economy in a high-employment, high-productivity equilibrium in the aftermath of a pandemic. All of these policies can restore efficiency, ultimately by relaxing financial constraints. In this sense, the analysis rationalizes the observed prevalence of debt finance in the worldwide fiscal response to Covid-19.

But the implementation of appropriate financial support policies is tricky. Because they often entail channeling resources to firms beyond what incentive-compatible 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 relevant financial obligations are fulfilled.

Financial support policies also require the government to spend resources upfront, at a time of crisis when revenues are down. So, to fight the economic consequences of the pandemic, governments need to run 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 adopt anti-virus policies is therefore likely to run current account deficits. The capacity to borrow, for both the government and the nation as a whole, becomes critical.

In the next section we explain the model and its main conclusions, while in section 3 we explore in more detail the associated policy implications. Then, in section 4, we present some preliminary evidence that credit policies have been effective in containing job losses. The final section summarizes and offers some conclusions.

2. A Minimalist Model

We study a small open economy hit by a pandemic. Productive plants close so that workers can stay home, 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 there are 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 pandemic is over, but this is not realistic. Because of adjustment costs involved in hiring and firing workers, existing regulations, and restrictions implied by labor contracts, jobs lost during the pandemic may take a long time to be reestablished. So, when the pandemic hits, firms have the option of firing workers, but they cannot rehire them right away when the recovery period begins.

At the start of the pandemic, therefore, the decision of a typical firm faces is how many workers to retain or to dismiss. 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 CCV focuses on the case in which labor productivity is normally high enough so that, in the absence of financial frictions, the firm would choose to retain all workers. This is the case if the typical firm has positive net present value: the marginal product of labor in the recovery phase, discounted to the start of the pandemic, is greater than the present discounted value of wages in the pandemic and recovery phases. Under that condition firms would like to

retain its existing labor force, even at the cost of paying them a wage while the pandemic lasts. Intuitively, the firm will not want to fire a worker whose marginal product, once the pandemic ends, is large enough to compensate the firm for paying the worker a wage during the pandemic.

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 wages but production and sales are zero during the pandemic). So 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 during the pandemic, so all jobs would be preserved and the economy would return to full employment 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, so it has become common in models of credit rationing. In particular, we assume that, because of enforcement problems or asymmetric information, the amount that a firm can credibly promise to repay to creditors in the recovery period —the firm's "pledgeable value", in the terminology of Holmstrom and Tirole (2011) — is a fixed fraction of the firm's profits in that period. That fraction, which we will call the "pledgeable ratio", is a natural measure of financial imperfections: less financial development is summarized by a smaller pledgeable ratio.

In the presence of this financial friction, the pandemic can result in an equilibrium in which firms have to dismiss workers, eliminating jobs permanently, simply because they are unable to borrow the necessary amount to pay wages during the pandemic. 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 prevent 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 are bind. The model therefore exemplifies the possibility of a perverse loop of the type emphasized by Fornaro and Wolf (2020) and others.

Financially-constrained equilibria are Pareto 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 enough 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. Yet this outcome is ruled out if financial constraints are binding in equilibrium.[4]

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[4] Financially-constrained equilibria exist only if financial frictions are severe enough. Otherwise, financial constraints are not binding in equilibrium, and the outcomes are the same as if financial imperfections were absent.

The possibility of financially-constrained equilibria and inefficient outcomes provides a welfare-based rationale for Pareto-improving policy intervention. So it is crucial to identify conditions under which equilibria are likely to be financially constrained. Useful criteria are apparent from our discussion and, in fact, can be characterized quite precisely in the CCV model:

- Firms are more likely to be financially-constrained if their initial liquidity position is weak, since they need to borrow more to finance their payroll during the pandemic
- Credit limits during the pandemic are more severe 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 be more stringent if the pandemic-cum-lockdown phase is expected to last longer.
- And, of course, the likelihood of financially-constrained equilibria is larger if financial frictions are more severe, as expressed by smaller pledgeable ratios.

Two more aspects of our analysis are important for the evaluation of policy options. First, the interaction between employment, credit limits, liquidity, and the value of firms implies potentially large amplification effects whenever financial constraints bind. Consider, for example, a firm that enters the pandemic phase with one more dollar. The model then implies that the firm will be able to devote more than one dollar to increase its wage bill. This is because each job that can be 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.

Second, expectations are paramount. In fact, it is not hard to show that simple versions of the model can generate multiple self-fulfilling equilibria, which can be Pareto-ranked and result in different levels of job destruction. To illustrate, CCV discusses the case in which output per worker in the recovery period falls to a low level if the labor force is too low. This assumption captures the presence of fixed costs of production. In that case, the CCV model can yield two equilibria, of which at least one must be financially-constrained and involve more job destruction than the other equilibrium.

So expectations can be self-validating. If people are pessimistic they 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 limits, which prevent firms from preserving jobs, justifying pessimism. If, on the contrary, 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 remaining question is whether its effects, especially on productive capacity, will last well after the pandemic. Our paper shows that the answer can be 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 the negative impact on productivity of job destruction can generate persistent losses in productive capacity, transforming viable but illiquid firms into insolvent ones.

3. Policy implications

Several unconventional policies —liquidity injections, equity injections, and loan guarantees— if sufficiently large, can keep the economy in a full-employment, high-productivity equilibrium in the aftermath of a pandemic. They are effective because they alleviate distortions caused by credit constraints, providing firms with the financing they need to prevent the loss of jobs. In this sense they are similar to the debt finance policies that have dominated the Covid-19 response.

But these policies all face steep implementation challenges. A first challenge has to do with incentives for repayment. What these policies all have in common is that government provides entrepreneurs with resources in excess of what borrowing constraints, which are really incentive constraints, would have allowed. The policies differ in terms of the implied enforcement requirements during the recovery, when the entrepreneur has an incentive to abscond with a share of the profits, leaving taxes unpaid (in the case of a wage subsidy or a liquidity injection), dividends unpaid (in the case of equity injections), or debts unpaid (in the case of loan guarantees). This point is crucial, because it reveals that the policies will be feasible insofar as government is able to do what private agents cannot: compel entrepreneurs to play by the rules.

In some cases, such as tax collection, this means appealing to the coercive powers of the state. In other cases, such as equity injections, it means that government can either limit *ex ante* certain actions by the firm (like pay large bonuses to management and deplete a firm´s cash reserves), or become a large enough shareholder to prevent the company board from approving such actions. The argument is weakest in the case of loan guarantees, but even here government can do things private lender cannot, like seizing tax returns (or even assets) in case of non-payment.

The management of expectations is also challenging. All these policies become more complex in the presence of multiple equilibria. The size of the intervention necessary to make full employment feasible is not necessarily one that will rule out other less attractive equilibria with lower employment and potentially lower productivity. A larger intervention may rule out the bad equilibrium, but it will necessarily be a more expensive intervention, which may not be affordable for governments with limited fiscal space.

Alternatively, governments may choose to stick to the smaller of the two interventions (the one that leaves open the possibility of a bad equilibrium) but try actively to coordinate expectations on the good outcome. Optimistic talk alone will not do the trick, because lenders will lend more if and only if they expect other lenders will lend more. One possibility is to rely on large state-owned lenders who internalize the pecuniary externality and 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 are doing it again today.[5]

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[5] See Biron, Cordova and Lemus (2019).

Fiscal space is also a difficult 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 might be unrealistic, of course: political constraints might limit any future tax increases, or taxes that are politically feasible could be highly distortionary.

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

Two additional caveats deserve mention. The first one has to do with the length of the shock. We assume that if unconstrained, the firm always wishes to stay at the pre-crisis, full-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 the firm to keep everyone employed. That could happen, for instance, if there are second, third or fourth waves of infection. Or 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 those scenarios, the policy discussion would need to have a different focus: how to help firms reduce their scale or wind down operations.

The second limitation is that our paper examines an economy with a representative firm. Reality is much messier, of course, and firms are heterogeneous along many dimensions. How does recognizing this fact alter our policy analysis?

In the absence of policy intervention, firms might fall into different classes. Some firms would be solvent, in the sense of having a positive present value if they had sufficient access to credit. 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, would 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 negative net present value and 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. So our analysis provides a rationale for the common practice of targeting financial support policies on them. In contrast, large firms may have had better liquidity positions at the start of the pandemic and better access to capital markets, and may not need financial support.[6]

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[6] And it is interesting to note that in several countries, 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.

Some empirical support for this view is provided by Bartik et al (2020), who conducted a survey of more than 5,800 small businesses in the US. They show that mass layoffs had occurred already by April 2020. In their sample, businesses had –on average – reduced their employee counts by 40 percent relative to January. Bartik et al (2020) also provide evidence suggesting that many small businesses were financially fragile, with less than one month of cash on hand. Interestingly, many businesses that responded the survey anticipated problems with accessing the aid, such as bureaucratic hassles and difficulties establishing eligibility.

An implication of the analysis so far is that financial support in response to the pandemic is justified only for solvent but financially-constrained firms. Solvent, financially unconstrained firms, would not change their production and employment plans if they had access to additional finance. Hence financial support to those firms is would seem to be unnecessary, because it cannot improve efficiency.

But in practice, of course, the challenge is to identify the 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. And of course, support for insolvent firms could be justified by arguments other than efficiency –for instance and most important, equity and distribution. But the question would then be whether debt policies are called for, as opposed to alternatives such as direct transfers.

4. The empirical scorecard

In this section we begin by describing the evolution of GDP and employment during the second quarter of 2020 and the third quarter of 2020, for a group of advanced and emerging market economies.[7] This period includes the significant drop in economic activity due to social distancing restrictions (Q2 2020) and the rebound of in Q3 2020 associated to the relaxation of restrictions. We then connect the evolution of stock prices, GDP and employment to a variable that is crucial in our theoretical framework: credit provided to private firms. This evidence is preliminary and meant to be mostly suggestive, but it appears consistent with our analysis.

As Table 1 shows, in advanced economies the fall of GDP in the second quarter of 2020 was 10.7% 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, especially in emerging market economies.

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[7] The list of countries included in the empirical discussion and the grouping of countries can be found in the Appendix.

Table 1: GDP Growth

		year on year			quarter on quarter	
	Number of countries	Q2 2020	Q3 2020	Number of countries	Q2 2020	Q3 2020
Developed	35	-10.8	-3.7	34	-9.1	8.3
EME	27	-13.5	-5.8	20	-11.8	8.6

Source: OECD database and national statistical offices.

What about employment? The short-run employment losses associated to the Covid-19 shock have been 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 2nd quarter of 2020 and 1.9% in the 3rd quarter. In emerging market economies job losses were larger. Employment decreased 8.6% (annual terms) in the 2nd quarter of 2020 in and 5.2% in the 3rd quarter.

Table 2: Total Employment
(year on year % change)

	Number of countries	Q2 2020	Q3 2020
Developed	34	-2.7	-1.9
EME	21	-8.6	-5.2

Source: ILO database and national statistical offices.

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

Table 3: Total Number Employees

(year on year % change)

	Number of countries	Q2 2020	Q3 2020
Developed	31	-3.0	-1.9
EME	16	-9.1	-6.9

Source: ILO database and national statistical offices.

In our model, access to external funds is crucial to reduce the negative impact of the Covid-19 shock on the value of firms. In that framework, 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 between 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, as the Covid-19 episode is still unfolding, but on the whole it is consistent with the thrust of our analysis.
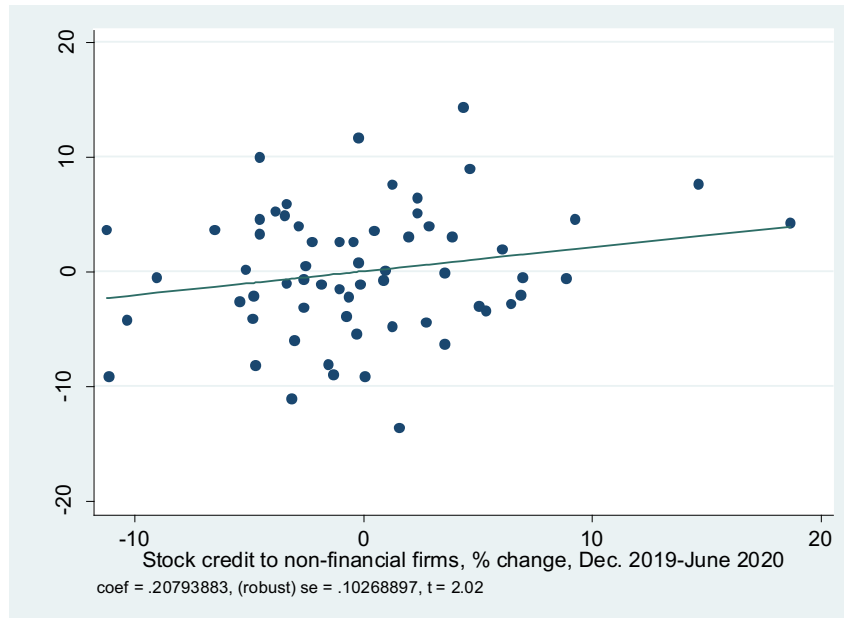
We start with a look at the change in the value of firms vis a vis GDP and employment during the third quarter of 2020. Focusing on Q3 is warranted because this quarter started the "initial" recovery. If our story is right, countries in which loans to firms were relatively larger during the 2nd quarter of 2020 should have suffered lower 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, in line with the implications of our theoretical framework. The straight line corresponds to an OLS linear regression. The estimated slope is positive and statistically significant. Of course, a potential caveat to this analysis is that firms that are traded in stock markets are less likely to face credit constraints.[8]
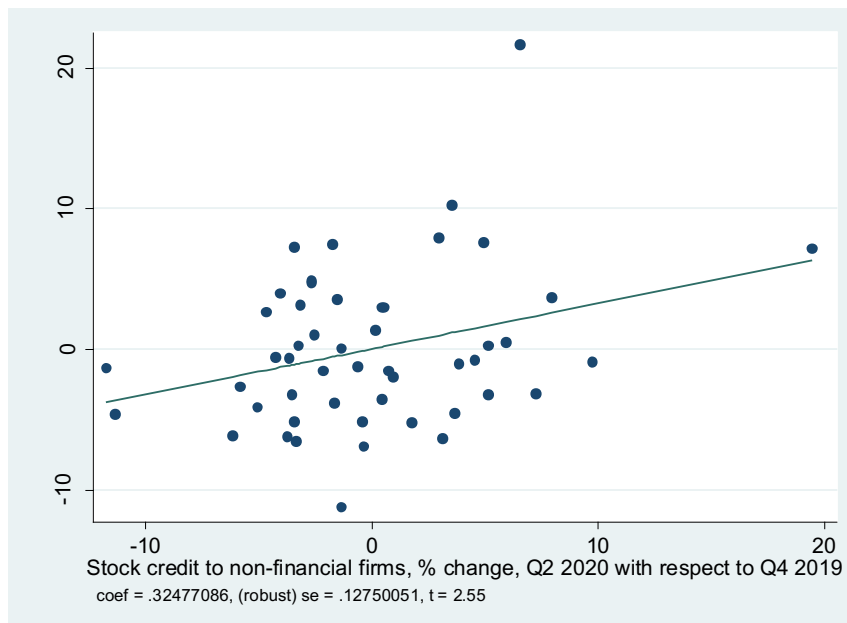
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[8] Alfaro, Chari, Greenland and Schott (2020) find that COVID-19-related losses in market value at the firm level rise with capital intensity and leverage and are deeper in industries more conducive to disease transmission.

Figure 1: Value of Firms and Credit

Stock credit to non-financial firms, % change, Dec. 2019-June 2020
coef = .20793883, (robust) se = .10268897, t = 2.02

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 2nd quarter of 2020 is positively correlated with the GDP in the third quarter of 2020. Figure 2 shows the scatter plot of the two variables, as well as the OLS regression line. The slope is again positive and significant. The positive correlation indicates that a larger provision of credit to non-financial firms is associated with the avoidance of output losses in these economies.
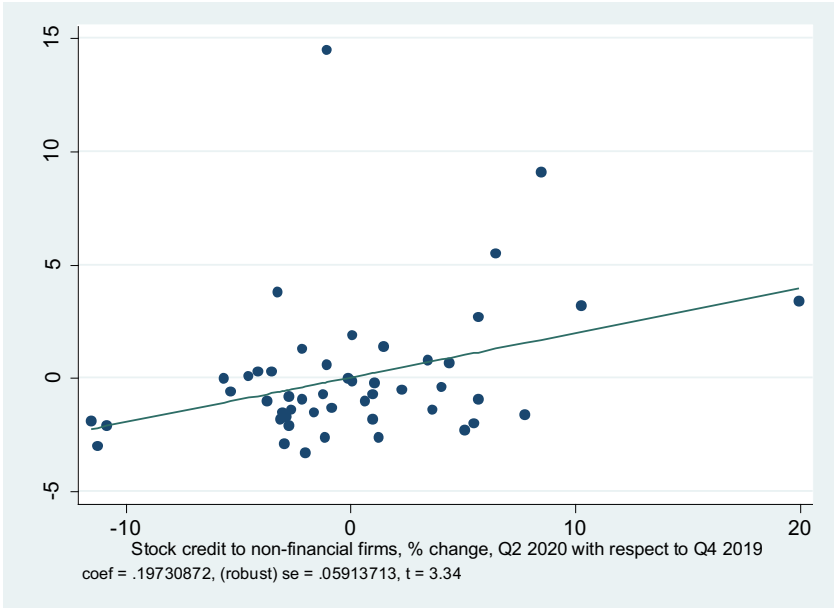
Figure 2: Quarter on Quarter GDP Growth Q3-2020 and Credit

Stock credit to non-financial firms, % change, Q2 2020 with respect to Q4 2019
coef = .32477086, (robust) se = .12750051, t = 2.55

Similarly, there is evidence of a positive association of employment and credit provision. We do not have seasonally-adjusted time series for total employment. To overcome this limitation, we compute the difference between the annual rate of growth for total employment in the 3rd quarter of 2020 and the annual rate of growth of total employment in the 2nd quarter of 2020.

Figure 3 shows this evidence. The increase in the provision of credit to non-financial corporations between the last quarter of 2019 and the 2nd quarter of 2020 is positively correlated with the recovery of total employment between the 2nd quarter of 2020 and the 3rd quarter of 2020. If layoffs are associated to losses in productivity, then, the provision of credit would be important to reduce permanent losses in productive capacity.
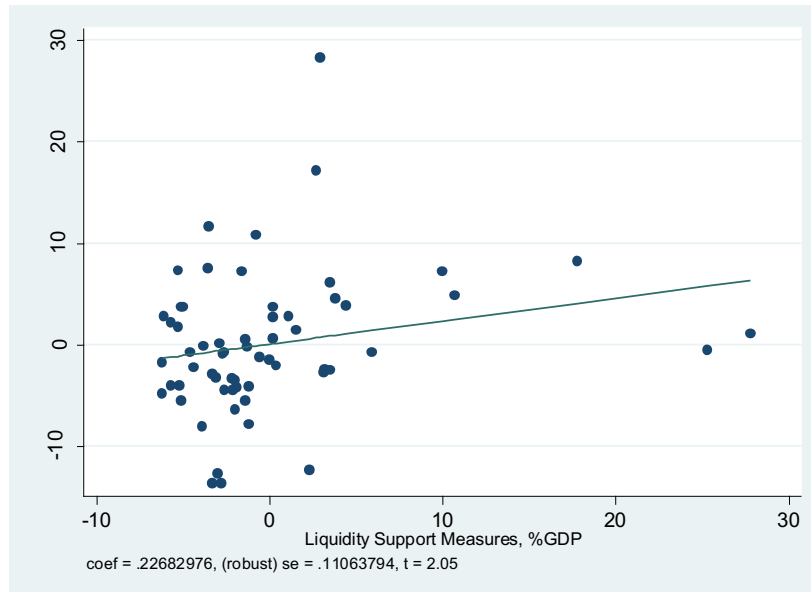
Figure 3: Employment and Credit

Stock credit to non-financial firms, % change, Q2 2020 with respect to Q4 2019

coef = .19730872, (robust) se = .05913713, t = 3.34

Finally, in our framework policies aimed at fostering credit to private firms affected by adverse shocks can reduce the impact of these shocks on asset prices, productive capacity, and employment. Figure 4 presents some evidence in favor 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 3rd 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.

Figure 4: Credit and Liquidity Support Measure

coef = .22682976, (robust) se = .11063794, t = 2.05

Putting the figures together, we find that the evidence suggests positive relationships between the size of the liquidity support policies implemented by governments to fight the virus, the extent of credit, firm value, and employment and GDP. All of these cuts at the data are consistent with our theoretical analysis.

A look at some micro evidence

In addition to the informal macro evidence just reviewed, recent micro evidence can also shed some light on our discussion. Gourinchas et al (2020, 2021) study the performance of SMEs in a group of European countries during the Covid crisis.[9] Using firm-level data they conclude that in the absence of government support, the SME failure rate would have been 9.84 percentage points relative to a counterfactual non-COVID year. Government financial support programs, in their estimate, can save as many as 7 percent of total jobs –though with widely different costs depending on how targeted those programs are.

Evidence from Chile —an emerging country that has undertaken large government-supported lending programs— suggests a similar conclusion. Using individual-firm-level data, Albagli, Fernández and Huneeus (2021) report that in March-June 2020, 22% of relationships with workers were severed, and an extraordinary 74% of the commercial relationships between firms and its suppliers were destroyed. Of the supplier-links destroyed, 41% were reestablished during March-June, while only 22% of the worker links destroyed earlier were reestablished.

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[9] Belgium, Czech Republic, Finland, France, Greece, Hungary, Italy, Poland, Portugal, Romania, Slovakia, Slovenia, and Spain.

Albagli, Fernández and Huneeus (2020) argue that the provision of credit has been a mitigator of firms' involuntary labor-market adjustments. Based on the analysis of individual-firm-level data from the Chilean IRS and the 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. 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. In particular, they estimate that an increase in the stock of debt -to-sales of 1% reduces the probability of non-reporting sales in the electronic invoice system in 0.5%. 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 be lowered –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. So 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 is endogenous, and may well depend on the ability of firms to borrow and pay to keep valuable employees on board.

So it may end up happening 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, the pessimism about the future is self-fulfilling, in the sense that it hinges on firms´ inability to borrow. So there is a prima facie case for government intervention. And government can lend

beyond what conventional credit limits would allow precisely because it has powers that private firms lack –it can withhold tax refunds (in the case that firms default on loans or loan guarantees) it can compel firms not to pay dividends (in the case of special equity injections).

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 such programs are having an impact, in the sense that the size of liquidity support policies implemented by governments is positively correlated with the extent of credit expansion, firm value, employment and GDP. And detailed micro-economic 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 (2021) argue that, in their sample of European countries, simulations suggest that 2020 policy support has not, on its own, lead to a "time bomb" of 2021 SME failures. However, "a serious worry is that public loan guarantees have overburdened SMEs with debt" and 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 set may become obsolete in the new post-pandemic world.[10] As that happens, governments will have to move from saving old jobs to retraining workers for the new jobs of the future.

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[10] Barrero, Bloom, and Davis (2020) persuasively argue that "Covid-19 is also a reallocation shock".

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

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