

Assisting Firms during a Crisis: Benefits and Costs

Larry D. Wall

Federal Reserve Bank of Atlanta

Summary:

Public and private efforts to reduce COVID-19 infection levels have led to a sharp drop in economic activity around the world. In an attempt to mitigate the damage to businesses, governments around the world have implemented a variety of financial programs to help firms. These programs have been criticized as interfering with markets, providing bailouts, and creating adverse incentives. In this article, I review both the rationale for government-provided assistance and the costs of providing that assistance from the perspective of how that aid affects the likely level and volatility of economic growth. The conclusion of this article is as a part of their decision making, policymakers should weigh both the intended and unintended consequences of such aid on the economy when deciding whether, what type of, and how much assistance should be provided.

Key findings:

1. One rationale for providing businesses with support is that worker layoffs have been shown to result in substantial reductions in affected workers' income. Another rationale for providing support is that the bankruptcy process is costly and likely to operate less efficiently during a crisis.
2. Firms' ability to raise new funds rather than cut costs is limited during an economic crisis.
2. Government support of businesses is unavoidably a subsidy to the firm's owners and creditors and is associated with a variety of costs including moral hazard, continued operation of failing firms (often referred to as zombies), and debt overhang. Good program features can reduce, but not eliminate, these costs.

JEL classification: G31, G32, G38, H25, J63

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About the Author: Larry D. Wall is the executive director of the Center for Financial Innovation and Stability in the Research Department of the Federal Reserve Bank of Atlanta. His research interests lie in the topics of financial innovation, financial stability, and their intersection.

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Comments to the author are welcome at larry.wall@atl.frb.org.

1 Introduction

The COVID-19 pandemic induced a widespread combination of voluntary social distancing and government-mandated restrictions in most countries around the world.¹ One consequence of these responses has been a sharp drop in economic activity in all but a few essential industries. The resulting drop in sales revenue put many small and large firms at risk of defaulting on their obligations and being forced into bankruptcy. In an effort to mitigate this damage, the governments of developed countries around the world have provided financial assistance to businesses in a variety of forms and subject to a variety of conditions.² In many cases, this assistance has been subject to severe criticism for interfering with market mechanisms, providing economically inefficient “bailouts” to firms that should have been allowed to fail, and being implemented in inefficient ways.³ The claims of benefits by supporters of the aid and of costs by critics are not mutually exclusive.

This article provides a high-level review of the evidence on both sides of the trade-off with an emphasis on the provision of such aid in response to COVID-19. The focus of the article will be on how the provision of government support may support the long-run growth of the economy and how such support can also reduce future growth rates. Given the costs of economic downturns, the article will also touch on ways that providing aid might mitigate and ways that aid might exacerbate the risks of downturns. A caveat to this analysis is that it is not a comprehensive review of all of the possible considerations in providing support. (For example distributional considerations are almost entirely absent from the analysis.) Nevertheless, the issues this article raises will have a first-order impact on the economy and society and, as such, should be a part of the decision-making process on whether and how to extend aid to existing firms.

The rest of the article is organized as follows. The first section discusses business’s approach to cash management and why many firms would not have access to sufficient cash to continue normal operations during the COVID-19 downturn. The next section discusses businesses options for maintaining sufficient cash, including both cutting expenses and raising new funds. The third section analyzes some of the costs with the government providing aid to businesses and some ways of reducing those costs. The paper ends with some concluding thoughts.

2 Why Businesses Might Not Have Enough Cash to Survive the COVID-19 Downturn

Businesses earn revenue from their sales and use the proceeds to pay their expenses, including payments to labor, other suppliers, creditors, and owners for supplying risk capital. Some of these payments are variable expenses that can be adjusted in response to changes in the firm’s revenue.

¹ Goolsbee and Syverson (2020) provide evidence that individual choice played a larger role in the reduction of retail traffic than did government-mandated restrictions in the United States.

² The International Monetary Fund’s COVID-19 “Policy Tracker” website provides a high-level summary of the economic responses of governments around the world, including the financial assistance they are providing to businesses.

³ As few examples of the many critiques of U.S. policy, see Forsyth (2020), Taibbi (2020), and Granja, Makridi, Yannelis, and Zwick (2020).

However, many other expenses are fixed, especially in the short run, including lease and rental agreements, debt service, and some labor costs.

Established businesses typically prepare for some fluctuation in revenue by having sufficient access to cash to meet their expenses if revenues are lower than anticipated. However, this access to cash is costly. Cash held in safe, liquid bank accounts, money funds, or liquid securities earn a lower rate of return than would be expected on the firm's other assets. An alternative to having sufficient cash on hand to cover potential contingencies is to have the ability to borrow from financial firms (such as banks), borrow in financial markets, or both. The problem with these alternatives is that they might not be readily available during a crisis, as explained below. Some firms address the difficulty of borrowing during a crisis by obtaining a committed line of credit from a bank, which gives them the right to borrow from the bank—but they must pay for this line. Given the costs of retaining large amounts of cash or having large lines of credit, firms typically maintain sufficient access to cash to be able to operate during a “normal” downturn but not necessarily sufficient access to be able to survive a prolonged period of cash flows far below normal.

The COVID-19 induced downturn occurred at a time when the business sector was, by some measures, more vulnerable to a downturn in revenue than had historically been the case. The Board of Governors of the Federal Reserve System (2020) found that the ratio of U.S. nonfinancial business credit to gross domestic product (GDP) was near its highest level in the past two decades. Given the historically low interest rates, the median publicly traded business had an interest coverage ratio around 3.0, implying the median firm had earnings available for debt service in 2019 equal to approximately three times its interest expense. However, this ratio falls to around 0.5 for public firms at the bottom quartile of coverage ratios. At the global level, Banerjee, Iles, Kharroubi, and Serena (2020) find that 50 percent of the firms in their sample of publicly traded firms in 26 economies do not have sufficient cash buffers to cover debt service, albeit a large fraction of the firms could cover the shortfall with credit lines. Moreover, the publicly traded firms analyzed in these studies tend to be larger and more well established than privately owned businesses that typically have proportionately lower cash reserves and are less likely to have lines of credit.

Not only was the business sector more vulnerable just before the COVID-19 downturn, the shock to revenues was far outside the bounds of a normal downturn. Torry (2020) reports that overall U.S. retail sales fell a seasonally adjusted 16.4 percent in April from the prior month, with especially steep declines in some areas such as clothing (78.8 percent) and furniture (58.7 percent). A JPMorgan Chase Institute (2020) analysis of a sample of small firms shows that revenue declined more than 80 percent for the typical personal services firm. Moreover, the novelty of Covid-19 means that it is difficult to forecast the likelihood of future spikes in coronavirus infection levels and the extent which such spikes will induce reductions in economic activity and further depress firms' revenues.

3 Alternatives Absent Government Support and Their Costs

Businesses can respond to the potential shortage of cash in three ways: sell assets, reduce their cash outflow, or obtain new funding. The problem with selling assets is that the pandemic is a shock to the entire economy, including other firms in the industry. Potential buyers are likely to face similar problems obtaining the cash to purchase assets from distressed businesses. Moreover, valuation of the assets

might be impaired to the extent that substantial uncertainty exists about the future of the economic activity and to the extent that other firms might also wish to sell similar assets to alleviate their shortage of cash.

3.1 Reduce Cash Outflow

Continuing businesses might slow their cash outflow in ways such as reducing investment in new assets, renegotiating terms with creditors, and reducing payments to workers. If management judges these activities to be insufficient to reduce cash outflow, the firm may enter into bankruptcy to further reduce costs.

From the macroeconomic perspective of maintaining aggregate demand, businesses' attempt to preserve cash flow by cutting expenses has an obvious disadvantage: the cut in payments by the business represents a reduction in income to other people and other firms. However, that does not imply that government assistance is necessarily an efficient response. A better alternative may well be to provide the aid directly to those individuals and businesses that would be ultimately suffering a reduction in income. Firms' survival would then depend upon their initial cash resources and their ability to reduce expenses in line with the drop in revenue. Those firms that fail could go into bankruptcy, where someone else could more efficiently use their assets.

The following subsection discusses the effect on workers of firms laying off employees to reduce the firm's cash outflow. The second subsection considers the potential inefficiencies introduced by firms using the bankruptcy process to reduce costs.

3.1.1 Reducing Costs by Laying Off Workers

Employee layoffs might have an adverse impact on employees in a variety of ways beyond the short-term loss of income from their job. One source of adverse effects is that workers tend to be sorted over time into the firm that can make the most efficient use of their talent. Layoffs often disrupt these matches and force workers to search for a new employer, and they also force firms that eventually rehire to find new workers. In addition to this sorting effect, as individuals work for a firm they develop human capital that is specific both to the firm's industry and to the firm itself. Employees suffer the loss of firm-specific human capital if they move to another firm and might also lose some industry-specific human capital if they end up working in another industry. There is also a macroeconomic cost due to the potential for redundant rebuilding of firm- and industry-specific human capital among firms that do rehire.

A substantial number of studies conducted in recent decades find layoffs result in large, persistent reductions in many workers' income. Three recent studies highlight aspects of this phenomenon using data from the most recent recessions. Fang and Silos (2020) study the effect of unemployment on the wage rate of hourly workers during the last three recessions (1991, 2001, and 2008). They find that the distribution of wage changes of workers experiencing unemployment during recessions is centered around zero, but that for those suffering a wage loss the median loss is 17–20 percent. The losses tended to be higher among older workers, those without a college degree, and married workers.

Part of the reason that Fang and Silos (2020) find the distribution of wage changes centered around zero is that they do not distinguish whether the period of unemployment was due to the employee being forced to leave the firm because it was downsizing or because the employee voluntarily left to pursue other opportunities (such as a better job or more education). Flaaen, Shapiro, and Sorkin (2019) study employee separation from firms where the firms are contracting by 30 percent or more during the period from 2000 to 2006. After controlling for some factors, they find that separations associated with distressed firms reduce real earnings, on average, by more than 50 percent immediately after the layoff. They also find that real earnings remain below their initial level at the end of their analysis (five years after the separation). In contrast, voluntary quits are associated with a far smaller initial drop in earnings and very shortly thereafter typically result in an increase in earnings.

Graham et al. (2019) analyze the employee cost of firm bankruptcy over the period from 1979 to 2019, with most of their sample consisting of firms that file Chapter 11 indicating the intent on the part of these firms to continue at least some of their operation. They find that employees' annual earnings fall by 10 percent the year the firm files for bankruptcy and that the cumulative loss in the present value of the salaries was 67 percent over seven years.

3.1.2 Reducing Costs through Bankruptcy

The bankruptcy process itself is another source of costs. This cost could be avoided if the various parties that have contracted with the distressed firm can voluntarily reach agreement to restructure the firm's obligations outside of the bankruptcy court. However, conflicting incentives of the various parties combined with incomplete information often make it impossible to reach voluntary agreements, necessitating the filing of bankruptcy. If a firm does enter judicial bankruptcy, some deadweight costs are unavoidable as the various parties hire lawyers and consultants to help protect their interests during the process. However, the costs of bankruptcy might go well beyond these deadweight losses.

Firms entering into bankruptcy generally file under either Chapter 7 or Chapter 11 of the bankruptcy code. Firms whose assets are worth more in liquidation will enter Chapter 7 and its assets will be sold. A firm whose assets are probably worth more if the business continues in operation may enter Chapter 11 proceedings to have its obligations restructured so that it can continue operating. However, a firm filing under Chapter 11 may eventually become a Chapter 7 case if continued operation does not appear viable. Moreover, even if the firm remains under Chapter 11, the court may decide that some (possibly large) fraction of the firm's assets should be sold.

Ideally, the overall value available for distribution to the firm's creditors, and how best to maximize that value, guides decisions about which assets should be sold in a Chapter 11 bankruptcy. However, the decision on whether and how much of the firm's assets should be sold may have important implications for different classes of creditors. A firm's secured creditors have a claim on some specific assets of the firm. If the value of these assets in liquidation exceeds the secured creditors' claims, they have an incentive to seek more asset liquidation even if continued operation of the firm would be more efficient. On the other hand, unsecured creditors—those without a specific claim on assets—may benefit from continued operation even if that means risking some of the value of the secured creditors.

Ayotte and Morrison (2009) studied bankruptcy cases in 2001. Prior studies of bankruptcy had argued that firm management exerted too much control over the process. However, they found that changes in bankruptcy practice tended to cede control over the firm to secured creditors, resulting in a greater likelihood of a firm's liquidation if the secured creditors were overcollateralized (that is, the value of the collateral exceeds the value of their claim) and a greater likelihood of continued operation if they were undercollateralized (or there were no secured creditors).

Rosen (2020) observes that bankruptcy practices have continued to evolve in ways that result in the liquidation of greater numbers of firms, an outcome resulting from the use of sales under Section 363 of the bankruptcy code, which allows for prompt sales of assets whose value would otherwise deteriorate in bankruptcy. The turning point in the use of 363 sales was the bankruptcy of General Motors (GM), when "substantially all going concern assets" were sold. Rosen argues "GM set the pattern for future Chapter 11s." In a study that supports Rosen's claim, Antill (2020) used a sample of bankruptcy cases from 1987 to 2018 to study whether some firms are inefficiently liquidated in Chapter 11. Using within-district random assignment of bankruptcy judges, he estimates a structural model of bankruptcy and finds that liquidation was inefficient in 22 percent of the cases in his sample. Looking more carefully at the results, Antill finds that 363 sales were especially likely to result in inefficient liquidations that reduce creditor recoveries.

A further problem with relying on the bankruptcy process during a severe economic downturn is that it may overwhelm the ability of the bankruptcy system to efficiently process Chapter 11 cases. The result may be to impede the efficient, timely reallocation of the firm's resources to the detriment of both the creditors and society. Skeel (2020) observes that one potential problem is the congestion of the bankruptcy courts driven by the coming wave of corporate and personal bankruptcies stemming from the COVID-19 downturn.⁴ He argues that more bankruptcy judges will be needed and advocates creating more temporary bankruptcy judges. More judges would likely help, but a study by Iverson et al. (2020) suggests that more judges is an imperfect solution. They find that cases assigned to inexperienced bankruptcy judges tend to spend more time in bankruptcy. Also, they find that creditor recovery rates and postbankruptcy returns on assets are both lower.

Skeel (2020) also discusses a second problem: the financing of firms undergoing Chapter 11 bankruptcy. Firms in Chapter 11 bankruptcy proceedings typically need additional financing to support their continuing operation. Skeel notes that the surge in corporate bankruptcies along with lenders' concerns about their own liquidity could stress the private market for such financing. Skeel suggests that the government should coordinate with private lenders to take some of the risk and possibly provide direct funding. DeMarzo et al. (2020) go further and propose that the Federal Reserve provide direct financing at a very low rate.

⁴ Skeel (2020) also notes that Congress changed the bankruptcy law in 2019 to address one of the problems in applying Chapter 11 to small and medium-sized businesses. He suggests that this change should improve the chances that small and medium-sized businesses will be able to successfully use Chapter 11 to restructure.

3.2 Obtain Additional New Private Funding

Given the potential problems with cost cutting, the overall economy would likely be stronger if firms relied more on raising additional funds from private sources and less on cutting costs. The problem with a business raising funds from private sources during a crisis is the potential mismatch between the terms acceptable to firms' owners and those demanded by the suppliers of new funding.

A firm's owner will accept a new loan or equity investment in the business only if the benefits to the owner exceed the costs. Importantly in estimating these costs and benefits, the business owner (or the firm's managers delegated to work on behalf of the owner) can rely on information available to those inside the firm but which could not be credibly provided to those outside the firm. For example, the owner may believe that a new investment project is likely to have a high rate of return based on proprietary information, but outsiders may not be able to verify those expectations.⁵

On the other side, lending to and investing in a business is a risky proposition during the best of times. The supplier of funds can seek additional information about the firm's prospects, both in the form of hard information about the firm's past actions and softer information about its future revenue projections and costs. However, the supplier of funds will almost always be at a disadvantage relative to the firm's insiders. As a result, the suppliers of funds are likely to demand greater compensation for providing funds to protect against the risk they were overly optimistic. If the investment is in the form of equity, the investor will own a larger share of the firm. If the investment is in the form of debt, the investor will demand a higher interest rate, additional protection (such as requiring the firm or its owner to pledge collateral), or a combination of both.

As a result of the combination of differences in incentives and information, firms that could benefit from obtaining new funds from private sources might, in fact, elect to forgo these funds. The cost of meeting suppliers' minimum acceptable terms might exceed what owners of the firm are willing to bear. Moreover, this problem is even worse than it might first appear. The problem is that firms that appear to have similar prospects to outsiders might look very different to insiders. This dichotomy creates what Akerloff (1970) famously referred to as the lemons problem (the example used in his paper was the market for used cars). Stated in terms of the debt markets, the lemons problem is that investors will demand a risk premium that is larger than the firms with the best prospects are willing to pay, and so the best firms will refuse to borrow. However, their refusal to borrow leaves a pool of remaining borrowers that is weaker than the original pool, so investors need to further raise the required risk premium so they do not lose money, which results in some marginal firms that had been willing to borrow at the old rate being unwilling to borrow at the new, higher rate. The cycle then starts again, potentially reducing the set of firms willing to borrow to those that have to do so to remain in operation.

⁵ Outsiders may not be able to verify the information because the release of the proprietary information would reduce the value of the project. Another (not mutually exclusive) possibility is that the owners' estimate may rely on their experience in the market, but outsiders lack a way of independently verifying that management is sharing their true estimate of the project's potential.

Along with the problem of conflicting incentives and differential information, additional problems apply both to debt and equity financing. Debt financing has a further problem: what the finance literature calls “risk shifting.” A firm that has to pay a high rate on its debt may prefer a higher-risk project that, if successful, would earn enough to more than cover the cost of debt service to a lower-risk project that is unlikely to cover that cost even if it is successful. The result is that taking on high-cost debt may provide an incentive for a firm to become riskier, which would imply that lenders should offer an even higher rate of interest. Similar to the lemons problem, the end result of risk shifting may be that some set of borrowers would be incapable of offering terms lenders would find acceptable (a result the finance literature calls credit rationing).

Issuing equity could allow a firm to avoid the risk of being credit rationed, yet firms almost never issue equity during a crisis. In part, they avoid doing so because—as a residual claim on the firm—the value of equity is especially sensitive to the value of inside information. That is, equity holders are paid only after everyone else is paid. Thus, differences in the estimate of the firm’s total enterprise value that have little effect on the value of its debt may have a large impact on the valuation of the firm’s equity. Additionally, if a firm issues equity that reduces the firm’s risk of bankruptcy, then effectively part of the value of the new equity issuance goes to the debtholders. The result is that the firm’s existing owners view the new equity issuance as even more costly to them. A third problem, which especially applies to firms where the owner is also the manager, is that the success of the business often depends heavily on the efforts of the manager. The sale of equity to outsiders necessarily reduces the owner’s share of the profits. If the manager is also the primary owner of the firm, the resulting dilution may result in reduced exertion. The problem of such dilution of management’s incentive is especially likely to occur at small and medium-sized businesses, where owner/managers are common.

The above analysis suggests that the flow of new funds to businesses is constrained by incentive conflicts and information friction during the best of times. During a crisis, however, the problems compound. The owner is obtaining information about evolving developments, but much of that information cannot be credibly shared (such as discussions with customers). On the other hand, the historic information on the business that was verifiable is not so relevant, and the suppliers of funds have increased demands on their time as the crisis drives more firms to seek new funds that may limit the amount of time they have to evaluate any individual borrower.⁶ On top of these problems, in many cases the firm must obtain new financing quickly if it is to continue operation. Thus, the supplier of new funds may have less time to analyze the firm.

⁶ We recently saw an example of lenders having to prioritize borrowers due to time constraints. The Paycheck Protection Program adopted in the CARES Act provided for small business loans where the government would forgive the loans under certain conditions. However, to obtain these loans, firms had to apply to a Small Business Administration (SBA) approved lender, most of whom were banks, and the initial round of loans was made on a first-come, first-served basis. Given the need for rapid processing, some banks prioritized their existing customers as this reduced the amount of work the bank needed to do before granting the loan—especially with satisfying the requirements of existing anti-money laundering rules.

A partial solution to the problem of obtaining funding in a crisis is committed lines of credit, which are set up when a borrower pays a commitment fee in advance of a crisis and a bank agrees to provide funding upon demand to the firm.⁷ But these lines are costly to the firm, so many firms—especially smaller ones—do not have them.

In the financial crisis caused by the COVID-19 shutdowns, firms behaved in a manner consistent with the foregoing discussion. Firms that had committed lines and were concerned about liquidity drew on those lines (see Prior 2020). As market conditions later improved, larger firms turned to the bond market, issuing more than \$1 trillion in bonds in the first half of 2020, according to Wirz (2020), including \$180 billion by firms rated below investment grade. Similarly, firm issuance of new equity dropped in March to \$4.8 billion but bounced back as conditions improved, with a total of more than \$87 billion in April and May (see Franklin 2020). However, financing remains an issue for many businesses, especially smaller firms.

4 Government Support

If businesses are unwilling or unable to tap private sources of funding, an alternative is to have the government supply the funding. Such funding would reduce the pressure on firms to cut their cash outlays. The funding can take various forms including cash payments to the firm, lending to the firm, or making an equity investment in the firm. For the purposes of this discussion, government guarantees of private loans to firms will be considered the equivalent of direct government lending.

A direct cash payment to a firm without any strings attached is likely an inefficient way of supporting the firm. Owners of financially strong firms might obtain a windfall benefit by retaining a substantial fraction of the cash for themselves. For the very weakest firms, the creditors of those firms that would have gone bankrupt in any case would benefit from the government's gift. Alternatively, direct cash payments could come with the requirement that the funds be passed through to other parties, such as the firms' workers as was done with the Paycheck Protection Program in the CARES Act. In this case, the government is effectively using the firm as a conduit for transferring resources to third parties. Those devising the support program should evaluate the efficiency of this approach relative to providing the funds directly to the intended beneficiary.

The next portion of this article assumes that policymakers understand the fiscal costs of providing such support and takes a closer look at some other alleged costs of the government providing debt or equity financing.

4.1 Subsidizing Business Owners

A common criticism of the government support programs adopted during the 2007–09 financial crisis was that they provided firms (primarily banks) with a government bailout—that is, the owners of these firms received a massive government subsidy. To the extent this criticism is true, the programs are merely bailouts for the firms' owners, the government support is unlikely to raise the level or reduce the volatility of economic activity. The response of those supporting the programs to this criticism is that the

⁷ Committed lines of credit are sometimes subject to “material adverse change” clauses, which allow the lender to refuse to grant a loan under certain conditions.

money was not given to the firms; rather, it was lent to them. Moreover, in aggregate the amount paid by the borrowers covered not only the loan principal but provided the government with substantial interest income. Thus, the response goes, the government support was a good deal for the taxpayers.

The argument that the critics often overstated the subsidy is correct. A government grant and a government loan are two very different things, and critics of government support often glossed over that distinction. However, those arguing that these loans were a good financial deal for the taxpayers also overstate their case. Private investors and lenders demand compensation for bearing added risk due to incentive conflicts and asymmetric information. Government involvement in the provision of financing does not magically solve these problems. Firms will accept loans and equity investment, or both, by the government only if the funds are offered on better terms than are available from private sources. Yet if the government supplies funds on terms more favorable to the firm than those offered by investors, the government is effectively providing a subsidy to the firm's owners—the government is taking risks for which it is not being fully compensated by the firm.⁸

Why, then, do governments nevertheless decide to provide loans or equity injections (or both, on occasion) on terms that would not be available from private sources? The answer is that the government internalizes the social benefits of the firm obtaining new financing whereas these benefits are largely irrelevant to private lenders and investors.⁹ For example, the government is likely to place greater weight on the firm's workers than the firm's owners and outside investors do.

The amount of the subsidy provided to the owners depends in large part on the terms of the debt or equity claims. The government can recover more of its costs by charging a higher rate on loans, demanding a higher fraction of the firm's equity for stock investments, or imposing other costly conditions for providing aid, but a firm's owners will accept such aid only if it provides them with a subsidy. The harsher the terms, the more likely it is that some firms who could survive only by cutting costs will choose to do so.

4.2 Moral Hazard

Another common criticism of the 2007–09 government support programs is that they resulted in an increase in moral hazard. Many critics argued that banks needed support only because they took excessive risk in the belief that the taxpayer would bail them out if necessary. Building on this premise, some advocates for supporting businesses in 2020 argue that the businesses had no role in causing the COVID-19 shutdowns and, therefore, there cannot be any moral hazard. Although the argument that there cannot be any moral hazard is not correct, the related argument that moral hazard is less of an issue than in 2007–09 has some merit.

The term moral hazard as used in modern economics does not connote the potential for immoral behavior. Rather, moral hazard arises when an entity has an incentive to increase its exposure

⁸ See Lucas (2019) for an estimate of the economic cost of the 2007-09 bailouts.

⁹ This is not to deny that politics plays some role in the decision as it does in almost every government decision. However, a full treatment of the political issues in providing such support is far outside the scope of this paper's focus on the economics of government support.

to risk because it does not bear the full costs of that risk. As Poole (2009) argues, moral hazard distorts risk-taking incentives, inducing firms to hold riskier assets. Such increase in their holdings of riskier assets not only makes economic growth more volatile, it also increases the likelihood the government will need to provide bailouts in a future crisis.

Thus, the question is whether the provision of financial support will change investors and firms' actions in the future. The answer unquestionably is yes to the extent that this increases creditors confidence in future bailouts. Creditors will respond to their changed beliefs by charging firms less for bearing risk, and firms will respond by taking more risk. This increased risk taking by firms can make the economy more vulnerable to future downturns.

However, the fact that the COVID-19 programs will increase moral hazard does not necessarily imply these bailouts will distort incentives as much as the 2007–09 bailouts. Those arguing against moral hazard concerns are correct that the COVID-19 shock was not brought on by a firm's actions and is a shock that financial markets perceived as a very low-probability event. Bianchi's (2016) model shows that supporting firms in response to a low-probability, systemic shock caused by exogenous forces distorts creditors' pricing and firms' actions to a smaller degree than idiosyncratic bailouts necessitated in part by a firm's own actions. That said, the COVID-19 experience has shown financial markets and firms that pandemics are possible and could cause substantial economic disruption. This awareness should result in market prices and firms' actions taking greater account of the potential for a pandemic, except to the extent market participants and firms believe they would be bailed out.

4.3 Inefficient Firms Allowed to Continue Operating

It is likely that some of the firms were inefficient or in the process of becoming obsolete given changing market conditions, so supporting firms during a crisis imposes a social cost. Business analysts often phrase this discussion in terms of the government facilitating the continued existence of zombies—that is, firms that are dead but continue to operate with government support. Kane (1987) used that colorful term to refer to insolvent savings and loans in the early 1980s that relied on deposit insurance to remain in operation.

The cost of keeping some zombies in operation is almost unavoidable as government programs are challenged to distinguish between firms that are not viable and those that are barely viable. For two reasons, the problem of identifying which firms are viable is arguably even greater during the COVID-19 pandemic. First, the gradual shift from physical to online commerce was already upending a number of business models before the downturn. Second, while infection rates remain elevated, the potential exists for COVID-19 social distancing to disrupt some business models for an undetermined period.

The costs of the continued operation of zombies has been the subject of some recent studies. One qualification of these studies is that of creating criteria to identify zombies. Because Kane focused on a type of financial firm, he could identify zombies by estimating the market value of savings and loans' financial assets and compare them with the value of their liabilities. Similar estimates are generally not possible for nonfinancial firms as valuing their assets from only balance sheet information is more difficult, and the value of such assets is likely greater in a going concern than in a sale. As a result, recent studies typically define "zombie" in terms of weak economic performance.

Banerjee and Hofmann (2018) define zombies in terms of low ratios of interest coverage and, in part of their analysis, low values of stock market values to the value of their assets. They find that zombies are less productive and adversely affect markets by crowding out investment and employment at other firms. Acharya, Crosignani, Eisert, and Eufinger (2020) define zombies in terms of low interest coverage ratios and low interest rates on their debt—which they interpret as an indication the bank is subsidizing the firm to avoid having to record a loss on its loan.¹⁰ They find that zombie credit is associated with a decrease in firm defaults and entries, firm markups and product prices, lower productivity, and an increase in aggregate sales as well as material and labor cost. The result of the lower productivity is reduced real economic growth potential. The lower rate of price inflation has also made it more difficult for the European Central Bank to raise inflation rates to the level the central bank judges to be optimal for long-run economic growth.

The work of Schivardi, Sette, and Tabellini (2020) offers a qualification on these findings about zombie firms. They develop a model in which an adverse shock to an industry results in both more zombies and depressed performance by firms that are not zombies. In their model, the adverse shock both produces zombies and lowers the operating performance of stronger firms. An implication of their model is that prior studies of zombies overstated the effect of zombie firms on other firms, and they assert that an adverse external shock that affected the entire industry is behind many of the observed adverse consequences for firms that are not zombies. The same study acknowledges that allowing zombies to continue to operate may distort resource allocation in the long-run, implicitly saying that in this respect the programs may lower long-term growth. However, the authors argue that keeping these weak firms alive could be socially beneficial in the short-run.

4.4 Debt Overhang

Although governments sometimes provide support in the form of equity investments, government loans and a guarantee of private loans are more common. One consequence of providing aid in the form of new credit is that doing so increases the firm's leverage—the amount of debt it has relative to equity. The increase in leverage can create or exacerbate what is called the debt overhang problem.¹¹ Myers (1977) observed that firms with high levels of debt have an incentive to overinvest in high-risk assets and underinvest in low-risk assets, even if the low-risk assets are more profitable on average. If the firm invests in high-risk assets, the owners keep most of the gains if the firm does well, and the creditors take much of the loss if the firm fails. Similarly, with low-risk assets, the firm's owners obtain little benefit if

¹⁰ Acharya et al.'s (2020) use of the low interest rate criteria for inclusion of firms is motivated by their use of a sample of European firms. Some economists think that a number of European banks became so financially weakened by the early global financial crisis (2007–09) and the European sovereign debt crisis that these banks could not afford to reflect additional credit losses in their financial statements. To avoid reporting these losses, the banks continued to provide financing to weak firms that should have failed and did so at below market rates with the intent of keeping these firms out of bankruptcy.

¹¹ Brunnermeier and Krishnamurthy (2020) emphasize the potential government-provided debt has to exacerbate the debt overhang problem. This problem leads them to conclude that strengthening the bankruptcy system would be preferable to providing loans to large corporations if the downturn is expected to be prolonged and the social costs of bankruptcy costs are not too high.

the firm does well but the creditors benefit from the higher returns if the firm does poorly. One result of the reduction in low-risk investments and increase in high-risk investments is that firms adversely affected by a debt overhang are likely to become riskier and, hence, more vulnerable to economic shocks such as that which arose from COVID-19. Another concern is that the reduction in low-risk investments may lead to reduced investment and less growth. This concern is supported by Kalemli-Ozcan, Laeven, and Moreno's (2018) finding that high debt levels lead to lower levels of investment.

4.5 Measures to Reduce the Cost of Providing Aid

The previous subsections show that government assistance to firms has a variety of economic costs in addition to the obvious fiscal costs. However, as Schivardi, Sette, and Tabellini (2020) observe, the benefits of providing the assistance may outweigh these economic costs. For example, the long adverse impacts of government aid in the early stages of the COVID-19 shutdowns could have been swamped by the adverse effect of not providing aid. As was discussed in Section 3, the result of not providing aid could easily have been that the weakest firms were quickly forced into bankruptcy while the strongest firms may have been forced to cut back on their spending even more than they did. Thus, in making the decision on whether to provide support to businesses, policymakers should take full account of both the benefits and costs of doing so. This notion also suggests that policymakers should seek to structure whatever support they provide in a way with a view towards enhancing the economic growth benefits and reducing the economic costs.

One way of reducing moral hazard is to reduce the set of firms eligible for support and raise the cost to the firms of receiving that support. Such actions during a crisis will help to reduce investors' postcrisis expectations that firms will receive a generous bailout next time. However, such actions will also reduce firms' willingness to accept government support during the current crisis, thus limiting the benefits of providing that support. Another, not mutually exclusive, way of reducing moral hazard is to take actions that reduce the benefits of increased risk taking. For example, after the 2007–09 crisis, regulators in developed countries took a variety of measures to make the threat of bank resolution (closure and sale) more credible. A belief among creditors that bankruptcy is more credible postcrisis will result in them requiring higher risk premiums, which will discourage firms from taking excessive risk. A third way of reducing moral hazard is to reduce the benefits of increased leverage. For example, the current tax structure in some countries, including the United States, provides a benefit for debt financing relative to equity financing (interest payments are a deductible expense but dividends to equity holders are not). Any action that reduces the tax benefits of taking on more debt will work to reduce firms' incentive to take greater financial risk. Finally, some firms, mostly financial firms, are subject to prudential regulation. The agencies in charge of these regulations can reduce moral hazard by tightening their rules, such as by requiring more capital.

The use of tighter eligibility requirements and higher costs of financing can also help reduce the incidence of zombie firms and debt overhang issues. Once again, tighter standards and higher costs come with some tradeoffs in the form of reduced participation in the program. An alternative for reducing the debt overhang problem is to provide more assistance in the form of grants or equity investments. However, these options also come with some of the aforementioned adverse consequences.

5 Conclusion

A major shock to the economy, such as occurred in response to COVID-19, poses a number of issues for public policymakers including whether and how best to provide financial assistance to businesses. This issue has a variety of dimensions, including its impact on current economic conditions and its impact on income distribution. This article focuses on another set of related issues: the impact of providing aid on the long-run level and volatility of economic growth. It argues that timely and appropriate support for businesses can prevent external shocks such as COVID-19 from snowballing into much worse outcomes for the macroeconomy. However, any such programs are inevitably going to come with some unintended costs. But the mere existence of such costs is not a rationale for automatically refusing to provide timely support in response to a major economic shock but these costs should be taken in account in the decision process. Policymakers should also take steps reduce the costs of support to the long-run growth and volatility of growth rates.

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