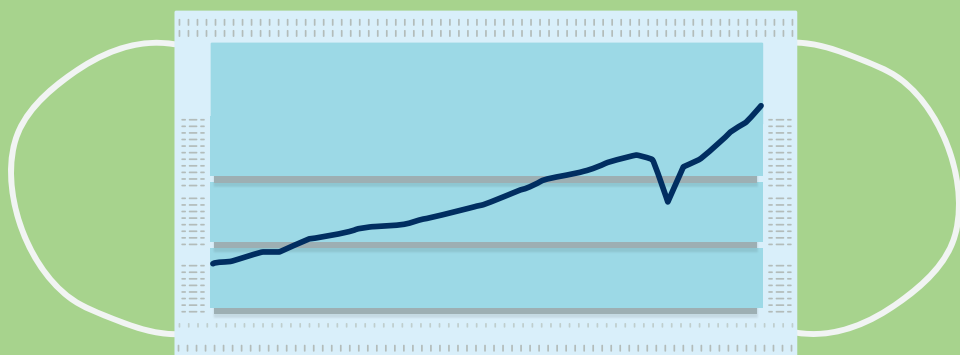


# RECESSION REMEDIES

Lessons Learned from the  
U.S. Economic Policy Response to  
COVID-19



Edited by

**Wendy Edelberg, Louise Sheiner,  
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# Lessons Learned from Support to Business during COVID-19

*Gabriel Chodorow-Reich, Ben Iverson, and  
Adi Sunderam<sup>1</sup>*

## Introduction

The United States responded to the recession caused by the COVID-19 pandemic with massive and unprecedented support for businesses. New federal business subsidies during the first year of the pandemic, 2020Q2–2021Q1, including the Paycheck Protection Program (PPP), Economic Injury Disaster Loan (EIDL) Advances, and targeted aid for sectors such as airlines and restaurants, totaled \$600 billion, or about 2.7 percent of potential GDP, while expanded EIDL Loans added an additional \$200 billion of support. The Federal Reserve authorized purchases of up to \$750 billion in corporate bonds through the newly created Corporate Credit Facilities (CCFs) and up to \$600 billion in long-term, low interest rate loans to midsize corporations through the new Main Street Lending Program (MSLP).

At the same time, the business sector overall fared much better during the COVID-19 recession and recovery than had been expected at the outset. Indeed, this resilience was different from previous downturns. Business bankruptcy filings declined during a recession year for the first time since 1980 and remained below their pre-pandemic level into 2021. After peaking in April 2020, the unemployment rate fell faster than in any other post–World War II recovery period, and job vacancies in 2021 reached their highest level on record.

We critically evaluate the business aid programs and their role in cushioning the downturn and spurring the economic recovery. We do so especially with an eye toward future non-pandemic-related downturns, during which

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policymakers may be tempted to return to these programs in the hope of achieving a similarly rapid recovery. However, the variety of other policy support enacted during the COVID-19 recession and reviewed elsewhere in this book—as well as the unusual course of a lockdown-driven recession—pose serious confounders to immediately concluding a causal link between the business aid programs and the economic trajectory. Our task will be to evaluate the role played by the business programs specifically and to highlight where uncertainties remain.

Our evaluation starts by setting out a framework for assessing business aid. If financial markets functioned frictionlessly and there were no externalities, there would be no rationale for government intervention on efficiency grounds. We identify two plausible deviations from this benchmark: (a) market failures that prevent long-run solvent firms from obtaining temporary liquidity and (b) externalities from worker layoffs or firm failure. Accordingly, business support should focus on alleviating financial frictions or avoiding labor market congestion, bankruptcy court congestion, and aggregate demand externalities that result when firms contract. We then review the impact of policies enacted during the pandemic period and reach the following conclusions.

First, policies to support small businesses likely could have achieved their objectives with much smaller budgetary cost by focusing on smaller firms and featuring a smaller subsidy component. The PPP made 5.1 million potentially forgivable loans between April and August 2020 with a total face value of \$522 billion. More than 50 percent of these loans were under \$25,000 and 80 percent were less than \$100,000, yet loans greater than \$500,000 that went to larger recipients account for half the budgetary cost. We survey the academic literature evaluating PPP and find no credible evidence that the largest PPP loans had a substantial positive employment effect in the short or medium run. The evidence for the efficacy of loans to the smallest firms is more mixed.

The closely related EIDL program, which gave nonforgivable, long-term loans to small businesses, also had extraordinarily high take-up, with 3.6 million loans totaling \$194 billion through November 2020 and an additional \$124 billion over the following year. Relative to PPP, these loans have the benefit of providing immediate liquidity but at much lower cost to taxpayers. In addition, EIDL loans were potentially better targeted, as only businesses with an expectation of long-term viability could apply. However, lending to already indebted firms may leave them overleveraged, creating debt-overhang problems that impede the recovery. Open questions for the small business support policies include their long-term impact on firm survival and employment and whether loans or grants are better tools from a cost-benefit perspective.

Second, the academic literature has largely neglected many of the other business subsidy programs. Two of the largest were the Employee Retention Credit and grants to air carriers. While both had features designed to link disbursements to payroll, the fungibility of funds raises the possibility that they may instead have benefited shareholders. Such concerns may be particularly

significant for the grants to air carriers, which mostly went to large, publicly traded firms, many of which had previously undergone successful bankruptcy restructuring, albeit not all simultaneously.

Third, Federal Reserve (Fed) interventions into the corporate bond market clearly can play a stabilizing role. Indeed, despite the fact that the CCFs used only approximately \$15 billion of their \$750 billion capacity, both informal event study analysis and more rigorous academic studies find that they significantly lowered bond yields in the spring of 2020. The key open question is whether doing so is desirable. In the COVID-19 crisis, large benefits were obtained even with low take-up, but those outcomes were in part due to the rapid macroeconomic recovery. Had the pandemic more strongly affected the economy in late 2020 and early 2021, the costs of intervention may have been significantly higher.

Fourth, the Fed's direct support for bank lending had little direct impact. A key design feature of the MSLP was that banks offloaded 95 percent of each loan to the Fed but retained a 5 percent slice, meaning that banks would only make loans that offered similar returns as the rest of their balance sheet. If banks had been balance-sheet constrained as they were during the 2007–09 recession, such a policy could have proven very useful. As it turned out, banks remained in relatively good health, and only \$18 billion of the \$600 billion facility was used.

Finally, given that our reading of the literature suggests that one should be skeptical of a crucial role for much of the business aid in supporting the recovery, we review other explanations for the performance of the business sector. Using Compustat financials data, we show that large firms initially reacted by raising substantial external financing from private markets. These firms raised debt by drawing down existing credit lines and increasing bond issuance and conserved equity largely by pausing share repurchase programs. This increase in financing allowed these firms to withstand the initial decline in net income. We then show that sales recovered much faster during the pandemic than during the 2007–09 downturn. Since our Compustat data covers only public firms, it is possible that small- and medium-sized private firms reacted quite differently to the pandemic. Further research is needed to shed light on the behavior of such firms.

We end by articulating four main lessons for the prospects of business aid programs to support employment and business survival in a non-pandemic-related recession. First, policymakers should not blindly redeploy the 2020 tool kit despite the positive trajectory of the current recovery, as other factors, including the nature of recovery from a temporary lockdown and general support for households, likely played a more important role. Second, if necessary, support for small businesses could likely achieve a similar objective with much smaller budgetary cost than PPP by focusing on smaller firms and providing a smaller subsidy component. Third, the fungibility of funds given to large firms, such as publicly traded airlines, and the history of successful bankruptcy

resolution for these firms suggest caution in the granting of such aid in the future. Finally, while the Fed clearly has the ability to intervene successfully in corporate credit markets, the question of whether it should do so involves careful consideration of the reason for a decline in bond prices. In addition, while not a significant element of the COVID-19 response, a policy such as the MSLP could prove useful in a future recession when banks are constrained.

## Background on Business Performance

The economic recovery that began in the summer of 2020 was much faster than expected at the time or than historical experience would have predicted. To set the stage for our subsequent analysis, in this section we put the macroeconomic and business sector performance into context.

### Macroeconomic Context

Figure 4.1 shows the paths of actual GDP (left panel) and the unemployment rate (right panel) against the May 2020 median forecast in the Survey of Professional Forecasters and the July 2020 forecast of the Congressional Budget Office. Despite making their forecasts *after* the CARES Act had passed, both sets of forecasters proved far too pessimistic about the depth of the downturn and the speed of the recovery. Mostly notably, the rebound in 2020Q3 far exceeded expectations.

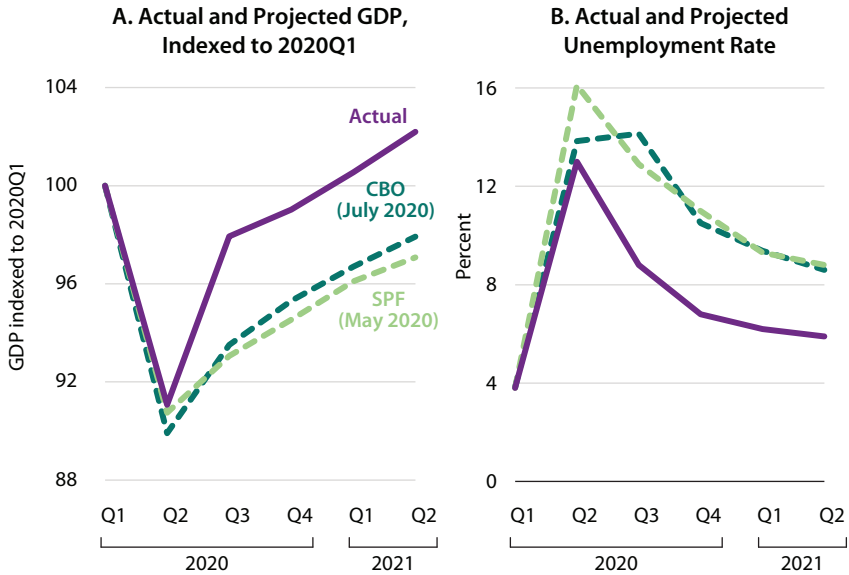
Figure 4.2 shows the historically rapid nature of the recovery, focusing on the labor market. The top panel replicates and extends the finding of Hall and Kudlyak (2021) that the unemployment rate has historically fallen by roughly 0.1 log point per year during recoveries and expansions. Against this backdrop, the more-than halving of the unemployment rate from the high of almost 15 percent in April 2020 to about 6 percent in April 2021 is unprecedented. The bottom panel plots total job vacancies, perhaps the best high-frequency measure of business demand. After falling sharply during the lockdown period, vacancies rebounded and reached a series high by early 2021 before skyrocketing during the summer and fall.

### Business Bankruptcies

Along with the overall better-than-expected macroeconomic performance, business survival fared much better than feared at the recession's onset. We will focus on business bankruptcy rates as a proxy for the health of businesses generally. Historically, business bankruptcy rates have been highly correlated with economic conditions: in quarterly data from 1980–2019, a 1 percentage point rise in the U.S. unemployment rate coincides with an increase of about 600 business bankruptcies filings in the same quarter. The relationship between unemployment and bankruptcies was especially strong during the global financial crisis

FIGURE 4.1

## Actual and Projected Macroeconomic Trajectories, 2020Q1–2021Q2



Source: Bureau of Economic Analysis n.d.; Bureau of Labor Statistics n.d.; Federal Reserve Bank of Philadelphia 2020; Congressional Budget Office (CBO) 2020.

Note: GDP amounts are indexed to 100 in 2020Q1, such that subsequent observations can be interpreted as percent changes from this initial level. SPF May 2020 is the release date of the second quarter Survey of Professional Forecasters (SPF) report by the Federal Reserve Bank of Philadelphia.



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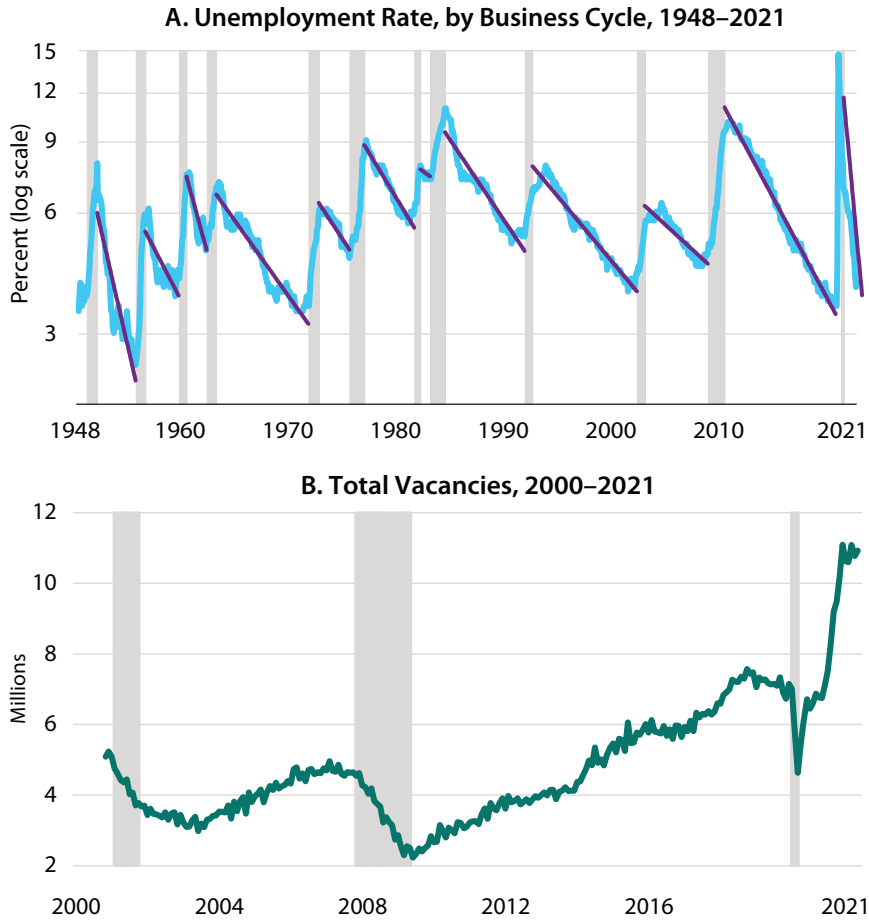
of 2008, as can be seen in Figure 4.3, which plots the unemployment rate and bankruptcy filings over time.

Given this context, the sharp increases in unemployment in March and April 2020 were cause for concern. If historical relationships had held, the 10-percentage-point increase in the unemployment rate would have led to the prediction of an additional 6,000 business bankruptcies in the second quarter of 2020 alone, doubling the 5,952 business bankruptcies in 2020Q1.

These fears did not materialize. Instead, bankruptcies *fell* with the onset of the COVID-19 pandemic. As shown in Wang et al. (2021), business bankruptcies fell 17 percent in 2020 relative to 2019, and filing rates in 2021 were similar to those in 2020. The decline in bankruptcy filings is striking given that there had not been a decline in bankruptcies during a recession since official bankruptcy statistics began being collected in 1980. Further, bankruptcy rates were already quite low in 2019, making a further decline unlikely *ex ante*.

FIGURE 4.2

## Unemployment Rate and Job Vacancies



Source: Bureau of Labor Statistics n.d.; authors' calculations.

Note: In Figure 4.2a, slope lines have been added to show the average rate of decline in the unemployment rate following each recession. Steeper lines indicate more rapid recoveries. Recessions are demarcated by grey bars.



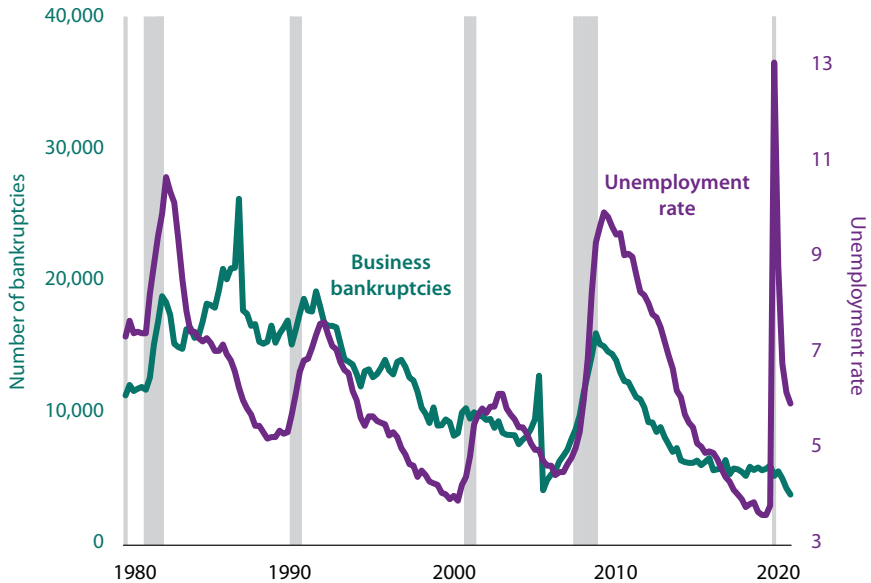
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The timing and breakdown of business bankruptcies can give some indication of what precipitated the overall decline. Figure 4.4, provided by Wang et al. (2021), shows how weekly bankruptcy filing rates evolved for small and large businesses throughout 2020 relative to 2019. Small businesses, defined as those with less than \$10 million in assets, saw filing rates fall dramatically at the



FIGURE 4.3

## Business Bankruptcies and Unemployment, 1980Q2–2021Q2



Source: Bureau of Labor Statistics n.d.; U.S. Courts Bankruptcy Filings Statistics n.d.

Note: Recessions are demarcated by grey bars.



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immediate onset of the pandemic, well before government support programs were put in place to support these businesses.<sup>2</sup> As the year wore on, small business filings rebounded somewhat from the initial drop but still stabilized around 20 percent lower than 2019 levels. Meanwhile, large business filings saw a short-lived decline in late March 2020 but for the most part remained close to 2019 levels throughout 2020.

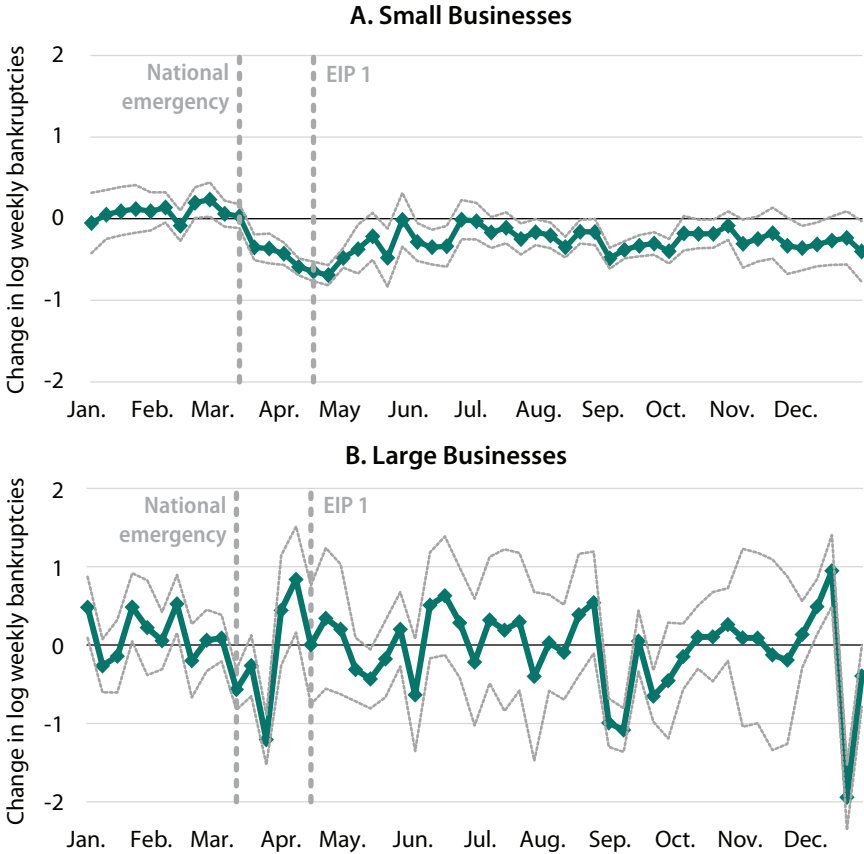
In this section, we have focused on business bankruptcy rates because official statistics on overall business failure have not yet been released.<sup>3</sup> Given that the smallest businesses in the economy are unlikely to use bankruptcy (Greenwood, Iverson, and Thesmar 2020), it is possible that business exit rates increased even while bankruptcy rates declined. Crane et al. (2021) leverage

2. This decline was not due to physical court closures, as Wang et al. (2021) show that filings declined at the same rate in bankruptcy districts where courts were never closed.

3. The U.S. Census Bureau's (n.d.) Business Dynamics Statistics provide measures of firm startups and shutdowns, but the most recent release as of this writing is for 2019.

FIGURE 4.4

## Year-Over-Year Change in Business Bankruptcy Filings, by Week, 2020



Source: U.S. Courts Bankruptcy Filings Statistics n.d.

Note: Small businesses are those with less than \$10 million in assets and large businesses are those with more than \$10 million in assets. 95% confidence intervals shown in dotted gray lines.



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alternative indicators of business exit (e.g., paycheck issuance and phone-tracking data) to estimate business exit rates in the first year of the pandemic. Using these sources, they estimate that the business exit rate was about 25 percent higher than baseline in the first year of the pandemic, but they note that these alternative data sources have limitations that could lead to overstating or understating the true exit rate. A key difficulty, which was particularly exacerbated by the COVID-19 pandemic, is determining whether business closures are

temporary or permanent. Given these difficulties, it will likely be necessary to wait for administrative data to fully understand the pattern of business closures.

In summary, both the overall macroeconomy and business survival, specifically, fared much better during the pandemic than initially feared or historical experience would have predicted. Against this backdrop, we next evaluate the role of direct government aid to businesses. However, it is important to recognize that these programs came on top of several other policies and factors specific to COVID-19 that likely aided the rapid recovery and interacted in important ways with business aid. On the policy front, fiscal support to households played an important role in supporting consumer demand and thus indirectly helping businesses. This support included three separate rounds of direct payments to households in April 2020, January 2021, and March 2021, totaling over \$850 billion, and extended and enhanced Unemployment Insurance (UI). Enhanced generosity of UI in particular makes it less important to incentivize businesses to maintain employment (as the PPP and other programs did) since these workers are supported in other ways, especially during a period such as summer 2020 when public health conditions warranted having many people remain at home anyway. Bolstered by government support, total household income rose in 2020 despite the recession, and households increased their liquid assets, especially lower income households.<sup>4</sup> The increase in household income and wealth created the conditions for the sharp rebound in consumer demand as the economy exited the recession, with additional fuel coming from widespread availability of COVID-19 vaccines in early 2021.

Similarly, the evolution of business practices and the course of the pandemic itself played an important part in determining business conditions. Widespread use of videoconferencing technologies allowed many to work from home. Widespread testing protocols allowed some workers to return to work. And the relatively quick development of vaccines meant that many businesses were able to partially or fully reopen sooner than might have been anticipated. All these factors together created a quick economic rebound in late 2020 and early 2021, which meant that many businesses only faced short-term cash flow shortfalls rather than fundamental insolvency. The totality of these circumstances make it important to try to isolate the role for and effectiveness of direct government support for businesses.

## Framework for Evaluation

Given that the COVID-19 pandemic and associated recession were quite unusual, we cannot simply use outcomes to assess the success of business support programs and the suitability of such programs for future recessions.

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4. The JPMorgan Chase Institute (2022) found that median cash balances were 65 percent higher than 2019 levels at the end of 2021 among low-income families. Cash balances for high-income families were about 35 percent higher at the end of 2021.

We instead start by highlighting conditions under which governments should provide support to businesses during a recession. We then assess business support programs in part by asking how well they address the rationales we highlight. Following Hanson et al. (2020), we suggest two main rationales, focusing on efficiency concerns: (a) market failures that prevent long-run solvent firms from obtaining temporary liquidity and (b) externalities from worker layoffs or firm failure.

If financial markets functioned frictionlessly and there were no externalities, there would be no rationale for government intervention. In this case, firms that were solvent in the long run could simply raise capital by issuing equity or borrowing against their future cash flows from banks or financial markets. The availability of private financing would allow firms to weather temporary revenue shocks, like the COVID-19 pandemic and its accompanying public health interventions. For instance, consider a restaurant that faces temporarily low cash flows due to the pandemic but will ultimately be viable (i.e., have post-pandemic profits that exceed the costs of surviving the pandemic). If financial markets functioned perfectly, the restaurant would be able to borrow enough to survive. This argument applies even in the face of the extreme macroeconomic uncertainty created by the pandemic. In uncertain environments, firms retain option value by deferring the decision to shut down until there is more clarity on the path of the economy. In frictionless markets, lenders and investors recognize that this option is valuable and are willing to contribute funding immediately in exchange for the possibility of a future payoff.

Thus, deviations from this frictionless benchmark are necessary for government interventions to be warranted on efficiency grounds. The first rationale for intervention we consider arises because credit markets may not function well enough to enable firms with viable long-run business prospects to raise enough financing to meet temporary liquidity needs. The lockdown conditions that prevailed in the spring of 2020 and caused revenue at many firms to fall precipitously provide an example par excellence of when fixed costs such as rent or debt obligations could cause firms to fail if they cannot arrange temporary financing, but such circumstances arise in all recessions. Again, in a first-best world with perfect credit markets, full enforcement of contracts, and no asymmetric information, long-run solvent firms could obtain such financing from private sources and government intervention would not be necessary.

However, these conditions may fail in a variety of ways, particularly in a crisis. For instance, lending may become constrained because banks take losses on their existing loans at the onset of a crisis, reducing their capital buffers and creating debt overhang. In early 2020, there was significant concern that bank capital buffers would be rapidly depleted during the COVID-19 pandemic (Feldman and Schmidt 2021). Alternatively, the nature of firm cash flows may change in a way that makes it difficult for banks to continue lending. For instance, it may become more difficult for lenders to discriminate between long-run solvent and insolvent borrowers, causing them to exit credit markets

completely. In this case, even solvent firms may not be able to borrow. A third potential financial friction involves changes in the nature of cash flows that make it difficult for solvent firms to fully pledge future cash flows to lenders. For instance, banks may have an advantage in holding low-risk assets i.e., in making relatively safe loans (Diamond 2020). If an economic downturn increases uncertainty about future cash flows, as the COVID-19 pandemic did, new loans will be riskier, even if they are made to firms that will be viable in the long run, on average. Banks with a preference for relatively safe lending may not be well-suited to provide such incremental financing to firms. Firms that have access to financing outside of banks could then turn to other capital providers, but finding new financing is costly for all firms and may be impossible for many small and medium firms (Fazzari, Hubbard, and Peterson 1988). Finally, credit markets may suffer from fire sales (Shleifer and Vishny 1992; Stein 2012) or market freezes (Diamond and Rajan 2011), which can impede the ability of healthy firms to raise financing. In the presence of such frictions, government interventions may be helpful. These interventions can take the form of direct assistance, supplements to bank financing, or central bank policies, such as asset purchases, that help to ensure well-functioning financial markets.

The second rationale for government intervention involves negative externalities from firm shrinkage or exit. The idea is that there are benefits to keeping firms alive that accrue to neither the firms themselves nor their lenders. In such cases, government intervention can be valuable even if financial markets function well. For instance, if too many firms simultaneously seek bankruptcy protection, the resulting congestion in bankruptcy courts can lead to inefficient liquidations (Iverson 2018; Greenwood, Iverson, and Thesmar 2020). Existing research suggests that the deadweight loss from such congestion can be large. For instance, Iverson (2018) found that a 6 percent increase in bankruptcy caseloads increases the loss given default on commercial and industrial bank loans by 3.9 percentage points (relative to a mean loss given default of 36 percent). In a typical recession, caseloads rise 25 to 50 percent, suggesting scope for significant losses from congestion.

Labor market congestion is a second type of externality that can justify government intervention. If too many laid-off workers simultaneously search for new jobs, they can impede the employer–employee matching process, resulting in fewer hires and lower quality matches (Blank and Maghziyan 2021). More broadly, such separations risk destroying firm-specific human capital, slowing down the eventual recovery. The widespread use during the pandemic of temporary layoffs, in which workers expect to be recalled to their previous employer, mitigates such concerns but may not eliminate them.

A third type of externality occurs when lower consumption by laid-off workers contributes to lower aggregate demand, leading output to fall further (Chodorow-Reich and Karabarbounis 2016; Farhi and Werning 2016). Concerns about aggregate demand externalities loom particularly large when interest rates are stuck at the zero lower bound. While other policies—notably, generous

UI—can alternatively target the decline in consumption by laid-off workers, such considerations nonetheless strengthen the rationale for employment subsidy policies that also have this effect.

Social insurance (i.e., subsidies to business that rise in bad times) for business owners is a third rationale for government intervention that is sometimes proposed. There may be social benefits to encouraging entrepreneurship, and since entrepreneurs bear a large amount of uninsurable, undiversifiable risk, supporting small businesses could be valuable. This is particularly true given that small-business owners are typically not eligible for other forms of social insurance, like UI. Moreover, to the extent a pandemic-type shock was completely unforeseen, ex post transfers to business owners could correct for the absence of pandemic insurance ex ante (Romer and Romer forthcoming). On the other hand, as pointed out by Hanson, Sunderam, and Zwick (2021), business owners are on average relatively wealthy, so the social insurance benefits of supporting them are likely small.

While these rationales provide a case for supporting businesses in a generic recession, it is worth noting that they may have provided an especially strong case in the recession caused by the COVID-19 pandemic. Three features of the pandemic-related recession made it different from most others. First, during the early months of the COVID-19 pandemic, the correlation between firms' short-run cash flows and their longer-run solvency was likely much weaker than in a typical recession. The pandemic and associated public health interventions caused precipitous revenue declines for many fundamentally healthy firms. Against this backdrop, the risk that government support would prop up insolvent firms through so-called zombie lending was weaker than usual.

Second, the turmoil in bond markets in March 2020, while not completely unprecedented, was significantly more severe than market dislocations in a typical recession. In other words, financing frictions in bond markets were larger than usual, again strengthening the case for government intervention.

Third, macroeconomic uncertainty was significantly higher than normal in the COVID-19 recession (Altig et al. 2020). This both exacerbated standard financial frictions and increased the option value inherent in keeping firms alive, relative to typical recessions.

The rationales outlined above also have implications for the types of interventions that are likely to be most effective. For instance, if financial market frictions are the rationale for intervention, it may be beneficial to target the firms and sectors most affected by such frictions. Because small firms typically face greater financial constraints than larger firms (Fazzari, Hubbard, and Peterson 1988; Zwick and Mahon 2016) and have access to fewer sources of financing, the case for targeting government support toward small firms may be stronger than the case for unconditional support. Similarly, for firms that depend on particular banks for financing, these relationships make it difficult to seek funds from other sources (Rajan 1992; Darmouni 2020). Thus, steps to encourage bank lending may be particularly impactful. In contrast, large firms typically have many sources

of financing, including public debt and equity markets, and multiple banks with which they maintain relationships. These characteristics suggest that the gains from government support of large firms may be relatively smaller.

It is also worth noting that while the types of externalities discussed provide rationales for government intervention, it is not clear whether they justify direct aid to businesses specifically. For instance, aid to businesses may reduce the congestion of bankruptcy courts in an unexpected recession, but outside of crisis times simply hiring more bankruptcy judges is a more direct policy intervention. Similarly, aid to businesses may prevent them from firing workers and reduce labor market congestion. However, job retention subsidies may be a better-targeted policy response to the problem.

Finally, the stated purpose of a policy may not equate to its ultimate effect, because money is fungible. Policies requiring that aid be used to support payroll provide a leading example. If the recipient would have met the required payroll target even absent the aid, then the policy has in effect provided unrestricted support to the owners of the business. Evaluating specific programs therefore requires determining how the funds were actually used.

## Summary of Major Programs

Table 4.1 lists the major business aid programs, the amount authorized, the amount utilized during the mostly pre-vaccine year stretching from 2020Q2 to 2021Q1, and the amount in 2021Q2–2021Q4. Several of these programs were administered by the Small Business Administration (SBA).<sup>5</sup> The largest single program measured by dollars utilized was the PPP, whose size exceeds all the other federal subsidy programs combined. Other programs administered by the SBA include Economic Injury Disaster Loans (EIDL), EIDL advances, and SBA loan forbearance. These non-PPP SBA programs provided in aggregate \$344 billion in liquidity to small businesses. The new Federal Reserve programs had even larger authorizations but much lower utilization. Moreover, these programs involved asset purchases, making the subsidy amount far smaller than the authorized purchases. Finally, many state and local governments enacted business support policies.

We now discuss each of these programs in greater detail, with emphasis on evaluation of their effectiveness and the lessons learned for future downturns.

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5. Our focus is on programs aimed at general business survival that were active during 2020. In addition to the programs listed in Table 4.1, businesses also received subsidies through the Provider Relief fund (\$64 billion allocated thus far) and tax credits to support paid sick leave (\$113 billion). In 2021, restaurants received support through the Restaurant Revitalization Fund (\$28 billion.)

TABLE 4.1

## Distribution of Major Business Aid Programs, Billions of Dollars Authorized and Utilized

	Authorized	Utilized	
		2020Q2–2021Q1	2021Q2–2021Q4
<b>Federal government subsidies</b>		<b>604</b>	<b>252</b>
SBA programs			
Paycheck Protection Program	814	457	180
Economic Injury Disaster Loan advances	35	20	7
SBA forbearance	7	7	
Other programs			
Employee Retention Tax Credit		71	47
Grants to air carriers	58	29	12
Food Assistance Program	30	21	6
<b>Federal government loans</b>		<b>941</b>	<b>169</b>
Paycheck Protection Program	814	735	58
EIDL loans		206	111
<b>Federal Reserve programs</b>	<b>1,350</b>	<b>33</b>	
Corporate Credit Facility	750	15	
Main Street Lending Facility	600	18	
<b>State and local programs</b>	<b>15</b>		

Source: Bureau of Economic Analysis n.d.; Federal Reserve n.d.; Small Business Administration n.d.; authors' calculations.



Note: Authorized refers to cumulative authorizations across bills and is blank for mandatory spending. Dollar values in 2020Q2–2021Q1 and 2021Q2–2021Q4 refer to the amount of business subsidies,



loans, or purchases actually made. Federal government loans include loans to all recipients including those not in the business sector.

## SBA Programs

### *Paycheck Protection Program*

The PPP was the largest and most visible of the federal subsidy programs. Initially enacted at the end of March 2020 under the CARES Act with an authorization of \$350 billion, the program was extended and modified several times and eventually made nearly 12 million loans totaling \$800 billion before expiring at the end of May 2021. The first round of PPP funding lasted from April to August 2020 and offered term loans of an amount equal to 2.5 times average monthly payroll with a cap of \$10 million. Firms were eligible if they had fewer than 500 employees or operated in the Accommodation and Food



Services Sector with fewer than 500 employees per location. The Coronavirus Response and Relief Supplemental Appropriations Act of 2021, signed at the end of December 2020, replenished the funding for new PPP loans. It also allowed firms with fewer than 300 employees and at least a 25 percent reduction in gross receipts between comparable quarters in 2019 and 2020 to receive a second PPP loan, again based on 2.5 times monthly payroll but with a cap of \$2 million. The first and second loans were forgivable if the borrower maintained employee and compensation levels for a specified 8- to 24-week period following the disbursement and used at least 60 percent of the proceeds on payroll costs. As of December 2021, 80 percent of the total PPP loan amount, or \$634 billion, had been forgiven.

In terms of the rationales articulated for government intervention in the Framework for Evaluation section above, PPP can be thought of as serving two purposes. First, the loan aspect of the program may be thought of as an attempt to overcome financial frictions for small firms by directly supplying them with funds. Second, the grant aspect of the program can be thought of as an attempt to reduce labor market congestion or to generate aggregate demand externalities more broadly. We now review evidence that suggests that to the extent the program achieved these goals at all, it could have done so on a far smaller scale.

We begin our analysis of the PPP by highlighting the sharp disparities in the dollar amount allocated to smaller and larger firms. Figure 4.5 shows the number and dollar value of loans by loan size for the first PPP round (covering the period April–August 2020) using data from SBA on the universe of PPP loans.<sup>6</sup> Because of the statutory link between loan amount and payroll, the distribution of loan sizes closely approximates the distribution of firm sizes of loan recipients. While half of the loans were under \$25,000, in total these loans account for only 6 percent of the dollar cost. At the other extreme, just 1.6 percent of the loans exceeded \$1 million, but these loans account for one-third of the dollar cost.

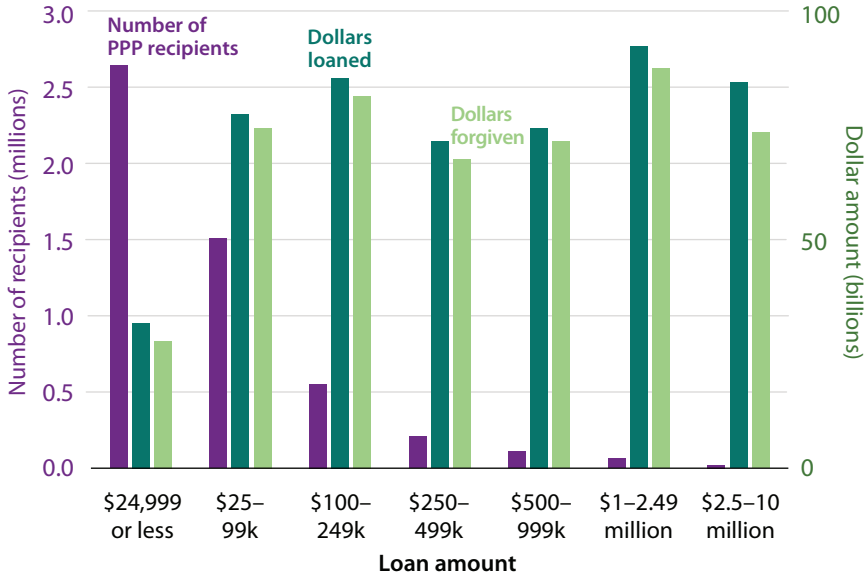
The academic literature has taken several approaches to evaluating the PPP. Perhaps the simplest is to ask how recipients adjust their balance sheets after receiving the funds. Using administrative bank supervisory data on firms with credit line commitments of at least \$1 million matched to their PPP loan, Chodorow-Reich et al. (forthcoming) found that by the end of June 2020 these firms had reduced their non-PPP borrowing from banks by \$0.95 for every \$1 of PPP funds. While not a causal estimate of the use of PPP funds, this adjustment suggests that for these larger PPP recipients (i.e., the mean PPP loan in their data is about \$1 million) the PPP loan might have partially or mostly replaced private financing.

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6. Firms that received their first PPP loan in the tranche starting in January 2021 skewed much smaller than in the initial allocation, with 96 percent of the loans and 72 percent of the dollars in loans of less than \$25,000. The distribution of second PPP loans was much closer to the initial tranche.

FIGURE 4.5

## Receipt of Paycheck Protection Program, by Loan Size



Source: Small Business Administration n.d.a.

Note: Left axis and purple bars represent the number of loans given, while the right axis and dark and light green bars represent the amount of dollars loaned and forgiven.



A second approach uses the 500-employee threshold as a natural experiment that separates eligible firms just below the threshold from ineligible firms just above it. Autor et al. (2020), Chetty et al. (2020), and Hubbard and Strain (2020) all pursue this methodology, with Autor et al. and Chetty et al. finding that eligible firms increased their relative employment by 2 to 3 percent in the summer of 2020 and Hubbard and Strain finding no effect in the neighborhood of the cutoff. Even the upper bound of these effects is modest relative to the size of the program, consistent with the evidence from Chodorow-Reich et al. (forthcoming) that larger recipients may have used a large portion of the funds to pay down other debt.

A third approach exploits the haphazard nature of the initial rollout period, when demand for PPP loans exceeded the CARES Act appropriation. Specifically, during the first weeks of the program, banks prioritized existing customers in processing PPP applications, and some banks had more efficient PPP operations than others. The CARES Act appropriation ran out on April 16, freezing new

loan activity until Congress appropriated an additional \$310 billion on April 24 and lending resumed on April 27. These delays create an opportunity to compare firms that received their PPP loans earlier and later. Relative to the cutoff approach, this research design can encompass smaller recipients but only in the weeks and months immediately following the program's rollout.

Studies of early versus late recipients produced mixed results. Doniger and Kay (2021) found sizeable employment effects in areas with more loans processed just before the initial CARES Act allotment ran out, especially in smaller firms. Granja et al. (2020) applied a similar approach to firm and local area outcomes and found much smaller immediate employment effects, a difference they attribute to the variation in lending before the replenishment not being fully random. Faulkender, Jackman, and Miran (2020) attempted to resolve the nonrandom distribution by using county-level variation in the density of community banks, which processed loans relatively efficiently, and found large effects that they interpret as local to the small firms most likely to borrow from a community bank. However, their main results also display "pre-trends" wherein counties with higher community bank density had smaller increases in UI claims even before the PPP went into effect, highlighting the difficulty of obtaining causal estimates. Bartlett and Morse (2020) compared businesses in Oakland, CA, that applied for and received or did not receive a PPP loan as of the beginning of June and found that recipients had a self-reported 20 percentage point higher subjective probability of survival if lockdown conditions persisted for an additional six months, but this effect disappears for firms with more than 20 employees. Using data from a nationwide survey of small firms, Bartik et al. (2021) found similar effect sizes for small firms. In addition, they found that effects of receiving a loan were similar across small firms, suggesting that the choice to distribute PPP through banks which favored certain clients did not substantially reduce the program's overall impact. Moreover, banks were likely better able to distribute the funds quickly than a program directly administered by the government. This may have raised the overall impact of the program by allowing firms that were very cash constrained early in the pandemic to survive.<sup>7</sup>

A fourth approach attempts to match firms that received PPP loans to other firms that have similar characteristics but did not receive PPP funds or got them later. Wheat and Mac (2021) used deidentified administrative data on customers of JPMorgan Chase and compared outcomes at firms that received PPP loans in 2020 to those that received their first PPP loan in 2021. They found that the 2020 recipients increased total expenses by 42 percent in the month of receipt relative to the control group, with larger effects for smaller firms, but the difference almost fully dissipates within three months. Dalton (2021) merges

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7. It is worth noting that the banks' ability to rapidly deliver PPP funds was supported by the Federal Reserve through the Paycheck Protection Program Liquidity Facility (Anbil, Carlson, and Stycznski 2021).

the PPP loan-level data with monthly administrative employment records for all establishments in the Quarterly Census of Employment and Wages. Using a dynamic event study design that compares recipients to observationally similar firms that received a loan later or never received a loan, Dalton found employment effects in the neighborhood of 4 to 6 percent, with larger effects for smaller establishments. Dalton went on to find positive employment effects at the end of his sample (seven months after receipt), suggesting the longer-run average cost per job could be lower than his headline range of \$20,000–34,000 per employee-month retained.<sup>8</sup> While these studies are the most optimistic for the efficacy of PPP, they rely on the crucial assumption that 2020 PPP recipients would have evolved similarly to 2021 recipients or to non-PPP recipients absent the program. This assumption could fail if, for example, the firms that did not apply during the summer of 2020 did not expect to meet the payroll criteria for loan forgiveness, perhaps because they did not expect to reopen.<sup>9</sup>

Taking stock, three main lessons emerge. First, across research designs, evidence on both the use of funds and employment effects suggest very limited impact of the PPP on employment at larger firms in the months following receipt. This suggests the program could have accomplished its employment objectives at a much lower cost, for example by capping the maximum loan size at well below \$1 million.<sup>10</sup> Second, some studies find evidence of an impact on smaller businesses in the months immediately following receipt, although nothing in the range of the statutory requirement that 60 percent of the funds be spent on payroll. This highlights the lesson that—because money is fungible—even programs with strict employment requirements such as the PPP may not have large effects on employment. In this case, businesses used much of the PPP funds for items other than payroll, such as paying down debt. Third, there is as yet no evidence of a positive effect of PPP on employment or firm survival in the medium to long run. This will be an especially important area for future research.<sup>11</sup>

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8. This cost per job applies only to jobs directly impacted by the PPP. In other contexts total employment effects tend to be larger than the direct effects (Chodorow-Reich 2019).

9. In the extreme, suppose that all firms that applied for and received PPP in the summer of 2020 did so knowing that they would meet the payroll requirement irrespective of whether they received a loan and that nonapplicant firms did not apply because they knew they would have to reduce their payroll irrespective of loan receipt. Then a comparison of these groups of firms would indicate a positive effect of PPP receipt on employment even though PPP had no causal impact and all of the employment at recipients was inframarginal.

10. Notably, smaller loans account for an even higher share of loans and loan amount to self-identified Black or African American recipients. Of total PPP loans to this group, 96 percent by number and 75 percent by amount were for less than \$25,000, and only 7 percent of the amount was made in loans of more than \$500,000.

11. Autor et al. (2022) extended the 500-employee cutoff design through December 2020 and found the employment differential had fully disappeared by the end of that month.

## *SBA Forbearance and the EIDL Program*

Beyond the PPP, the SBA has been involved in two main programs that directly support small businesses in response to COVID-19. The first was a forbearance program in which the SBA was authorized to pay six months of principal, interest, and fees for all 7(a), 504, and microloans. This relief was provided automatically to all SBA loans that were fully disbursed prior to September 27, 2020, and were in regular servicing status. SBA loan forbearance was originally provided as part of the CARES Act in March 2020, with a total of \$17 billion available for relief. Initially, it was uncertain how many businesses would seek and obtain new SBA loans prior to the September 27 deadline; hence, it was unclear how much of the \$17 billion allocated would be used to provide forbearance. By the end of 2020 it was clear that not all \$17 billion would be needed, and as part of the Coronavirus Response and Relief Act, passed on December 27, 2020, \$11.5 billion of this amount was rescinded, reducing the total assistance from the CARES Act to \$3.6 billion. At the same time, the act allocated an additional \$3.5 billion in available funds for automatic loan relief, available for all 7(a), 504, and microloans approved before September 27, 2020, and fully disbursed after this date. Any additional funds were made available to pay the first three months of payments for loans approved after September 27, 2020, subject to availability of funds. Thus, in total, about \$7 billion in direct loan payments were made by the SBA to cover payments that would have normally been made by small businesses. The SBA forbearance program fulfills two rationales for government support outlined in the Framework for Evaluation section. First, it provided short-term liquidity to small businesses. Second, it supported bank balance sheets by providing consistent loan payments at a time when many small businesses may not have had the revenue to make payments on their own.<sup>12</sup> However, because forbearance was provided automatically, it likely went to many businesses that did not need liquidity and would have made payments regardless.

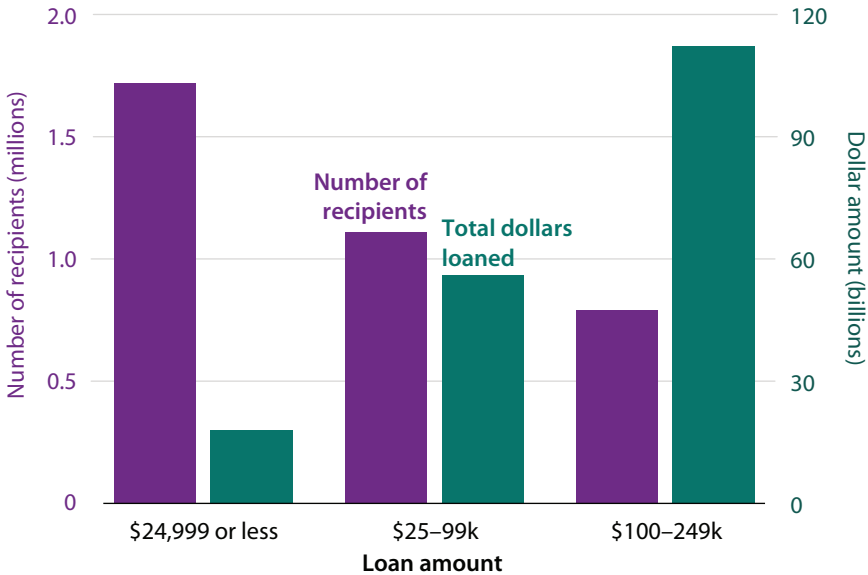
In addition to automatic forbearance, the SBA also offered EIDL loans to small businesses in need of liquidity during the pandemic. While the EIDL program existed prior to COVID-19, the program was expanded considerably in response to the COVID-19 pandemic. To give a sense of the size of this expansion, in 2019 total EIDL loans to businesses amounted to \$98 million. The COVID-19 EIDL program was several orders of magnitude larger, with a total of \$317 billion in loans approved across 3.9 million loans as of the end of December 2021. EIDL loans are designed to provide working capital or to repay other business debt, allowing small businesses to refinance at favorable rates. Originally, loans were available up to \$150,000, but this cap was raised to \$500,000 in March 2021 and to \$2 million in September 2021. To be eligible

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12. Typically, the SBA guarantees 50 to 85 percent of an SBA loan, while the SBA forbearance program provided an effective 100 percent guarantee for the six-month period.

FIGURE 4.6

## Economic Injury Disaster Loans, by Loan Size



Source: Small Business Administration n.d.b.



for a loan, a business must have fewer than 500 employees and demonstrate that it suffered working capital losses due to COVID-19. Figure 4.6 shows the number and size distribution of the first round of EIDL loans made through December 2020.<sup>13</sup> Compared to PPP, the EIDL program disbursed a larger share of funds in smaller amounts, with about 96 percent by number and 40 percent of the dollar value of loans being less than \$100,000.

Importantly, the EIDL program is distinct from PPP loans, as there is no loan forgiveness expected. Businesses that obtain these loans must meet certain credit score requirements,<sup>14</sup> post collateral for loans above \$25,000 and provide a personal guaranty for loans over \$200,000. Thus, the subsidy from the government comes in the form of a relatively low interest rate of 3.75 percent combined with long, 30-year maturities and a two-year grace period in which no loan payments are required. Given expected repayments, the Committee

13. The most recent data released by the SBA ends in December 2020, before the cap was raised above \$150,000.

14. The requirements are a credit score above 570 for loans up to \$500,000 and above 625 for loans larger than \$500,000.

for a Responsible Federal Budget (n.d.) expects losses to total only \$36.5 billion even though the program has supported \$317 billion in total loans. To the extent that the COVID-19 pandemic was a short-term liquidity event for many firms, the EIDL program was well-suited to help businesses bridge a funding gap until revenue streams could be reestablished.

In addition to the EIDL program, the SBA administered the Targeted EIDL Advance program, which provided funds to businesses in the most need. EIDL Advances have no expectation of repayment; they are essentially a no-strings-attached grant from the SBA. To qualify, a business must operate in a low-income area, have fewer than 300 employees, and demonstrate that it has lost at least 30 percent of its revenue over an eight-week period. Businesses that qualify for an EIDL Advance can receive grants of up to \$15,000 with no repayment requirement. By the middle of July 2020, EIDL Advances totaled \$20 billion across 5.8 million grants disbursed.

Combined, the SBA provided substantial aid to small businesses beyond PPP in the form of loan forbearance (\$7 billion), subsidized lending (\$317 billion in loans), and direct grants (\$20 billion). Despite the size of these programs, they have received much less attention than the PPP program in academic studies. One exception is Li (2021), who used the Census Bureau's Small Business Pulse Survey to show that the local severity of the COVID-19 pandemic was unrelated to the probability that a small business applied for or received an EIDL loan or SBA loan forgiveness, suggesting that the programs were poorly targeted. However, Li (2021) also found that firms that received SBA support were less likely to report revenue and employee hour decreases in subsequent weeks. Nonetheless, these are simply correlations seen in the data and should be interpreted with caution. It is likely that the savviest businesses were the ones that applied for SBA assistance, and they may have weathered the COVID-19 pandemic better than other firms even if they had not received SBA assistance.

Fairlie and Fossen (forthcoming) also studied the allocation of SBA assistance, with a focus on whether the PPP and EIDL programs effectively reached minority communities. They found that take-up of the PPP program was slow in many minority communities and that loan amounts were negatively correlated with the minority share across communities. Meanwhile, they found that the EIDL program was more effective in its reach, with loan numbers and amounts both positively correlated with minority communities.

Aside from the allocation of assistance, some concern has been raised about fraud in applying for SBA assistance. The Government Accountability Office (2021) found that at least \$156 million in EIDL loans had been approved for ineligible businesses, such as real estate developers and multilevel marketers. In addition, U.S. financial institutions filed more than 20,000 reports of suspicious activity related to the EIDL program. The SBA's Office of Inspector General released a report in October 2020 finding that about 46 percent of total EIDL funding through July 2020 had been released to potentially fraudulent borrowers, many of whom submitted duplicate applications from the same IP address or email address (SBA 2020). Similarly, Griffin, Kruger, and Mahajan



(2021) argue that a large number of PPP loans were released to potentially fraudulent borrowers. Given the speed and size of the programs, it is perhaps inevitable that the SBA could not put in place tight controls—at least initially. In preparation for future small business assistance, care should be given to thinking about how to scale up programs quickly without lowering the guardrails so dramatically.

We are unaware of any academic study that clearly identifies the effect of EIDL or SBA loan forgiveness on small business performance. Nonetheless, some conclusions can be drawn. First, demand for EIDL loans was very strong, showing that the program's subsidized terms were attractive to many small-business owners. Many small businesses were willing to take on additional debt despite the uncertainty at the beginning of the pandemic, signifying at least some expectation of an ability to repay after the two-year grace period. Their demand for EIDL loans was likely affected also by the long maturity of these loans. Recent work has shown that many individuals focus on monthly payment amounts rather than interest rates or overall loan amounts when considering new credit (Argyle, Nadauld, and Palmer 2020). By stretching payments over 30 years, EIDL loans have low required monthly payments, which likely enhanced their attractiveness. As opposed to the PPP, EIDL loans have the benefit of providing liquidity now but at lower cost to the government after repayment of the loans.

Another benefit of EIDL loans is their ability to be somewhat targeted towards long-term viable firms. As laid out in the Framework for Evaluation section, one argument for government involvement in business support is that during downturns it can be difficult to separate viable from nonviable firms, leading capital providers to stop providing capital entirely. During the pandemic, government-provided liquidity via grant programs, including the PPP, targeted firms that were hard-hit by the pandemic but not necessarily those firms that also expected to be viable long term. Indeed, to the extent that the pandemic fundamentally altered some aspects of the economy (e.g., moving more commerce online), the hardest-hit firms in the short run could also be those that cannot survive in the long run. On the other hand, subsidized lending programs that force business owners to consider their ability to repay (e.g., the EIDL) or that force lenders to keep some “skin in the game” (e.g., the Main Street Lending Program [MSLP], discussed below) can provide needed liquidity while still attempting to provide capital to firms with better prospects.

Of course, the downside of providing loans to struggling businesses instead of grants is that it leaves them with more debt, which could slow economic recovery due to debt overhang. Relative to providing grants, loans create at least some debt overhang as small businesses use cash flows to repay debt instead of other potential investments during the recovery phase. The amount of debt overhang in the aftermath of COVID-19 is still unknown, but the quick recovery in the economy suggests it has not been overly severe to this point. Clearly, the non-PPP SBA small-business support programs merit closer study in the future than they have received to date.



## Other Federal Subsidies

The CARES Act and subsequent legislation contained several other provisions to aid businesses. Two of the largest were the Employee Retention Credit and grants to air carriers. The Employee Retention Credit was a refundable tax credit against employment taxes equal to 50 percent of the qualified wages paid by an employer after March 12, 2020. To be eligible, employers had to experience either a full or partial suspension of operations due to a government order in response to COVID-19 or demonstrate a significant decline in gross receipts. More than \$70 billion was claimed for wages paid through 2021Q1 and a further \$31 billion after that date.

In recognition of the immediate disruption to travel, the CARES Act provided grants to air carriers based on their total payroll and required the funds to be used exclusively for employee compensation. The program disbursed \$28.6 billion to 611 passenger carriers, cargo carriers, and support contractors between April and October 2020. Strikingly, \$22 billion of this total went to just six large airlines: American (\$6.0 billion), Delta (\$5.6 billion), United (\$5.1 billion), Southwest (\$3.4 billion), Alaska (\$1.0 billion), and JetBlue (\$1.0 billion).

The academic literature has thus far paid little attention to these other programs. While both had features designed to link disbursements to payroll, the fungibility of funds raises the possibility that they may instead have benefited shareholders. Such concerns may be particularly significant for the grants to air carriers, which mostly went to large, publicly traded firms that have access to a variety of capital markets where they may have been able to access liquidity. Alternatively, the airlines could have renegotiated with their creditors either out of court or via Chapter 11 bankruptcy. Indeed, most major air carriers have previously undergone successful bankruptcy restructuring, albeit not all simultaneously. Finding a suitable counterfactual for large passenger airlines is difficult. Careful case studies of how these firms used the funds would help in assessing these programs.

## Federal Reserve Programs

The Federal Reserve responded to the COVID-19 pandemic by taking unprecedented actions at unprecedented speed. It began by deploying many of the tools it used during the 2008–09 financial crisis. Specifically, on March 15, 2020, it cut the federal funds rate to a range of 0 to 0.25 percent and began large-scale asset purchases, or quantitative easing, in Treasury securities and agency mortgage-backed securities. On March 17, 2020, the Fed announced several measures to support market liquidity, including reopening many facilities first used in the financial crisis: the Primary Dealer Credit Facility, the Commercial Paper Funding Facility, and the Money Market Mutual Fund Liquidity Facility. Through their broader effects on financial markets, these steps all indirectly supported businesses.

Direct support for business credit began on March 23, 2020, when the Fed and the Treasury announced their new Corporate Credit Facilities. Under the original announcement, the Primary Market Corporate Credit Facility (PMCCF) would buy up to \$100 billion of newly issued bonds and loans from investment-grade U.S. firms. The Secondary Market Corporate Credit Facility (SMCCF) would buy up to \$100 billion of existing investment-grade bonds and loans as well as exchange-traded funds (ETFs) that held such bonds. On April 9, 2020, the Fed and the Treasury significantly expanded the scale of the two programs, increasing their total capacity to \$750 billion. It also expanded their scope, allowing the facilities to buy the bonds and loans of firms that had been investment grade at onset of the pandemic but had subsequently been downgraded.

The April 9 announcement also established the MSLP, a \$600-billion facility to make loans to firms. The program was aimed at mid-sized firms, with requirements that firm employment, revenue, and leverage not be too high. Banks made qualifying loans and sold 95 percent to the facility while retaining the remaining 5 percent. Restrictions were placed on uses of funds, and firms participating in the program were subject to restrictions on executive compensation, dividends, and share repurchases.<sup>15</sup>

### *The Corporate Credit Facilities*

Any evaluation of the CCFs must wrestle with two facts. First, take-up was very low. As shown in Table 4.1, the CCFs used only approximately \$15 billion of their \$750-billion capacity.

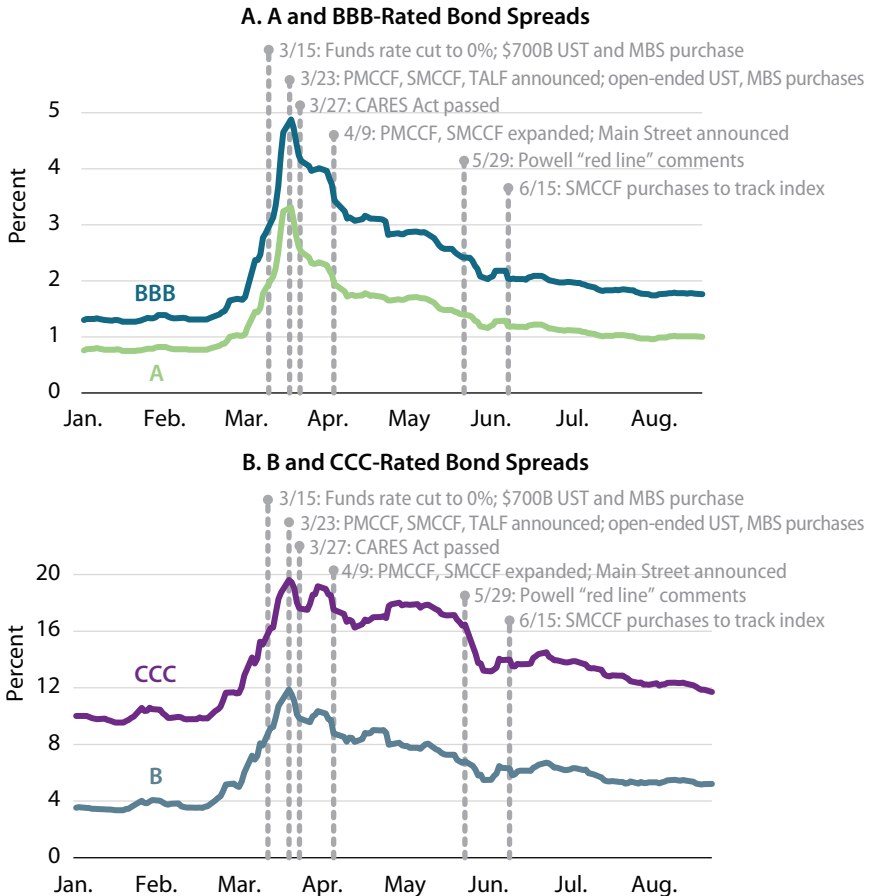
Second, despite this low take-up, the CCFs appear to have had meaningful announcement effects on bond prices, as shown in Figure 4.7. Investment-grade credit spreads fell sharply after the initial program announcement on March 23, while high-yield credit spreads were more significantly impacted when the programs were significantly expanded on April 9. Spreads fell further after Federal Reserve Chair Jerome Powell's remarks on May 29: "The Fed is strongly committed to using our tools to do whatever we can for as long as it takes to provide some relief and some stability now. ... We crossed a lot of red lines, that had not been crossed before. ... This is that situation in which you do that, and then you figure it out afterward (Smialek 2020)." These price movements were accompanied by significant bond issuance by firms, which took advantage of improving market conditions to build up their liquidity buffers (Halling, Yu, and Zechner 2020).

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15. While the Corporate Credit Facilities and the Main Street Lending Program were jointly designed by the Federal Reserve and the Treasury Department, press reports indicated that some of the more restrictive elements of the program design were insisted upon by Treasury. See, for example, Timiraos and Davidson (2020).

FIGURE 4.7

## Corporate Credit Spreads and Select Policy Changes, 2020



Source: ICE/Bank of America n.d.

Note: Lines show ICE/BofA corporate bond index option-adjusted spreads, in percentage points, for A, BBB, B, and CCC rated bonds. The acronyms refer to: PMCCF (Primary Market Corporate Credit Facility); SMCCF (Secondary Market Corporate Credit Facility); TALF (Term Asset-Backed Securities Loan Facility); MBS (Mortgage-Backed Securities).

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Consistent with Figure 4.7, academic studies, including Haddad, Moreira, and Muir (2021), Gilchrist et al. (2020), and Boyarchenko, Kovner, and Shachar (2021), find significant effects on credit spreads of the announcement of the CCFs when taking a simple event study approach. Yet, while event studies find

large effects, they are potentially confounded by other news about the path of the pandemic and the macroeconomy that were released around the same time. Thus, the same studies try to achieve more careful identification of the effects of the CCFs by also taking a second approach: a differences-in-differences approach that compares spreads on bonds that were eligible for CCFs purchases and bonds that were not, before and after the key program announcements. These empirical exercises find that the CCFs lowered credit spreads, but they generally found smaller magnitudes than the simple event study approach. Boyarchenko, Kovner, and Shachar (2021) also argued that purchases themselves had important effects on bond prices, over and above the simple announcements of the programs.

While the differences-in-differences approach offers more careful identification, it may understate the effects of the CCFs for two reasons. First, the programs may have had general equilibrium effects that simultaneously moved all bond prices. Second, investors may have anticipated that the programs would be expanded if market conditions deteriorated further. Thus, program announcements may have moved the prices of ineligible bonds. Haddad, Moreira, and Muir (2021) used prices of options on bond ETFs to argue that the market did indeed anticipate significant expansions of the CCFs if markets deteriorated.

In terms of the rationales articulated for government intervention in Section III, the CCFs are best rationalized as an attempt to reduce the financial frictions that prevailed in the corporate bond market early in the pandemic. Bond price declines in March 2020 were in part driven by fire sale dynamics (Ma, Xiao, and Zeng 2021; Falato, Goldstein, and Hortaçsu 2021), and the CCFs may have helped mitigate fire sale problems. Consistent with the idea that the CCFs reduced financial frictions, O'Hara and Zhou (2021) and Kargar et al. (2021) show that market liquidity improved significantly for eligible bonds.

We next turn to the potential costs of the CCFs. As discussed in Hanson et al. (2020), the expected cost of the CCFs depends in part on one's theory of disruptions in the corporate bond market. It could be the case that bond market fire sales are akin to bank runs—that there are multiple equilibria, a “bad” fire sale equilibrium with low asset prices in which many investors try to fire sell their bonds and a “good” equilibrium featuring high prices and few sales. Under this multiple equilibrium view, the CCFs take little risk.

In contrast, it could be the case that there are not multiple equilibria, but government actions still have benefits. For instance, suppose that losses could be borne either by the government, in which case they must be financed by future taxation, or by the private sector, in which case they are amplified by private sector financial frictions and spillovers. If the distortions associated with taxation are relatively low and private sector frictions are relatively high, then government intervention may be warranted, but it is not a free lunch (Hanson, Scharfstein, and Sunderam 2019).

The low take-up and large price impact of the CCFs are not sufficient to distinguish between these two views. Under the multiple equilibrium view, the very existence of the CCFs shifted markets from the bad equilibrium to the good one, like deposit insurance in the canonical Diamond and Dybvig (1983) treatment of bank runs. Thus, there are large benefits to government intervention in terms of prices and market functioning, even though utilization of the facilities is low.

However, low take-up and large price impact are also consistent with the idea that there are not multiple equilibria. Instead, the government opened itself up to significant risk taking through the CCFs, but that risk did not realize due to the path of the pandemic. Haddad, Moreira, and Muir (2021) used prices of options on bond ETFs to argue that the market anticipated that the government could take significant losses on its bond purchases if the economic impact of the pandemic had been worse.

Given the rationales articulated in the Framework for Evaluation section, it is worth noting that the CCFs targeted large firms with access to public markets. While the financial frictions these firms faced were likely more severe during the initial stages of the pandemic than normal, they were also likely much less severe than the financial frictions faced by smaller firms. In other words, the CCFs were not targeted toward firms facing the most significant financial frictions. Nonetheless, since public firms are large employers with large macroeconomic impacts, interventions targeted at them may have relatively large benefits.

Taking stock, the key lesson of the CCFs is that it is possible for the government to play a major stabilizing role in bond markets and reducing financial frictions. The critical open question is whether doing so is desirable. In the COVID-19 crisis, large benefits were obtained at low cost with low take-up, but those outcomes were in part due to the path of the pandemic. Had the pandemic more strongly affected the economy in late 2020 and early 2021, the costs of intervention may have been significantly higher. The costs and benefits of such intervention in future market disruptions are uncertain.

### *The Main Street Lending Program*

We next turn to the MSLP, which targeted smaller firms than the CCF. As shown in Table 4.1, like the CCFs, the MSLP had very low take-up. It used just over \$18 billion of its \$600 billion capacity.

A key design feature of the MSLP was the way that banks and the government shared risk. Banks sold 95 percent of qualifying loans to the facility while retaining a 5 percent slice of the loan with the same risk (i.e., a “pari passu” loan participation) on their balance sheets. This design choice meant that loans made under the MSLP had to offer similar returns to other loans banks were willing to make. In other words, the MSLP did not encourage subsidized lending. Though banks only had to retain a fraction of the loans, they had to

earn a satisfactory return on the retained portions. And since banks and the government shared risk and repayments proportionately, the overall returns on MSLP loans were similar to the returns on the bank-retained portions.<sup>16</sup>

When would banks find a facility with such a design useful? At times when banks are highly balance-sheet constrained but when there are many loans on which banks could earn a satisfactory return. At such times, the MSLP would expand the size of banks' effective balance sheets. At the onset of the pandemic, there was a considerable chance that banks would become capital constrained. As documented by Chodorow-Reich et al. (forthcoming), Greenwald, Krainer, and Paul (2021), and Kapan and Minoiu (2021), there were significant drawdowns of bank credit lines in the early stages of the pandemic. Greenwald, Krainer, and Paul (2021) argued that drawdowns may have changed decisions about new lending, suggesting that balance-sheet constraints may have entered banks' calculus. In addition, Acharya, Engle, and Steffen (2021) showed that banks with larger drawdowns suffered particularly large stock price declines. However, as shown in Figure 4.8, neither bank stock prices nor bank capital ratios declined as significantly during the pandemic as they did during the global financial crisis, and they recovered from their lows far more quickly. For instance, bank regulatory capital declined 29 percent peak-to-trough in the global financial crisis, compared with 7 percent during the pandemic.

In terms of the rationales for intervention outlined earlier in the chapter, the MSLP is best rationalized as an attempt to reduce the potential financial frictions in the banking sector. There is a rich body of literature demonstrating that bank capital supply shocks can negatively impact firm investment and employment (e.g., Bernanke 1983; Bernanke and Lown 1991; Peek and Rosengren 1997; Ashcraft 2005; Khwaja and Mian 2008; Ivashina and Scharfstein 2010; Chodorow-Reich 2014). Furthermore, these impacts tend to be particularly severe for smaller firms without access to public capital markets, and the MSLP focused on such firms.

Taking stock, the key lesson is that the MSLP could have had a larger impact if the pandemic's effect on the macroeconomy and the banking sector had been more severe and more protracted.<sup>17</sup> The key open question is whether other tools for shoring up bank balance sheets could achieve the same goals at lower cost. For instance, increasing the amount of bank equity would also improve the health of their balance sheets and support additional lending. In

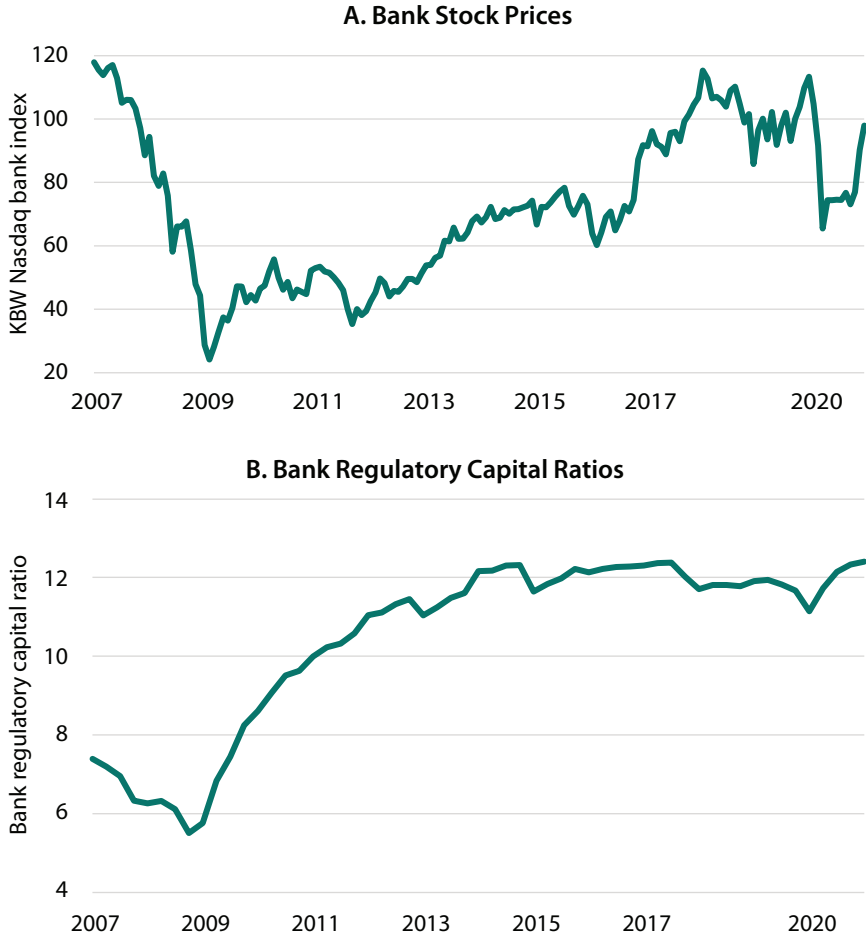
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16. The returns were not exactly the same, because the banks received origination and servicing fees, while the government did not.

17. Since market prices are generally not available for bank loans, it is difficult to study announcement effects of the MSLP in the way that the academic literature has for the CCFs. Nonetheless, Minoiu, Zarutskie, and Zlate (2021) argue that the MSLP may have been perceived by banks as a backstop. As such, banks may have lent more at the initial stages of the pandemic because they understood that future lending would be supported by the MSLP.

FIGURE 4.8

## Bank Stock Prices and Regulatory Capital Ratios, 2007–2020



Source: Nasdaq n.d.; Federal Reserve Board n.d.

Note: Panel A shows the evolution of the KBW bank index, a capitalization-weighted index of 24 stocks that is designed to track the performance of U.S. money center and regional banking firms. (The index does not include traditional brokerage firms like Goldman Sachs and Morgan Stanley that are now organized as BHCs.) Panel B shows the risk-based capital ratios of U.S. publicly traded BHCs from 2006Q1 to 2020Q1 using data from Form FR Y-9C. Specifically, we plot the Tier 1 capital ratio (the ratio of Tier 1 Capital to Risk-Weighted Assets) and the CET1 ratio (the ratio of Common Equity Tier 1 Capital to Risk-Weighted Assets). Prior to 2014Q1 (for Advanced Approaches BHCs) or 2015Q1 (for all other BHCs) when Common Equity Tier 1 Capital is first reported on the FR Y-9C, we constructed a proxy for Common Equity Tier 1 Capital (sometimes referred to as Tier 1 Common Equity) by taking the appropriate deductions from each BHC's reported Tier 1 Capital.

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the next crisis, the government could encourage higher amounts of equity in the banking system in two ways. First, as argued by Greenwood et al. (2017) and Blank et al. (2020), it could use the bank stress tests as a regulatory tool to encourage banks to raise equity from capital markets. Second, in a more severe crisis, the government could directly inject equity into the banking system, as it did during the global financial crisis. Encouraging banks to raise equity from capital markets minimizes the government's risk exposure and involvement in bank operations. In contrast, when the government injects equity itself, a host of governance problems can arise. The MSLP sits between these extremes. The government is still involved, but it avoids some of the governance problems involved with direct equity ownership.<sup>18</sup>

## State and Local Programs

While our focus is on the federal support programs, we note that all states and many counties and cities created programs to provide grants or below-market-rate loans to private businesses. Funding for these initiatives came from the CARES Act Federal Coronavirus Relief Fund, from other federal sources, and from state and local government tax revenue. We collected information on state-administered business relief programs through internet searches and list the total amount disbursed in Table 4.1. State grant and fee offset programs total \$14.7 billion, with more than half of the financing coming from the CARES Act. Notably, many of these initiatives had caps of \$100,000 or less and employment caps well below 500, making them much more targeted toward small businesses than the federal PPP. While these programs were much smaller than the federal programs, they may have offered more “bang for the buck” by focusing on those businesses that faced the largest financing frictions.

## Other Factors Impacting Businesses

The CCFs and the MSLP were designed to support relatively large firms through the pandemic. Given that these facilities saw relatively little use, the question arises: how did these firms weather the pandemic? We study this question using Compustat data on nonfinancial firms. Notably, while Compustat is restricted to relatively large firms with publicly issued equity or debt, the patterns uncovered may also help to shed light on the experience of smaller firms.

Figure 4.9 shows that prior to the pandemic, Compustat nonfinancial firms in total earned large positive net income of over \$200 billion per quarter. On average, they did not accumulate additional cash and they used their profits

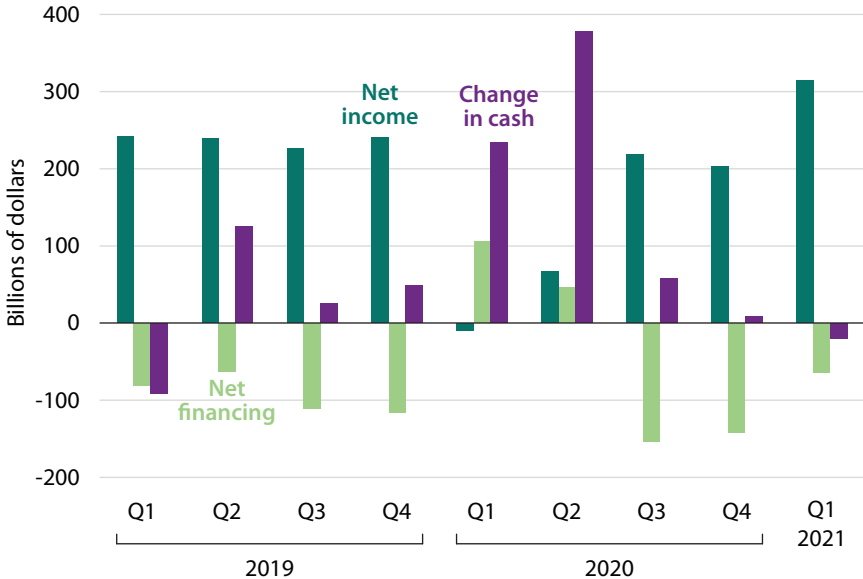
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18. It does not avoid all such problems, however. For instance, for programs like the Main Street Lending Program, there are important questions about whether the government or the originating bank should have control rights if loans default.



FIGURE 4.9

## Quarterly Net Income and Financing for Nonfinancial Public Firms, 2019Q1–2021Q1



Source: Compustat n.d.

Note: Cash is defined as cash and short-term equivalents; net financing is defined as net stock issuance (issuance minus repurchases) plus net debt issuance (issuance minus retirements) minus dividends.

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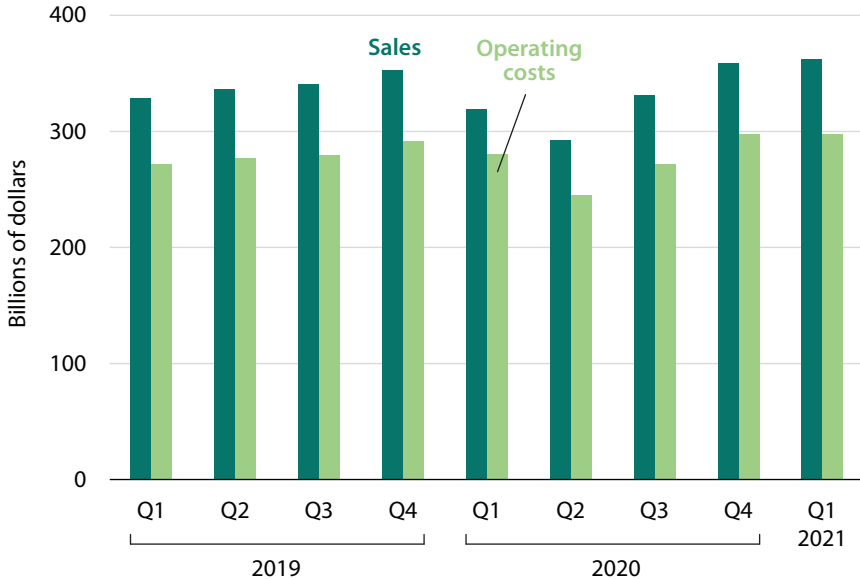
to reduce their outstanding net financing; that is, on average, they retired debt and repurchased equity. Total net income then fell sharply with the onset of the pandemic in the first quarter of 2020 and remained low in the second quarter. At the same time, firms increased their issuance of net new financing and built up their cash buffers.<sup>19</sup> This behavior is consistent with the idea that firms feared a prolonged downturn at the beginning of the pandemic. However, firms' fears were not realized, as Figure 4.9 shows that net income recovered to its pre-pandemic level by the third quarter of 2020.

Why did net income not fall further at the height of the initial pandemic-related lockdowns? As Figure 4.10 shows, firms were able to reduce operating costs as their sales fell. A significant portion of this cost adjustment likely occurred

19. The change in cash is larger than the sum of net income and net new financing. The difference reflects (a) the conversion of noncash assets to cash; (b) depreciation, which shows up in net income but is not a cash expense; (c) trade credit (i.e., firms stretching their accounts payable and cutting their accounts receivable); and (d) capital expenditures.

FIGURE 4.10

## Sales and Operating Costs for Nonfinancial Public Firms, 2019Q1–2021Q1



Source: Compustat n.d.

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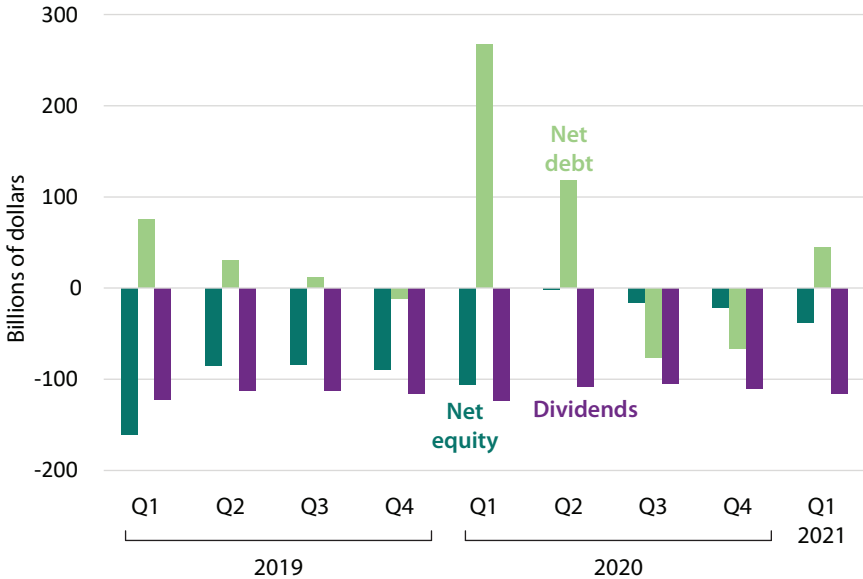
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through payrolls. This highlights the fact that there are two potential paths for the government to support households and firms. First, as in the U.S. unemployment insurance scheme, firms can lay off workers to reduce costs and the government can then provide direct aid to workers. Second, in schemes like the PPP, firms can retain workers and the government can help offset the costs of payroll.

How did firms increase their cash and net new financing early in the pandemic? Figure 4.11 breaks total new financing of nonfinancial firms in Compustat into three categories: net new equity issuance, net new debt issuance (including interest payments), and dividends paid to equity. Prior to the pandemic, dividend payments exceeded \$100 billion each quarter and equity repurchases averaged \$100 billion per quarter. Net debt issuance was generally small but positive. Figure 4.11 shows that equity repurchases (negative net equity issuance) shrank dramatically with the onset of the pandemic while dividend payments remained stable. Firms raised over \$250 billion of new debt financing in the first quarter of 2020. This debt came from two sources: capital markets and drawdowns of credit lines. Additional debt financing was raised in the

FIGURE 4.11

## Net Financing for Nonfinancial Public Firms, 2019Q1–2021Q1



Source: Compustat n.d.

Note: Net financing is defined as net stock issuance plus net debt issuance minus dividends.



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second quarter of 2020, and firms started to repay this financing at the end of 2020 as the economic outlook improved. Importantly, this reflects capital raising only by firms in the Compustat dataset, which are larger firms that have access to public capital markets. Smaller firms likely found it somewhat more difficult to raise capital during this time, which again highlights the importance of targeting programs such as PPP and EIDL loans to those firms.

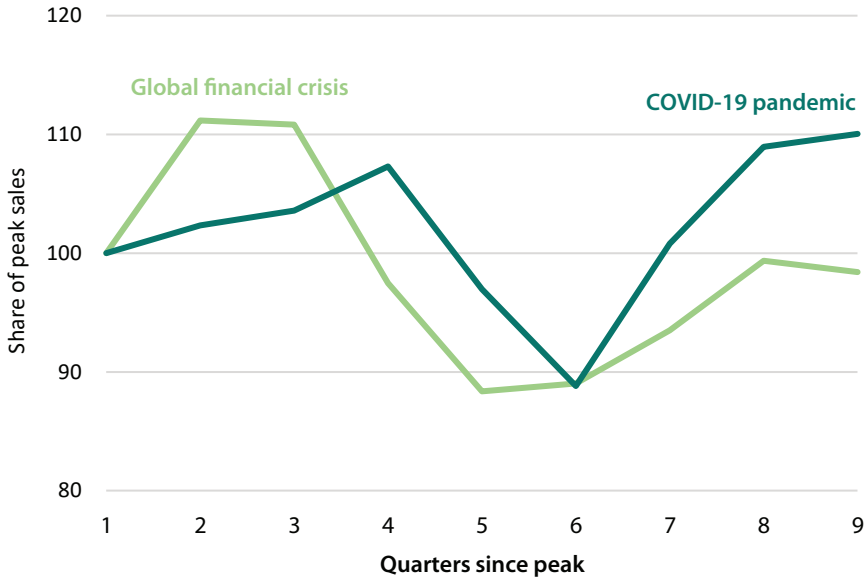
Why was the recovery in net income so fast in 2020? Figure 4.12 compares the evolution of sales (revenues) during the pandemic and the global financial crisis (GFC). The figure shows that the aggregate drop in sales for nonfinancial firms was similar in both recessions, but sales recovered much more quickly during the pandemic.

## Conclusion

We have evaluated the main business aid programs deployed by the U.S. government during the COVID-19 pandemic. Our focus has been understanding

FIGURE 4.12

## Sales for Nonfinancial Public Firms, Indexed to Recession Peak



Source: Compustat n.d.

Note: The global financial crisis is indexed to 2008Q1 and the COVID-19 pandemic to 2019Q1.

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the potential for such programs to help speed recoveries from future non-pandemic-related downturns. The main conclusion is that policymakers should not automatically interpret the rapid recovery from the pandemic as evidence that business aid programs have strong economic benefits. Many careful studies found that these programs had relatively small effects, suggesting that other factors including the nature of recovery from a temporary lockdown and general support for households likely played a more important role. There may be circumstances in which small-business lending programs like the EIDL or bond market stabilization programs like the CCFs could prove useful—for instance, in cases in which other support for households is less generous—but they should be judiciously deployed. The speed at which support programs were deployed during the COVID-19 pandemic was admirable. However, given the rapid rollout, it is not surprising that some of the programs were not well-designed to achieve maximum impact.

Four concrete lessons emerge from our analysis of business support programs in the COVID-19 pandemic. First, policymakers should not blindly redeploy the 2020 tool kit. Second, support for small businesses, like the PPP,

could have been restricted to significantly smaller firms. For instance, the employment cap for program eligibility could have been set at 50 or 100 employees, instead of 500, without adversely affecting the program's overall impact. Third, support for large firms, such as publicly traded airlines, should be treated skeptically because these firms have access to many forms of financing and can be efficiently processed by the bankruptcy system. Finally, while the Federal Reserve clearly can support banks and corporate credit markets, whether it should do so involves careful consideration of the reason for a decline in credit.

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The COVID-19 pandemic posed an extraordinary threat to lives and livelihoods. In the United States, the pandemic triggered a sharp downturn. Yet, the ensuing economic recovery was faster and stronger than nearly any forecaster anticipated due in part to the swift, aggressive, sustained, and creative response of U.S. fiscal and monetary policy. But when the next recession arrives, it most likely won't be triggered by a pandemic.

*Recession Remedies* examines and evaluates the breadth of the economic-policy response to COVID-19. Chapters address Unemployment Insurance, Economic Impact Payments, loans and grants to businesses, assistance to renters and mortgage holders, aid to state and local governments, policies that targeted children, Federal Reserve policy, and the use of non-traditional data to monitor the economy and guide policy. These chapters provide evidence and lessons to apply to the next recession.

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