# The COVID-19 Bailouts*

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**Abstract**

We use hand-collected data to investigate the COVID-19 bailouts for all publicly listed US firms. The median tax rate is 4% for bailout firms and 16% for no-bailout firms. The bailouts are expensive when compared to past corporate income tax payments of the bailout firms. We compute the number of years a bailout recipient has to pay corporate income tax to generate as much tax revenue as it received in bailouts: 135.0 years for the Paycheck Protection Program and 267.9 years for the airline bailouts. We also document a dark side of the bailouts. For many firms, the bailouts appear to be a windfall. Numerous bailout recipients made risky financial decisions, so bailing them out might induce moral hazard. Moreover, lobbying expenditures positively predict bailout likelihood and amount.

***Keywords***: COVID-19, coronavirus, bailouts, moral hazard, CARES Act, Paycheck Protection Program, Payroll Support Program, taxation.

***JEL classification***: E61, E65, G33, G38, H12, H25, H32, H81.

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# 1 Introduction

COVID-19 hit the world with unprecedented force. The responses by the US government and the Federal Reserve have been similarly unprecedented. This paper investigates two bailout programs that have experienced significant uptake: the $659 billion Paycheck Protection Program (PPP) for "small" businesses and the $32 billion Payroll Support Program for the aviation industry (henceforth "airline bailouts").

Critics of these interventions argue that bailouts socialize losses, while past profits have been paid out to shareholders.[1] Moreover, bailouts can create moral hazard and lead to excessive risk taking (Farhi and Tirole, 2012; Duchin and Sosyura, 2014). Poorly designed bailouts can also be expensive for taxpayers and generate windfalls for the private sector, while being ineffective in alleviating a crisis.[2] In contrast, bailout supporters argue that bailouts are necessary to keep workers employed and avoid the crisis from worsening.

To shed light on this debate, one would, in an ideal setting, conduct a firm-level analysis of the bailouts. This is not possible, however, since firm-level data is not available for privately held firms. Therefore, we focus on publicly listed US firms and combine this with detailed hand-collected bailout data from corporate filings with the Securities and Exchange Commission (SEC).

Our paper has two main contributions. First, the bailouts are expensive—both on a bailout funds-per-employee basis and when compared to past corporate income tax payments of the bailout firms. Second, we find a dark side of the bailouts, which appear to be a windfall for some firms and potentially induce moral hazard for other firms that made risky financial decisions.

We collect data on 755 bailouts worth $17.9 billion. The mean and median airline bailout per employee are $34.39 thousand and $31.76 thousand, respectively. The corresponding

[1] Amit Seru and Luigi Zingales (2020): "Save Capitalism From the Cares Act", March 30, www.wsj.com/articles/save-capitalism-from-the-cares-act-11585608917 (accessed May 1, 2020).

[2] Amit Seru and Luigi Zingales (2020): "The Stimulus Package Is Too Expensive and Poorly Targeted", March 29, https://promarket.org/the-stimulus-package-is-too-expensive-and-poorly-targeted-the-waste-contained-in-the-cares-act (accessed April 28, 2020)

values for PPP bailouts are $21.70 thousand and $16.16 thousand.

We compute the number of years a bailout recipient has to pay corporate income tax to generate as much tax revenue as it received in bailouts. The mean and median number of years for a PPP recipient are 135.0 and 22.1, respectively. The numbers for the airline bailouts are 267.9 and 138.3 years. These values are driven by low effective tax rates and the size of the bailouts. The median tax rate is 4% for bailout firms and 16% for no-bailout firms, while the current statutory corporate income tax rate is 21%. A small number of bailout firms are resident in tax havens such as Bermuda and Ireland. Given the substantial size of the bailouts and the significant US fiscal deficits in 2020 and 2021, the stylized facts on the aforementioned effective tax rates and "years to repay" might be relevant for the ongoing policy debate on US corporate taxation.

We now turn to the dark side of the bailouts. First, 66 of the 579 bailout firms with non-missing financials paid out more in dividends and net repurchases from 2015-2019 than they received in bailouts, potentially inducing future moral hazard problems. Second, 437 firms had more cash and cash equivalents at the end of 2019 than they received in bailouts, suggesting that the bailouts might be a windfall for these firms. Third, a substantial fraction of the bailout firms can be considered start-up like firms, for which the bailouts are likely a windfall, as well. Fourth, many of the recipients of the bailouts are quite large, implying that some firms might have been able to raise additional financing absent a bailout (Hadlock and Pierce, 2010).

Next, we run cross-sectional regressions to ascertain the determinants of the incidence and magnitude of the bailouts. Greater assets, cash/assets and Tobin's Q are associated with a lower bailout likelihood and amount. Surprisingly, firm age and sales both have a positive effect on the bailout probability and amount. A dummy for firms with a persistent negative EBITDA has a powerful effect on the bailout probability and amount, supporting our earlier point about these start-up like firms. Lobbying expenditures have a sizable effect on the bailout likelihood and amount. Firms that lobby might be experienced in navigating

bureaucracy and red tape, and might therefore be in a better position to disentangle the bailout rules.

To what extent can our results be extrapolated to privately held firms? The average privately held bailout recipient will most likely be more financially constrained than the average publicly listed one. Therefore, the likelihood that a bailout of a privately held firm involves any of the documented "dark sides" of bailouts will be lower than for a publicly listed firm. However, because the vast majority of PPP bailout funds went to privately held firms, it is reasonable to assume that the "dark side" of the bailouts for privately held firms will be quantitatively large due to the sheer size of the private sector and the bailouts. There will be many large privately held firms that will not be financially constrained and do not need a bailout. In addition, the bailouts do not condition on whether a firm was affected by or could have survived the COVID-19 crisis without a bailout.

One limitation of our paper is that we cannot establish causality, so the results should be interpreted as suggestive evidence.

Lastly, we discuss policy implications. First, the bailouts should have been conditioned on whether a firm has been affected by the COVID-19 crisis. Additionally, the airline bailouts appear overly generous on a bailout-per-employee basis, and expensive when compared to recent corporate income tax payments by the airlines. Moreover, the large publicly listed airlines paid out more to their shareholders in the last couple of years than they received in bailouts, suggesting that these bailouts might be inducing moral hazard. Delta, for instance, had a pre-tax income in 2019 of \$5.7 billion, on which it received a tax refund of \$95.00 million. The bailout Delta received was \$3.8 billion, while its aggregate payouts to shareholders from 2015-2019 were \$13.6 billion. In addition, the four largest airlines on average went bankrupt 4.25 times since the 1980s. This raises the question of why bankruptcy (or fire sales) could not have been used instead of bailouts to restructure the airlines.

Due to the vast number of papers on COVID-19, our literature discussion focuses only on the most closely related papers. Our paper contributes to the literature on the COVID-19

bailouts. To the best of our knowledge, our paper is the first to document the dark sides of the COVID-19 bailouts and the high cost of the bailouts when compared to the corporate income tax payments of the bailout firms. Elenev et al. (2020) use a macroeconomic model to document that the bailouts prevented a much deeper crisis. Granja et al. (2020) study the congressional district-level distribution of PPP bailouts using confidential data from the SBA, and find that PPP funds initially flowed more to areas less affected by COVID-19. Using survey data on small businesses, Bartik et al. (2020) investigate the employment effects of the PPP bailouts and find a positive but insignificant effect. Chetty et al. (2020) find that the PPP increased employment at small businesses by 3%, implying a cost of $290 thousand per job saved. Autor et al. (2020) estimate that the cost per job saved by PPP is $224 thousand.

Moreover, our paper contributes to the literature on bailouts more broadly by documenting the dark sides of the COVID-19 bailouts. For a discussion of the 2008/9 bailouts, see Calomiris and Khan (2015) and Goolsbee and Krueger (2015). Bailouts can increase moral hazard in the future (Farhi and Tirole, 2012; Duchin and Sosyura, 2014), and can be distorted because of political connections (Faccio et al., 2006; Duchin and Sosyura, 2012). Moreover, receiving a bailout can subject firms to political influences (Chavaz and Rose, 2019). Meier and Servaes (2019) argue that fire sales, an alternative for firms that do not receive a bailout, are not as costly from a welfare perspective as previously argued by policymakers.

# 2 Institutional Details of the Bailouts

The US government and the Federal Reserve have approved five private-sector bailout programs worth $1.8 trillion in total. See Table 1 for an overview of these programs. The Federal Reserve enacted additional emergency initiatives to fight the crisis that are not direct bailouts. Table A1 provides an overview of the different emergency programs by the Federal Reserve, their dollar volume, the eligible borrowers/beneficiaries, the collateral/assets, and a classification of whether a program involves a bailout. In this paper, we focus on the two

bailout programs that have been widely used–the $32 billion airline bailouts and the $659 billion "small" business bailouts through the Small Business Administration's (SBA) PPP. For a legislative history of the federal government's emergency measures, see Appendix A.1.

**Table 1: Five Direct Private Sector Bailout Programs**

| Bailout Program | Size | Provider | Financing |
|---|---|---|---|
| Airline Bailouts: Payroll Support Program | 32 | Government | CARES Act |
| Industries Required for National Security | 17 | Government | CARES Act |
| Small-Business Bailouts: Paycheck Protection Program | 659 | Government | $349 billion from CARES Act and $310 billion from Paycheck Protection Program and Health Care Enhancement Act |
| Large-Business Bailouts: Main Street New Loan Facility, Main Street Priority Loan Facility, and Main Street Expanded Loan Facility | 600 | Fed | $75 billion equity investment from the Treasury through the CARES Act and self-made leverage from the Federal Reserve |
| Mega-Firm Bailouts: Primary Market Corporate Credit Facility | 500 | Fed | $50 billion equity investment from the Treasury through the CARES Act and self-made leverage from the Federal Reserve |
| Total | 1,808 | | |

This table provides an overview of five direct private sector bailout programs from the federal government (abbreviated government) and the Federal Reserve (abbreviated Fed). Size is the amount of the program in billions of dollars.

*Airline Bailouts through the Payroll Support Program*

The $32 billion allocated for airline bailouts by the CARES Act includes $25 billion for passenger airlines, $4 billion for cargo airlines, and $3 billion for airline contractors. Passenger airlines that receive more than $100 million ($50 million for cargo carriers) are required to issue a loan and warrants to the Treasury. Airline contractors that receive more than $37.5 million must issue a loan only to the Treasury. 100% of the funds received must

be used for "employee wages, salaries, and benefits."[3] The face value of the loans is up to 30% of the total funds received for passenger airlines and 49% for Atlas Air, the only cargo airline that received more than $50 million in payroll support. The warrants are issued at-the-money, with a term of five years. The amount of the warrants is such that the strike price times the number of warrants is approximately equal to 10% of the face value of the loan (less than 3% of the total funds received for the passenger airlines). Not included in the numbers for the airline industry was the suspension of aviation excise taxes through January 1, 2021. The Treasury publishes a list of recipients of the airline bailouts on its homepage.

*"Small" Business Bailouts through the Paycheck Protection Program*

The first tranche of the $349 billion PPP bailouts from the CARES Act became available for payout on April 3, 2020 and was depleted within two weeks. The second $310 billion tranche from the Paycheck Protection Program and Health Care Enhancement Act became available for payout on April 27, 2020. The application deadline for PPP bailouts was August 8, 2020. After the top off, every firm eligible for a PPP bailout was able to get a bailout if it applied. PPP funds come in the form of forgivable loans. The PPP loan amount is equal to 2.5 times the average monthly payroll costs pre-COVID-19 (capped at $100,000 per employee), with a maximum PPP loan amount of $10 million. Loan payments are not required for the first six months after issuance. In the Paycheck Protection Program Flexibility Act (PPPFA) (signed into law on June 5, 2020), the period during which no loan payments have to be made was extended by several months. Each PPP loan, if not converted into a grant, has an interest rate of 1%. Before (after) the passage of the PPPFA, PPP loans not converted to grants have maturities of two (five) years. At least 75% (60% after PPFA) of the PPP loan amount must be used for payroll costs. Allowable non-payroll costs include payments of mortgage interest, other interest, rent, and utilities. Importantly, the PPP loan can be fully forgiven if the recipient maintains employment and pay levels during an

[3]US Department of the Treasury (2020): "Payroll Support Programs," home.treasury.gov/policy-issues/cares/preserving-jobs-for-american-industry/payroll-support-program-payments (accessed September 12, 2020).

8-week (24-week after PPPFA) period after the origination of the loan and subject to other conditions, such as the aforementioned 75% (60%) rule.

*Eligibility for the Paycheck Protection Program*

The eligibility rules for the PPP bailouts are opaque, complex, and contradictory. Information on eligibility for PPP funds is provided in a Frequently Asked Questions (FAQ) document on the Treasury's homepage. This frequently changing FAQ document is the main framework used to administer the $659 billion PPP bailout program. In practice, the PPP rules do not condition eligibility on the financial health of a firm. Thus, the PPP is a "first-come, first-served" program with eligibility criteria primarily based on firm size that intends to enable firms to retain employment during the economic shock caused by COVID-19. The PPP has three main eligibility rules based on firm size and industry classification. A firm must meet at least one of the criteria to be eligible for a PPP bailout.[4]

First, as a rule of thumb, most firms with at most 500 employees are eligible. Second, there are exceptions for all firms whose NAICS code starts with 72, which includes hotels and restaurants. These firms can obtain bailouts even if they have more than 500 employees, as long as each location or legal entity that applies for the bailout has at most 500 employees. Third, there are additional opportunities for firms with more than 500 employees to obtain PPP bailouts through the special SBA industry size cutoffs, which includes firms with up to 1,500 employees.

# 3 Data

We collect data on PPP bailouts from the SEC and airline bailouts from the Treasury. We remove firms that received but subsequently repaid their entire bailout. See Appendix B.1 for how we treat the special case of one airline holding company. Since we are only interested in the grant portion of the bailouts, we interpret the grant for the airline bailouts as the difference between the total funds received and the face value of the loan. No such

[4]See Appendix A.2 for additional details on the eligibility criteria.

adjustment is needed for the PPP bailouts.

The sample period for our firm data is 2010-2019. Firm data is from the following sources: Compustat North America for accounting and stock price data, CRSP for stock price data, Compustat Snapshot for historical company names, and OpenSecrets.org for lobbying expenditure data (Center for Responsive Politics, 2018). The lobbying data is from 2010-2018, and is matched with Compustat using a fuzzy name match. All variables are defined in Table 2. For variables with a measure of income in the denominator, we require that income is positive. All variables are winsorized at the 1% level except for the bailout variables. Tax rate variables are further winsorized to ensure that they are between 0 and 100%. For variables using stock price data, we first define the variable using data from CRSP. If the variable is missing, then we replace it with data from Compustat Security. Lastly, we keep only the "primary" instance of dual-listed firms using the data from Meier and Smith (2020).

**Table 2: Variable Definitions**

| **SEC and Treasury** | |
|---|---|
| Bailout Amount | Bailout Amount |
| Bailout Dummy | Equals 100 if the firm received a bailout and 0 otherwise |

| **Compustat/CRSP** | |
|---|---|
| Market Cap | Price-per-share times shares outstanding ($prccm \times cshoq$) |
| Book Assets | Total book assets ($at$) |
| Sales | Sales ($revt$) |
| Number of Employees | Number of employees ($emp$) |
| Firm Age | Firm age in years based on the IPO date, or, if missing, the date the firm first appeared in Compustat |
| $\mathbb{1}$(Total Debt$>0$) | Dummy that equals 1 if total debt is positive ($dltt + dlc$) |
| Crisis Return | Stock return including dividends from 2-19-20 to 3-23-20 ($(prcd_t/prcd_{t-1}) \times (trfd_t/trfd_{t-1}) - 1$) |
| Payouts | Dividends plus buybacks from 2015-2019 ($\sum_t (dvc + prstkc - sstk)$) |
| Payout Ratio | Payouts divided by income before extraordinary items from 2015-2019 ($\sum_t (dvc + prstkc - sstk) / \sum_t ib$) |
| Tobin's Q | Market assets over book assets ($(lt + pstk - txditc + prccm \times cshoq)/at$) |
| Book Leverage | Total book liabilities divided by book assets ($lt/at$) |
| Market Leverage | Total book liabilities divided by market assets ($lt/(lt + pstk - txditc + prccm \times cshoq)$) |
| Sales Growth | Growth in sales from 2018 to 2019 ($revt_t/revt_{t-1} - 1$) |
| EBITDA/Assets | EBITDA divided by book assets ($ebitda/at$) |
| $\mathbb{1}$(3-Yr EBITDA $< 0$) | Dummy that equals 1 if the firm has a negative EBITDA for each of 2017, 2018, and 2019, and 0 otherwise ($ebitda$) |
| Capex/Assets | Capital expenditures divided by book assets ($capx/at$) |
| R&D/Assets | R&D expenditures divided by book assets ($rnd/at$) |
| Cash/Assets | Cash and cash equivalents divided by book assets ($che/at$) |
| Quick Ratio | Current assets minus inventory all divided by current liabilities ($(act - invt)/lct$) |
| ETR Pre-2018 | Taxes paid from 2010-2017 divided by pre-tax income from 2010-2017 ($\sum_t txpd / \sum_t pi$) |
| ETR Post 2017 | Taxes paid from 2018-2019 divided by pre-tax income from 2018-2019 ($txpd/pi$) |

| **OpenSecrets.org** | |
|---|---|
| Lobbying Amount | Total lobbying expenditures from 2010-2018 |

This table lists the variable definitions by source. Unless otherwise stated, variables are measured as of 2019. The variable names from the relevant databases are in parenthesis. All variables are winsorized at the 1% level except for the bailout variables. Tax rate variables are further winsorized to ensure that they are between 0 and 100%.

# 4 Results

## 4.1 Summary Statistics

*Bailout Data*

We have information on 755 publicly listed firms that received a total of $17.9 billion in bailouts (Table 3, Panel A). This consists of 13 airline bailouts worth a total of $16.5 billion and 742 PPP bailouts worth a total of $1.4 billion. The mean and median airline bailout are $1.3 billion and $336.62 million, respectively. The mean and median PPP bailout are $1.86 million and $0.80 million, respectively.

The airline bailouts are, on a per-employee basis, much more generous than the PPP bailouts. The mean and median airline bailout per employee are $34.39 thousand and $31.76 thousand, respectively. The corresponding numbers for PPP bailouts are $21.70 thousand and $16.16 thousand.

*Bailouts and Taxes Paid*

To put the size of the bailouts in perspective, we compute the number of years a publicly listed bailout recipient has to pay corporate income tax to generate as much tax revenue as it received in bailouts (see Table 3, Panel B). The mean and median number of years for a PPP recipient are 135.0 and 22.1. The corresponding numbers for the airline bailouts are 267.9 and 138.3 years. The numbers are biased downward since companies that received a tax refund are excluded from the calculations. Because the airline bailouts are so large, both in absolute terms and relative to the size of the firm, we report the pre-tax income, taxes paid, effective tax rates, bailout amount, and years to repay for all publicly listed airlines (see Table 3, Panel C). For example, American Airlines has a pre-tax income of $2.1 billion, $13.00 million in taxes paid, $4.1 billion in bailouts, and 315.4 years to repay.

The high number of years is driven by low effective tax rates and the enormous size of the bailouts. The median tax rate is 4% for bailout firms and 16% for no-bailout firms (see Table 4), while the current statutory corporate income tax rate is 21%. Firms with low long-term

**Table 3: Summary Statistics - Bailout Data**

**Panel A: Bailout Summary Statistics**

| | Total | Mean | Median | N |
|---|---|---|---|---|
| PPP Loans | 1,383.62 | 1.86 | 0.80 | 742 |
| Per Employee | | 21.70 | 16.16 | 545 |
| Airline Bailouts | 16,489.47 | 1,268.42 | 336.62 | 13 |
| Per Employee | | 34.39 | 31.76 | 13 |
| All Bailouts | 17,873.09 | 23.67 | 0.81 | 755 |
| Per Employee | | 21.99 | 16.40 | 558 |

**Panel B: Summary Years to Repay**

| | Mean | Median | N |
|---|---|---|---|
| PPP Loans | 135.0 | 22.1 | 262 |
| Airline Bailouts | 267.9 | 138.3 | 8 |

**Panel C: Airline Bailout Recipients**

| | Pre-Tax Inc. | Taxes | ETR | Payouts | Bailout | Years to Repay |
|---|---|---|---|---|---|---|
| Delta | 5,674.5 | -95.00 | -1.67 | 13,569.0 | 3,835.4 | End of Time |
| United | 3,286.0 | 24.00 | 0.73 | 8,547.0 | 3,500.9 | 145.9 |
| Southwest | 3,060.5 | 553.00 | 18.07 | 9,784.0 | 2,311.4 | 4.2 |
| American | 2,070.0 | 13.00 | 0.63 | 12,963.0 | 4,100.2 | 315.4 |
| Alaska | 800.5 | 15.50 | 1.94 | 1,615.0 | 720.0 | 46.5 |
| JetBlue | 493.5 | -20.50 | -4.15 | 1,414.0 | 685.0 | End of Time |
| SkyWest | 406.3 | 2.58 | 0.63 | 256.3 | 336.6 | 130.7 |
| Spirit | 320.7 | -33.82 | -10.55 | 267.7 | 264.3 | End of Time |
| Hawaiian | 303.1 | 20.94 | 6.91 | 374.1 | 234.7 | 11.2 |
| Allegiant | 250.3 | -21.88 | -8.74 | 529.4 | 150.3 | End of Time |
| Air Wisconsin | 78.6 | 0.04 | 0.05 | . | 51.0 | 1,259.3 |
| Mesa | 39.6 | 0.40 | 1.02 | . | 92.5 | 230.0 |
| Atlas | -81.7 | -0.51 | . | 67.4 | 207.0 | End of Time |

Panel A summarizes the bailouts by type. Panel B summarizes the number of years it would take bailout firms to pay enough corporate income taxes to cover the bailout amount. As such, *Years to Repay* is calculated as *Bailout Amount* divided by *Taxes* (taxes paid, Compustat variable *txpd*). To be included in Panel B, *Taxes* must be positive. Panel C provides a breakdown of the relevant variables for the airline bailout recipients. *Pre-Tax Income* (Compustat variable *pi*) and *Taxes* represent averages from 2018-2019. Since taxes paid is missing for Delta in Compustat, we replace it with income tax expense (Compustat variable *txt*) from the income statement minus deferred taxes (Compustat variable *txdc*) from the statement of cash flows. *ETR* is the ratio of *Taxes* and *Pre-Tax Income*. *Payouts* is defined in Table 2. Dollar figures are in millions of USD except for the per-employee figures, which are in thousands. None of the variables in this table are winsorized.

effective tax rates are aggressive tax planners or tax avoiders (Dyreng et al., 2008). Given the substantial size of the bailouts and the significant US fiscal deficits in 2020 and 2021, the stylized facts on the aforementioned effective tax rates and "years to repay" might be relevant for the ongoing policy debate on US corporate taxation.

We use the tax residence algorithm from Meier and Smith (2021) to investigate the tax residence of bailout firms. 736 out of 755 bailout firms with tax residence data reside in the US, followed by 12 Canadian firms. There are a number of firms that reside in tax havens: 1 in Bermuda, 1 in the Cayman Islands, and 2 in Ireland.

*Industry Distribution of Bailout Firms*

The industry distribution of the bailout recipients differs substantially from that of the 2008/9 bailouts (see Table C1). Back then, with the exception of General Motors and Chrysler, the bailout recipients were banks and other financial institutions. This time, financial institutions are almost absent in the list of bailout recipients. Among the current bailout recipients, pharmaceutical products and medical equipment compromise about 25.8% of the bailout recipients, which is about twice their share among publicly listed firms. Computer software is also overrepresented (10.2% among the bailout recipients compared to 7.3% overall), when one would have expected that these firms are less affected by COVID-19.

*Summary Statistics of Full Sample*

Next, we compare bailout and non-bailout firms (Table 4). Since most of the bailout firms received PPP bailouts, the mean market capitalization, book assets, sales, and employees are all significantly smaller than those of non-bailout firms. In addition, bailout firms tend to have a higher ratio of R&D to book assets than non-bailout firms. This could be due to the fact that bailout firms are disproportionately from the computer software or pharmaceutical industries. Bailout firms also have lower EBITDA/assets than non-bailout firms. In contrast, bailout firms have larger cash/assets than no-bailout firms.

**Table 4: Summary Statistics - Full Sample**

| | Bailout | | | No Bailout | | | Difference |
|---|---|---|---|---|---|---|---|
| | Mean | Median | N | Mean | Median | N | Mean |
| Bailout Amount | 31 | 1 | 579 | 0 | 0 | 6,529 | 31*** |
| Bailout/Emp | 22 | 16 | 557 | 0 | 0 | 5,304 | 22*** |
| Market Cap | 286 | 29 | 564 | 6,432 | 539 | 6,182 | -6,146*** |
| Book Assets | 537 | 30 | 579 | 11,696 | 827 | 6,529 | -11,158*** |
| Sales | 389 | 19 | 578 | 3,732 | 294 | 6,488 | -3,343*** |
| Employees | 1,090 | 73 | 559 | 11,068 | 1,039 | 5,501 | -9,978*** |
| Firm Age | 17 | 13 | 577 | 19 | 14 | 6,521 | -2** |
| Crisis Return | -35 | -40 | 566 | -38 | -39 | 6,199 | 3*** |
| Payouts | 103 | -3 | 398 | 1,043 | 11 | 4,856 | -939*** |
| Payout Ratio | 68 | 21 | 111 | 52 | 51 | 3,175 | 16 |
| Tobin's Q | 615 | 155 | 564 | 557 | 135 | 6,159 | 58 |
| Book Leverage | 165 | 58 | 579 | 108 | 59 | 6,504 | 58*** |
| Market Leverage | 40 | 37 | 564 | 41 | 37 | 6,173 | -1 |
| Sales Growth | 29 | 2 | 513 | 18 | 5 | 5,517 | 11*** |
| EBITDA/Assets | -66 | -13 | 573 | -28 | 5 | 6,256 | -37*** |
| Capex/Assets | 3 | 1 | 577 | 4 | 2 | 6,423 | -1*** |
| R&D/Assets | 34 | 13 | 378 | 15 | 4 | 2,813 | 18*** |
| Cash/Assets | 25 | 14 | 579 | 21 | 8 | 6,513 | 4*** |
| Quick Ratio | 203 | 104 | 556 | 301 | 125 | 5,240 | -97*** |
| ETR Pre-2018 | 32 | 23 | 185 | 26 | 23 | 3,864 | 6*** |
| ETR Post 2017 | 16 | 4 | 153 | 20 | 16 | 3,771 | -4** |
| Lobbying Amount | 271 | 0 | 579 | 1,146 | 0 | 6,529 | -875*** |

This table provides summary statistics for firms based on whether they received a bailout. All variables are defined in Table 2. Accounting dollar figures and *Bailout Amount* are in millions. *Bailout/Emp* and *Lobbying Amount* are in thousands. Ratios are multiplied by 100 for presentation purposes. ***, ** and * denote 1%, 5% and 10% significance levels.

*Summary Statistics of High Payout Firms*

We also provide summary statistics on bailouts for subsets of firms. First, some bailout recipients made risky financial decisions. In particular, 66 firms paid out more in dividends and net repurchases from 2015-2019 than they received in bailouts (see Table 5). These high-payout firms are somewhat different than the typical bailout recipient; they are older, larger, profitable, and have low levels of R&D. For the high-payout group, the median aggregate

payouts from 2015-2019 is $18 million and the median bailout is $2 million, which implies that they could have easily produced the amount of the bailouts internally by withholding payouts. The mean and median payout ratio for the high payout firms are 142 and 81. Thus, instead of suffering for potentially reckless past behavior, these firms are helped at the taxpayer's expense, thereby potentially inducing future moral hazard problems.

**Table 5: Summary Statistics - High Payout, High Cash, and Low EBITDA**

| | High Payout | | | High Cash | | | Low EBITDA | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | Median | N | Mean | Median | N | Mean | Median | N |
| Bailout Amount | 242 | 2 | 66 | 21 | 1 | 437 | 1 | 1 | 279 |
| Bailout/Emp | 15 | 15 | 65 | 20 | 17 | 426 | 24 | 19 | 264 |
| Market Cap | 2,021 | 64 | 62 | 246 | 34 | 427 | 57 | 25 | 275 |
| Book Assets | 3,929 | 98 | 66 | 392 | 33 | 437 | 39 | 15 | 279 |
| Sales | 2,883 | 76 | 66 | 274 | 19 | 436 | 23 | 5 | 279 |
| Employees | 7,246 | 197 | 65 | 782 | 67 | 428 | 99 | 38 | 265 |
| Firm Age | 28 | 24 | 66 | 17 | 14 | 436 | 13 | 9 | 279 |
| Crisis Return | -41 | -41 | 62 | -37 | -41 | 428 | -31 | -39 | 277 |
| Payouts | 767 | 18 | 66 | 51 | -4 | 301 | -43 | -21 | 175 |
| Payout Ratio | 142 | 81 | 45 | 80 | 25 | 83 | 290 | 111 | 3 |
| Tobin's Q | 143 | 119 | 62 | 451 | 155 | 427 | 974 | 248 | 275 |
| Book Leverage | 46 | 42 | 66 | 110 | 52 | 437 | 242 | 68 | 279 |
| Market Leverage | 42 | 40 | 62 | 36 | 33 | 427 | 36 | 31 | 275 |
| Sales Growth | 5 | 1 | 66 | 31 | 2 | 382 | 48 | 0 | 228 |
| EBITDA/Assets | 4 | 5 | 65 | -54 | -13 | 431 | -120 | -55 | 279 |
| Capex/Assets | 3 | 2 | 66 | 3 | 1 | 435 | 2 | 1 | 278 |
| R&D/Assets | 6 | 3 | 26 | 32 | 14 | 308 | 49 | 24 | 224 |
| Cash/Assets | 22 | 16 | 66 | 31 | 23 | 437 | 33 | 25 | 279 |
| Quick Ratio | 318 | 165 | 60 | 254 | 139 | 415 | 225 | 94 | 276 |
| ETR Pre-2018 | 27 | 25 | 47 | 35 | 25 | 136 | 37 | 15 | 16 |
| ETR Post 2017 | 20 | 12 | 41 | 18 | 5 | 111 | 2 | 0 | 8 |
| Lobbying Amount | 1,964 | 0 | 66 | 196 | 0 | 437 | 46 | 0 | 279 |

This table provides summary statistics for three groups of bailout firms. *High Payout* includes firms where *Payouts* > *Bailout Amount*, *High Cash* includes firms with 2019 cash and cash equivalents greater than the bailout amount, and *Low EBITDA* includes firms with a negative EBITDA in each year from 2017-2019. All variables are defined in Table 2. Accounting dollar figures and *Bailout Amount* are in millions. *Bailout/Emp* and *Lobbying Amount* are in thousands. Ratios are multiplied by 100 for presentation purposes.

*Summary Statistics of High Cash Firms*

Second, we identify 437 "high cash" firms that had more cash and cash equivalents at the end of 2019 than they received in bailouts (see Table 5). Since the majority of bailout firms are high-cash firms, their characteristics are similar to the overall sample of bailout firms; they are small, liquid, and unprofitable on average. For the high-cash group, the median cash holdings are $23 million, while the median bailout is $1 million, implying that the bailouts are small compared to the cash holdings of these firms. As a result, the bailouts are likely a windfall for the high-cash firms that may have been capable of producing these funds internally.

*Summary Statistics of Firms with Persistent Negative Cash Flow*

Third, we investigate firms with a persistent negative cash flow (Table 5), which we define as a negative EBITDA in each of 2017, 2018, and 2019. 279 such firms received a bailout, with the mean and median EBITDA/Assets being -120% and -55%. The mean and median Tobin's Q of these firms are 9.74 and 2.48. The average book leverage of these firms is a very high 242%, while the average market leverage is only 36%. The mean and median R&D over assets of these bailout firms are 49% and 24%, respectively, while the mean and median cash over assets are 33% and 25%. 84 of the 279 "windfall" bailout firms with a negative EBITDA for three consecutive years are pharmaceutical and biotechnology firms, which are likely in the initial stages of developing new healthcare innovations–validating our proxy. In unreported results, we find that the second largest lender by loan value to publicly listed PPP recipients is Silicon Valley Bank, a bank based in Silicon Valley that focuses on start-ups. Silicon Valley Bank is the PPP lender to 32 publicly listed firms with non-missing EBITDA from 2017-2019, of which 26 are classified as having a persistent negative EBITDA. In addition, the firm age of negative EBITDA firms is clearly lower than for the average and median no-bailout firm in the sample. Overall, these numbers suggest that a large fraction of the firms that received bailouts appear to be start-up like firms that would have been unprofitable in 2020 absent COVID-19, so these bailouts might be a windfall for these firms.

*Summary Statistics of Large Firms*

Fourth, many of the recipients of the bailouts are quite large. Hadlock and Pierce (2010) document that firm size is a powerful proxy for financial constraints. This suggests that many of these firms might have been able to raise additional financing on the capital markets without a bailout, but at the cost of diluting or potentially even wiping out their existing shareholders and creditors. In particular, 104 firms with a market cap of at least $100 million at the end of 2019 received a median bailout of $4 million (see Table C2). The average Tobin's Q, market leverage, and cash/assets of these firms are 6.40, 31%, and 22%, respectively.

*Summary Statistics by 500 Employee Cutoff*

Fifth, we split the sample into those above and below the 500 employee cutoff in Table C3 since this cutoff was one focus of the policy debate on the PPP bailouts (see Section 2 for a discussion of eligibility rules). We only include bailouts from the PPP for this analysis. There are 52 bailout firms with more than 500 employees and 495 with at most 500 employees at the end of 2019. The average market capitalization, sales, and number of employees for a recipient of the PPP funds with more than 500 employees are $99 million, $273 million, and 1,683. Bailout firms with more than 500 employees have high market leverage (the median is 61%) and low liquidity (median cash/assets 6% and Quick Ratio 0.89). Bailing out these firms could imply that firms that deliberately took high risk before the crisis are now saved by the taxpayer.

## 4.2 Regression Analysis

Next, we employ a regression analysis of the bailout data. To make the sample more homogeneous, we restrict the sample to publicly listed firms with at most 500 employees that did not receive an airline bailout. We analyze the determinants of the bailout probability in models 1-3 using OLS, and the bailout magnitude in models 4-6 using Tobit. These are cross-sectional regressions at the firm level. Industry fixed effects using three digit SIC codes are included in all models.

**Table 6: Bailout Determinants**

| | Dep Var: Bailout Dummy | | | Dep Var: ln(Bailout Amount) | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| ln(Book Assets) | -4.34*** | -9.09*** | -9.20*** | -0.13*** | -0.33*** | -0.34*** |
| | (0.49) | (0.90) | (0.92) | (0.02) | (0.04) | (0.04) |
| Firm Age | 0.31*** | 0.27*** | 0.33*** | 0.01*** | 0.01*** | 0.01*** |
| | (0.07) | (0.08) | (0.08) | (0.00) | (0.00) | (0.00) |
| $\mathbb{1}$(Total Debt$>0$) | 7.27*** | 5.36 | 3.92 | 0.31*** | 0.16 | 0.11 |
| | (2.26) | (3.31) | (3.43) | (0.11) | (0.13) | (0.13) |
| Book Leverage | -0.49 | 0.32 | 0.24 | -0.03** | 0.03* | 0.04** |
| | (0.36) | (0.64) | (0.52) | (0.01) | (0.02) | (0.02) |
| Cash/Assets | -23.21*** | -18.02*** | -18.74*** | -0.97*** | -0.60*** | -0.60*** |
| | (3.45) | (4.78) | (4.88) | (0.13) | (0.17) | (0.17) |
| Capex/Assets | -14.05 | -18.52 | -16.35 | -0.31 | -0.19 | -0.04 |
| | (14.29) | (16.91) | (17.58) | (0.71) | (0.84) | (0.86) |
| EBITDA/Assets | 1.69* | 0.35 | | 0.04 | -0.05 | |
| | (0.92) | (1.67) | | (0.03) | (0.05) | |
| $\mathbb{1}$(3-Yr EBITDA $<0$) | | | 8.18*** | | | 0.27*** |
| | | | (2.97) | | | (0.10) |
| Tobin's Q | | -0.40*** | -0.43*** | | -0.04*** | -0.04*** |
| | | (0.05) | (0.05) | | (0.01) | (0.01) |
| ln(Sales) | | 3.05*** | 3.86*** | | 0.16*** | 0.18*** |
| | | (0.69) | (0.74) | | (0.03) | (0.03) |
| Crisis Return | | -11.14** | -9.46** | | -0.59*** | -0.55*** |
| | | (4.34) | (4.40) | | (0.17) | (0.17) |
| $\mathbb{1}$(Lobbying Amount$>0$) | 6.92*** | 6.98** | 6.55** | 0.34*** | 0.29*** | 0.29** |
| | (2.65) | (2.92) | (2.97) | (0.10) | (0.11) | (0.11) |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Estimation Method | OLS | OLS | OLS | Tobit | Tobit | Tobit |
| Bailout Prob. | 18.73 | 21.07 | 21.04 | | | |
| N | 2,493 | 1,922 | 1,868 | 2,544 | 1,972 | 1,916 |
| Adjusted $R^2$ | 0.212 | 0.250 | 0.259 | | | |
| Pseudo $R^2$ | | | | 0.230 | 0.262 | 0.268 |

This table analyzes the determinants of the incidence (using OLS) and magnitude (using Tobit) of the bailouts using cross-sectional regressions at the firm-level. In the first three specifications, the dependent variable is *Bailout Dummy* (100 or 0). In models 4-6, the dependent variable is *ln(Bailout Amount)*. The sample includes firms with at most 500 employees that did not receive an airline bailout. All variables are defined in Table 2. *Industry FE* refers to three digit SIC code fixed effects. Heteroskedasticity robust standard errors are reported in parentheses. ***, ** and * denote 1%, 5% and 10% significance levels.

Firms with lower levels of assets and higher sales are more likely to be bailed out and tend to receive a greater bailout amount. Firm age has a positive effect on the bailout likelihood and amount, a surprising result given that firm age is regarded as a proxy for financial constraints (Hadlock and Pierce, 2010). Reassuringly, crisis return[5] has a negative and significant effect on the likelihood of receiving a bailout, implying that firms more affected by the crisis are more likely to receive a bailout. In addition, cash over assets is negatively associated with the bailout likelihood and amount. The negative and significant estimate for Tobin's Q suggests that firms with a higher Tobin's Q might be better able to raise financing without government support. Past lobbying has a positive and significant effect on the incidence and magnitude of the bailout. Firms that lobby might be experienced in navigating bureaucracy and red tape, and might therefore be in a better position to disentangle the frequently changing, opaque, and contradictory bailout rules.

The dummy for persistent negative EBITDA is positive and significant. For instance, in column 3 of Table 6, the results indicate that having a negative EBITDA in 2017, 2018, and 2019 increases the probability of receiving a bailout by 8.18 percentage points. Since the unconditional bailout likelihood is 21.04%, this is a quantitatively large effect. This supports our prior interpretation that a large fraction of the firms that received bailouts appear to be start-up firms that would have been unprofitable in 2020 absent COVID-19, so these bailouts might be a windfall for these firms.

## 4.3 *Discussion of Results*

*Interpretation of Results*

One limitation of our paper is that we cannot establish causality, so the results should be interpreted as suggestive evidence.

*Generalizability of Results to Privately Held Bailout Recipients*

In an ideal setting, one would conduct a firm-level analysis of the bailouts. This is not

[5]The crisis return is the return of a stock, including dividends, from February 19, 2020, when the S&P 500 hit an all-time high, to March 23, 2020, when the Federal Reserve announced emergency measures.

possible, however, since firm-level data is not available for privately held firms. Therefore, we focus on publicly listed US firms and combine this with detailed hand-collected bailout data from corporate filings with the Securities and Exchange Commission SEC. This raises the question: to what extent can our results be extrapolated to privately held firms? The average privately held bailout recipient will most likely be more financially constrained than the average publicly listed one. Therefore, the likelihood that a bailout of a privately held firm involves any of the documented "dark sides" of bailouts will be lower than for a publicly listed firm. However, because the vast majority of PPP bailout funds went to privately held firms, it is reasonable to assume that the "dark side" of the bailouts for privately held firms will be quantitatively large due to the sheer size of the private sector and the bailouts. There will be many large privately held firms that will not be financially constrained and do not need a bailout. Bailouts are also not conditioned on whether a firm was affected by the COVID-19 crisis, implying that bailouts have been given to firms that were not affected by the crisis or may even have benefited from it (e.g., software). In addition, the bailouts do not condition on whether a firm can survive the crisis without a bailout. Moreover, the risk for abuse or outright fraud with bailout funds for privately held firms is larger than for publicly listed firms due to the lower transparency and accountability to outside stakeholders.[6]

# 5 Policy Implications

One implication from the preceding subsection is that the payout of bailouts should have been conditioned on whether a firm has been affected by the COVID-19 crisis, by, for instance, comparing 2020 to 2019 revenue. This design flaw is one of the drivers of the "dark side" of the bailouts such as the windfalls that we have documented.

Since the main aim of the PPP is to protect employment, it is unclear why policymakers use firms as an intermediary in achieving this goal. A better approach could be one similar

[6]New York Times (2020): "Spotting $62 Million in Alleged P.P.P. Fraud Was the Easy Part", August 28, https://www.nytimes.com/2020/08/28/business/ppp-small-business-fraud-coronavirus.html?action=click&module=Top%20Stories&pgtype=Homepage (accessed September 13, 2020).

to the German "Kurzarbeitergeld," which is a wage subsidy scheme that allows companies to lower their operating costs by immediately reducing their payroll while maintaining employment (Möller, 2010). Importantly, this approach avoids using firms as intermediaries, and instead directly pays the employees.

The goal of the airline bailouts was to allow the industry to maintain employment at existing salary levels. This was generous, since the bailouts per employee for the airlines are more than 50% larger than for the PPP bailouts (Table 3), and since airline employees are better paid (median hourly wage of $30.04) than the majority of the labor force (median hourly wage of $19.14).[7] Moreover, airlines paid out more to shareholders in the last five years than they received in bailouts, suggesting that these bailouts might be inducing moral hazard by rewarding aggressive financial strategies. The airline bailouts are also expensive when compared to recent corporate income tax payments by the airlines. Delta, for instance, had a pre-tax income in 2019 of $5.7 billion, on which it received a tax refund of $95.00 million. The bailout Delta received was $3.8 billion, while its aggregate payouts to shareholders from 2015-2019 were $13.6 billion (see Panel C of Table 3 for data on all publicly listed US airlines). Thus, without the bailouts, many airline employees might have lost their jobs. In addition, few industries have undergone as many bankruptcies as the airlines– Delta, American, Southwest, and United (or their predecessors) went bankrupt 4.25 times on average since since the 1980s (see Table C4). In line with Morrison and Saavedra (2020), we argue that chapter 11 would have been an effective tool instead of bailouts to restructure the airlines.

Morrison and Saavedra (2020) argue that policymakers have minimized the role of bankruptcy law in mitigating the financial fallout from COVID-19. They suggest that Chapter 11 bankruptcy is an effective tool for dealing with the financial distress of large corporations during the COVID-19 crisis that should be used more often. Therefore, it seems plausible

[7]Bureau of Labour Statistics (2019): "National Occupational Employment and Wage Estimates United States", https://www.bls.gov/oes/current/oes_nat.htm#00-0000; https://www.bls.gov/oes/current/naics3_481000.htm#00-0000 (accessed September 13, 2020).

that, at least at the margin, corporate bankruptcies would have been an effective alternative to bailouts for airlines and other large firms, such as the bailout recipients with more than $100 million in market capitalization (see Table C2).

One difference between the current crisis and that of 2008/9 is that there seems to be a lack of fire sales of struggling companies or investments into such companies at fire-sale prices. Warren Buffett's Berkshire Hathaway, for instance, invested $5 billion in Goldman Sachs in September 2008 and $3 billion in General Electric in October 2008, while, Warren Buffett's firm has not undertaken any major investments during the COVID-19 crisis.[8] A key reason for the lack of fire sale acquisitions or investments at fire-sale prices is most likely that the bailouts have been so large in size that there are few profitable investment opportunities for private investors to purchase assets cheaply.[9] As a consequence, existing shareholders and creditors have been bailed out by taxpayers. Due to the severity of the current crisis, some bailouts likely would have been necessary to prevent the free-fall of the economy, but considering the evidence in Meier and Servaes (2019), private investors could have stepped in and taken care of some struggling companies in fire sales, with limited welfare implications for the rest of the economy.

# 6 Conclusion

We use hand-collected data to investigate the COVID-19 bailouts for all publicly listed US firms. We document a dark side of the bailouts. For many firms, the bailouts appear to be a windfall. Numerous bailout recipients made risky financial decisions, so bailing them out might induce moral hazard. The bailouts are expensive when compared to past corporate income tax payments of the bailout firms. We compute the number of years a bailout recipient has to pay corporate income tax to generate as much tax revenue as it received in

[8]Financial Times (2020): "Famed Investor Tells Virtual Annual Meeting Berkshire Hathaway Can Find Nothing to Buy", May 2, https://www.ft.com/content/4b707086-4b48-48ab-9369-a3fcf5dd1af3 (accessed September 13, 2020).

[9]Wall Street Journal (2020): "How Fed Intervention Saved Carnival", April 26, https://www.wsj.com/articles/how-fed-intervention-saved-carnival-11587920400 (accessed April 28, 2020).

bailouts: 135.0 years for the Paycheck Protection Program and 267.9 years for the airline bailouts.

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# For Online Publication

# Appendix to

# "The COVID-19 Bailouts"

# A Appendix: Further Institutional Details

## A.1 *Legislative History of Bailout Programs*

On March 25, 2020, the Senate passed the "Coronavirus Aid, Relief, and Economic Security Act" or the "CARES Act." The House agreed to the Senate amendment on March 27, 2020 and it was signed into law by the President on March 27, 2020. The overall volume of the CARES Act is approximately $2.1 trillion. The second wave of bailouts for the private sector from the federal government are included in the $484 billion "Paycheck Protection Program and Health Care Enhancement Act". It passed the Senate on April 21, 2020 and the House of Representatives on April 23, 2020, before it was signed into law by the President on April 24, 2020. The Paycheck Protection Program Flexibility Act (PPPFA) was passed by the House of Representatives on May 27, 2020 and the Senate approved it by unanimous consent on June 3, 2020. The president signed it into law on June 5, 2020. The PPPFA loosened many of the rules with regards to the PPP bailouts. On June 30, 2020, the PPP application deadline was extended from June 30, 2020 to August 8, 2020.

## A.2 *Eligibility for the Paycheck Protection Program*

A firm must meet at least one of the criteria to be eligible for a PPP bailout. First, as a rule of thumb, most firms with at most 500 employees are eligible for PPP funds.

Second, there are exceptions for all firms whose North American Industry Classification System (NAICS) code starts with 72, which includes hotels and restaurants. The FAQ discusses eligibility criteria for firms with separate locations and separate legal entities (even if these separate legal entities are affiliated with the same parent entity, including 100% ownership). If each location of a business with a NAICS code starting with 72 has at most 500 employees, such a business is also eligible for PPP funds. In addition, a NAICS 72-code-business is eligible for PPP funds if each separate legal entity (even if affiliated through 100% ownership) has at most 500 employees. NAICS 72-code-businesses are also eligible for PPP funds even if they have more than 500 employees in any particular location, as long

as these employees are employed by separate legal entities (even if affiliated through 100% ownership links) that each have at most 500 employees across all the locations in which a particular legal entity operates.

Third, the SBA has size cut-offs to determine whether a firm is eligible for SBA funding. The size cut-offs differ across NAICS codes and are either provided in the dollar amount of "annual receipts," the number of employees, or, in the case of financial institutions, in millions of assets. The largest values for "annual receipts," employees, and assets are $41.5 million (63 NAICS codes), 1,500 employees (44 NAICS codes) and $600 million of assets. We use the size cut-offs that the SBA provides on www.ecfr.gov/cgi-bin/text-idx?SID=b919ec8f32159d9edaaa36a7eaf6b695&mc=true&node=pt13.1.121&rgn (accessed June 4, 2020).

## A.3 COVID-19 Emergency Programs by the Federal Reserve

**Table A1: COVID-19 Emergency Programs by the Federal Reserve**

| Program | Size | Eligible Borrowers/Beneficiaries | Collateral/Assets | Bailout |
|---|---|---|---|---|
| Repurchase Operations. | 1,500 | 24 broker dealers in US government debt. | treasuries, agencies | |
| Swap Lines. | | Bank of England, Bank of Japan, European Central Bank, Bank of Canada, Swiss National Bank. | foreign currency | |
| Commercial Paper Funding Facility. | | US issuers of commercial paper rated at least A-1/P-1/F-1 by major nationally recognized statistical rating organization. | commercial paper | |
| Primary Dealer Credit Facility. | | 24 broker dealers in US government securities. | treasuries, agencies, corporate bonds, equities | |
| MMF Liquiditiy Facility. | | Depositories, bank holdings companies, US branches and agencies of foreign banks lending to prime money market mutual funds. | treasuries, agencies, commercial paper | |
| Swap Lines Extension. | | Central banks of Australia, Brazil, Denmark, South Korea, Mexico, Norway, New Zealand, Singapore, and Sweden. | foreign currency | |
| Term Asset-Backed Securities Loan Facility. | 100 | Companies with eligible collateral and account relationships with one of 24 primary broker dealers. | asset-backed securities | |
| Primary Market Corporate Credit Facility. | 500 | Investment grade US companies headquartered in US with material US operations. | corporate bonds, business loans | Yes |
| Secondary Market Corporate Credit Facility. | 250 | Investment grade US companies headquartered in the US with material US operations. | corporate bonds, ETFs | Indirect bailout |
| Foreign and International Monetary Authorities. | | Foreign central banks and monetary authorities with accounts at the New York Fed. | treasuries | |

**Table A1: COVID-19 Emergency Programs by the Federal Reserve (Continued)**

| Program | Size | Eligible Borrowers/Beneciaries | Collateral/Assets | Bailout |
|---|---|---|---|---|
| Municipal Liquidity Facility. | 500 | States (+ DC), counties with 500,000+ residents, cities with 250,000+ residents; direct borrowing from Fed. | muni bonds | Yes: States, counties, cities |
| Main Street New Loan Facility, Main Street Priority Loan Facility, Main Street Expanded Loan Facility. | 600 | Businesses with 15,000 employees or up to $5B sales; Fed will buy 95% of loans from lenders who retain 5%. | business loans | Yes |

This table lists major emergency programs by the Federal Reserve in response to the economic crisis caused by COVID-19. Size is the amount of the program in billions dollars. Bailout indicates a private sector bailout. The table is based on our modification, update, and extension of an article on the Columbia Law School's Blog on Corporations and the Capital Markets by Lev MenandLev Menand (2020): "Fed to the Rescue: Unprecedented Scope, Stretched Authority," April 27, https://clsbluesky.law.columbia.edu/2020/04/27/fed-to-the-rescue-unprecedented-scope-stretched-authority/ (accessed May 5, 2020).

# B Appendix: Additional Data Adjustments

## B.1 *Harbor Diversified, Inc*

Harbor Diversified, Inc, a holding company whose main operating subsidiary is Air Wisconsin, received both a PPP bailout of $10 million and an airline bailout of $41 million. This is the only company that we have found that has received bailouts from both programs. Since Harbor Diversified is an airline holding company, and since the airline bailout is larger than the PPP bailout, we simplify the analysis by considering the bailouts as a single $51 million airline bailout. When listed among the other airlines in Table 3, Panel C, we list the name of the operating subsidiary, Air Wisconsin, for the sake of simplicity and clarity. In addition, since 2018-2019 data is not available for this firm in Compustat, we manually fill in pre-tax income, taxes paid, and the number of employees using their 2019 10-K.

# C Appendix: Additional Tables

**Table C1: Industry Breakdown**

| | Overall | Bailout | No Bailout | Ratio |
|---|---|---|---|---|
| Pharmaceutical Products | 11.5 | 18.0 | 10.7 | 1.6 |
| Banking | 9.6 | 0.9 | 10.5 | 0.1 |
| Computer Software | 7.3 | 10.2 | 7.1 | 1.4 |
| Trading | 6.8 | 3.5 | 7.1 | 0.5 |
| Industrial Mining | 5.3 | 1.7 | 5.7 | 0.3 |
| Petroleum and Natural Gas | 5.0 | 4.3 | 5.0 | 0.9 |
| Precious Metals | 3.8 | 0.3 | 4.1 | 0.1 |
| Utilities | 3.5 | 0.3 | 3.9 | 0.1 |
| Electronic Equipment | 3.4 | 6.4 | 3.1 | 1.9 |
| Business Services | 3.2 | 5.0 | 3.0 | 1.6 |
| Retail | 2.9 | 1.2 | 3.1 | 0.4 |
| Medical Equipment | 2.8 | 7.8 | 2.2 | 2.8 |
| Transportation | 2.6 | 3.1 | 2.6 | 1.2 |
| Insurance | 2.2 | 0.3 | 2.4 | 0.2 |
| Wholesale | 2.2 | 2.9 | 2.1 | 1.3 |
| Communication | 2.1 | 1.6 | 2.2 | 0.7 |
| Machinery | 2.1 | 3.3 | 2.0 | 1.6 |
| Chemicals | 1.4 | 2.6 | 1.3 | 1.8 |
| Construction Materials | 1.4 | 1.2 | 1.4 | 0.9 |
| Real Estate | 1.2 | 0.9 | 1.2 | 0.7 |
| Restaurants, Hotels, Motels | 1.2 | 2.1 | 1.0 | 1.8 |
| Measuring and Control Equip. | 1.1 | 2.6 | 0.9 | 2.3 |
| Automobiles and Trucks | 1.2 | 2.1 | 1.1 | 1.8 |
| Food Products | 1.1 | 0.7 | 1.1 | 0.6 |
| Entertainment | 1.0 | 1.6 | 1.0 | 1.5 |
| Healthcare | 1.0 | 1.2 | 1.0 | 1.2 |
| Electrical Equipment | 0.9 | 2.8 | 0.8 | 3.0 |
| Personal Services | 0.9 | 0.2 | 1.0 | 0.2 |
| Construction | 0.8 | 0.7 | 0.8 | 0.9 |
| Computer Hardware | 0.8 | 1.4 | 0.7 | 1.8 |

This table provides a percentage breakdown of the Fama French 49 industries for all firms, those that received a bailout, and those that did not receive a bailout. In addition, the *Ratio* column divides the bailout percentage by the overall percentage. All firms with non-missing book assets in Compustat are included. Industry classification is as of 2019. Industries are sorted in descending order of their overall share among Compustat firms.

**Table C1: Industry Breakdown (Continued)**

| | Overall | Bailout | No Bailout | Ratio |
|---|---|---|---|---|
| Consumer Goods | 0.8 | 1.4 | 0.8 | 1.7 |
| Steel Works Etc | 0.7 | 0.7 | 0.8 | 0.9 |
| Apparel | 0.6 | 0.2 | 0.6 | 0.3 |
| Business Supplies | 0.6 | 0.0 | 0.6 | 0.0 |
| Recreation | 0.5 | 1.2 | 0.4 | 2.6 |
| Printing and Publishing | 0.4 | 0.0 | 0.4 | 0.0 |
| Rubber and Plastic Products | 0.4 | 0.5 | 0.4 | 1.3 |
| Aircraft | 0.3 | 0.3 | 0.3 | 1.0 |
| Beer & Liquor | 0.3 | 0.3 | 0.3 | 1.2 |
| Candy & Soda | 0.3 | 0.7 | 0.2 | 2.6 |
| Coal | 0.3 | 0.7 | 0.2 | 2.8 |
| Agriculture | 0.2 | 0.3 | 0.2 | 1.6 |
| Shipbuilding, Railroad Equip. | 0.2 | 0.3 | 0.2 | 2.1 |
| Shipping Containers | 0.2 | 0.0 | 0.2 | 0.0 |
| Fabricated Products | 0.2 | 0.0 | 0.2 | 0.0 |
| Textiles | 0.1 | 0.3 | 0.1 | 3.1 |
| Defense | 0.1 | 0.0 | 0.1 | 0.0 |
| Tobacco Products | 0.1 | 0.0 | 0.1 | 0.0 |
| Almost Nothing | 3.8 | 2.1 | 4.0 | 0.6 |

**Table C2: Summary Statistics - Market Capitalization**

| | Mean | Median | N |
|---|---|---|---|
| Bailout Amount | 162 | 4 | 104 |
| Bailout/Emp | 22 | 19 | 102 |
| Market Cap | 1,423 | 217 | 104 |
| Book Assets | 2,653 | 171 | 104 |
| Sales | 1,933 | 82 | 104 |
| Employees | 4,924 | 271 | 102 |
| Firm Age | 18 | 14 | 103 |
| Crisis Return | -46 | -50 | 104 |
| Payouts | 664 | -12 | 70 |
| Payout Ratio | 2 | 26 | 28 |
| Tobin's Q | 640 | 189 | 104 |
| Book Leverage | 85 | 53 | 104 |
| Market Leverage | 31 | 26 | 104 |
| Sales Growth | 53 | 6 | 92 |
| EBITDA/Assets | -32 | -4 | 102 |
| Capex/Assets | 4 | 2 | 104 |
| R&D/Assets | 23 | 13 | 63 |
| Cash/Assets | 22 | 12 | 104 |
| Quick Ratio | 230 | 104 | 100 |
| ETR Pre-2018 | 29 | 17 | 44 |
| ETR Post 2017 | 13 | 2 | 35 |
| Lobbying Amount | 1,392 | 0 | 104 |

This table provides summary statistics for firms with a market capitalization of at least $100 million. All variables are defined in Table 2. Accounting dollar figures and *Bailout Amount* are in millions. *Bailout/Emp* and *Lobbying Amount* are in thousands. Ratios are multiplied by 100 for presentation purposes.

**Table C3: Summary Statistics - Number of Employees**

| | Employees > 500 | | | Employees ≤ 500 | | |
|---|---|---|---|---|---|---|
| | Mean | Median | N | Mean | Median | N |
| Bailout Amount | 7 | 7 | 52 | 2 | 1 | 495 |
| Bailout/Emp | 7 | 7 | 52 | 23 | 17 | 493 |
| Market Cap | 99 | 62 | 52 | 64 | 27 | 482 |
| Book Assets | 238 | 193 | 52 | 86 | 24 | 495 |
| Sales | 273 | 198 | 52 | 41 | 14 | 494 |
| Employees | 1,683 | 894 | 52 | 105 | 57 | 495 |
| Firm Age | 23 | 24 | 52 | 16 | 13 | 493 |
| Crisis Return | -43 | -46 | 52 | -34 | -39 | 483 |
| Payouts | -10 | 0 | 42 | -23 | -4 | 335 |
| Payout Ratio | 9 | 12 | 17 | 86 | 14 | 82 |
| Tobin's Q | 121 | 105 | 52 | 642 | 170 | 482 |
| Book Leverage | 68 | 59 | 52 | 168 | 55 | 495 |
| Market Leverage | 63 | 61 | 52 | 37 | 33 | 482 |
| Sales Growth | 13 | 1 | 51 | 31 | 2 | 433 |
| EBITDA/Assets | 2 | 5 | 52 | -70 | -17 | 489 |
| Capex/Assets | 4 | 3 | 52 | 3 | 1 | 493 |
| R&D/Assets | 3 | 0 | 23 | 35 | 14 | 344 |
| Cash/Assets | 8 | 6 | 52 | 27 | 18 | 495 |
| Quick Ratio | 97 | 89 | 52 | 225 | 116 | 474 |
| ETR Pre-2018 | 41 | 36 | 28 | 33 | 23 | 144 |
| ETR Post 2017 | 33 | 18 | 21 | 14 | 3 | 119 |
| Lobbying Amount | 23 | 0 | 52 | 41 | 0 | 495 |

This table provides summary statistics for two groups of PPP bailout recipients based on the number of employees. All variables are defined in Table 2. Accounting dollar figures and *Bailout Amount* are in millions. *Bailout/Emp* and *Lobbying Amount* are in thousands. Ratios are multiplied by 100 for presentation purposes.

**Table C4: Bankruptcies by Publicly Listed US Airlines Since 1980**

| Airline | Predecessor | Date | Remarks |
|---|---|---|---|
| Delta | Pan Am | 1/8/1991 | Delta acquired Pan Am in 1991 |
| Delta | Northwest | 9/14/2005 | Delta acquired Northwest in 2008 |
| Delta | Comair | 9/14/2005 | Delta acquired Comair in 1999 |
| Delta | Pinnacle | 4/2/2012 | Emerged from bankruptcy as a subsidiary of Delta |
| United | | 12/9/2002 | |
| United | Pan Am | 1/8/1991 | Pan Am sold its Latin American and Caribbean Routes to United airlines in 1991 |
| United | Continental | 9/23/1983 | United acquired Continental in 2010 |
| United | Continental | 12/3/1990 | United acquired Continental in 2010 |
| American | Eastern | 3/9/1989 | American acquired Eastern in 1989 |
| American | TWA | 1/31/1992 | American acquired TWA in 2001 |
| American | TWA | 6/30/1995 | American acquired TWA in 2001 |
| American | TWA | 1/10/2001 | American acquired TWA in 2001 |
| American | US Airways | 8/11/2002 | US Airways and American merged in 2013 |
| American | US Airways | 9/12/2004 | US Airways and American merged in 2013 |
| American | | 11/29/2011 | |
| Southwest | ATA | 10/26/2004 | Southwest acquired ATA in 2008 |
| Southwest | ATA | 4/2/2008 | Southwest acquired ATA in 2008 |
| Hawaiian | | 9/1/1993 | |
| Hawaiian | | 3/1/2003 | |
| Allegiant | | 12/14/2000 | |
| Mesa | | 1/5/2010 | |
| Atlas | | 1/30/2004 | |
| Atlas | Southern | 9/28/2012 | Atlas acquired Southern in 2016 |

This table provides an overview of all bankruptcies since 1980 by all US airlines that were publicly listed as of the end of 2019. A predecessor is listed if it went bankrupt, otherwise, it was the airline in column 1 that went bankrupt.