Non-Information Asymmetry Benefits of Relationship Lending*

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Abstract

Prior studies focus on information asymmetry as the primary source of relationship lending benefits. This study assesses the benefits of relationship lending in the Paycheck Protection Program (PPP), wherein loan credit risk plays nearly no role in the lending decision. Relationship firms, those that receive PPP loans from lenders with whom they have a past relationship, receive economically significantly larger loans and faster approvals than transaction firms, those without such relationships. PPP lenders tend to prioritize relationship firms mainly due to concerns arising from the increased risk of default associated with borrowers' pre-crisis debt—in line with evergreening motivation. However, these benefits come with costs. Firms are more likely to violate the program's rules when a relationship exists.

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1 Introduction

Traditionally, the literature on financial intermediation has focused on the role of banks as relationship lenders to solve problems regarding asymmetric information through monitoring (Diamond (1984)) or screening (Ramakrishnan and Thakor (1984)). Banks invest resources in screening to prevent lending to low-quality borrowers (adverse selection) and in monitoring clients' incentives to invest suboptimally (moral hazard). As banks develop a closer relationship with firms, long-term access to information about borrowers' creditworthiness reduces screening and monitoring costs, which translates into benefits for both lenders and borrowers.[1] For borrowers, relationship lending is associated with lower spreads, larger loans, lower collateral requirements, and relaxed covenants, particularly for less transparent firms (Bharath, Dahiya, Saunders, and Srinivasan (2011), Cayseele and Degryse (2000), Prilmeier (2017), Cole (1998), and Petersen and Rajan (1994)). For lenders, the benefits include decreased operational costs and increased probability of future lending (Bharath, Dahiya, Saunders, and Srinivasan (2007)).

Little is known on whether relationship lending provides any benefits when information asymmetry about the loan's credit risk plays a minor role in the lending decision—likewise, the source of relationship lending benefits under a low information asymmetry environment. In this paper, I examine whether information asymmetry frictions are the only source of relationship lending benefits. To address these questions, I exploit a unique setting where all debt contracts, by law and regulation, are universal, carry an identical interest rate, are fully backed by the government, and borrowers have no commitment to collateral or other covenants. This is important as the different types of debt contracts, loan specifications, and borrowers' credit quality characteristics lead to challenging empirical examinations to control for a multitude of factors that may affect relationship lending effects on variables of interest. Moreover, as the loans in this setting are fully backed by the Federal Reserve, there is little information asymmetry about the credit risk of the loan, which allows the examination of whether information asymmetry is the only source of relationship lending benefits and the identification of other forces that may create these benefits. Therefore,

[1] While relationship lending involves the use of proprietary borrower-specific information, to evaluate borrowers' credit quality (Boot (2000)), one-time lending is less informationally intense (Boot and Thakor (2000)).

the differences in outcomes for loans granted by the same lender can be clearly attributed to the variation in relationship lending.

The largest economic stimulus package in the history of the United States, the Paycheck Protection Program (PPP), was designed by Congress as part of the CARES Act to help small businesses cover payroll and other costs during the coronavirus pandemic.[2] To participate in the program, firms were required to have less than 500 employees, to sign a statement of good faith indicating that the firm had no other resources in place for covering payroll costs, and to indicate whether the firm intended to request loan forgiveness.[3] The PPP loan was fully backed by the Federal Reserve through agreements between banks and the Small Business Administration (SBA). After a firm requested the PPP loan through a bank branch, the bank sent the documents to the SBA for approval. Neither collateral nor covenants were required from firms to access these funds. Full repayment had to occur within two years of the loan date, with a six-month deferral period for the first payment. The interest rate was 1.0% and interest started to accrue from the date the loan was disbursed. As a result, following overwhelming demand, roughly half of the credit was exhausted within the first weeks of the program. The program allocated about 525 billion dollars from April to August 2020, and assisted over half a million small businesses across the country.[4]

Ex ante, it is unclear how a lender-borrower relationship might affect lending in this setting. On the one hand, lenders have incentives to prioritize relationship borrowers either because they value the relationship, as it may provide future opportunities, or because they are concerned with customers' default risk on existing loans. On the other hand, relationships may not be sustainable when alternative sources of funding are available to borrowers (Rajan (1992)). Less informed, first-time (i.e., no previous relationship before the PPP loan) lenders may take advantage of the

[2]The Coronavirus Aid, Relief, and Economic Security Act, also known as the CARES Act, was a $2.2 trillion economic stimulus bill passed by the 116th U.S. Congress and signed into law by President Donald Trump on March 27, 2020 in response to the economic fallout of the COVID-19 pandemic in the United States.

[3]This paper covers PPP loans obtained in the first and second rounds of the program. The third round, authorized by the passage of the Consolidated Appropriations Act, 2021 (H.R. 133) into law on Dec. 27, 2020, is not the object of this study.

[4]The PPP program was due to expire at midnight on June 30, 2020, but just hours before expiration, the Congress authorized an extension through August 8. See the full report at https://www.sba.gov/funding-programs/loans/coronavirus-relief-options/paycheck-protection-program#section-header-0.

PPP loan structure, which limits the information that the lenders may obtain from borrowers, to poach clients from other banks.[5] Hence, the advantage that informed (relationship) lenders have regarding borrowers' credit quality becomes irrelevant under this program. Therefore, whether lenders prioritize relationship firms is an empirical question.

To examine this question, I analyze a sample of public firms and complement it with an additional analysis of a sample of private firms for which data availability is limited. Under PPP loan rules and regulations, the only characteristic that should affect PPP loan size is borrowers' payroll size. Nevertheless, I find that relationship lending positively affects PPP loan size across several specifications. This effect is robust to heterogeneity in borrowers' and lenders' characteristics, to exchange-listing composition effects, and to matched samples. An additional benefit is that relationship lending borrowers (hereafter relationship firms) receive loan approvals about four days earlier than first-time borrowers (hereafter transaction firms), on average. Four days early is economically significant as the initial funds allocated to this program were exhausted in just two weeks. Moreover, during a crisis the velocity at which firms access emergency funds is key to preventing an extremely negative credit event. During this period, 42 firms in the sample had a negative credit event such as delisting, filing for bankruptcy, or announcing breach of covenants. These results suggest that information asymmetry is not the only source of relationship lending benefits.

Since information asymmetries play a minor role under the PPP program structure, I turn to examine alternative channels through which relationship lending creates potential benefits. A possible benefit is that lenders who have already established a relationship with borrowers from previous interactions have an easier time filling in their PPP application and, therefore, SBA approval of these applications is faster. However, this possibility does not explain the variation found with respect to the bigger loans granted to relationship firms. An alternative motivation benefit of relationship lending is that lenders prioritize relationship firms due to concerns that they will default on their pre-crisis outstanding debt. This assumption is supported in the extant evergreen lending

[5]Excerpts from conference calls suggest that lenders seized opportunities to attract new customers during the crisis.

literature (e.g., Caballero, Hoshi, and Kashyap (2008), Giannetti and Simonov (2013), Schivardi, Sette, and Tabellini (2017), Storz, Koetter, Setzer, and Westphal (2017), Adalet McGowan and Millot (2018)), Blattner, Farinha, and Rebelo (2019), Anderson, Riley, and Young (2019) and Acharya, Crosignani, Eisert, and Eufinger (2020)). The evergreening argument states that lenders have incentives to extend loans to problematic borrowers in order to prevent default. Lenders do so if the internalized costs of extended loans are lower than the expected costs associated with borrowers' liquidation. Since PPP loans mitigate lending risks by transferring borrowers' default costs from lenders to the Federal Reserve, the propensity to subsidize indebted firms may be aggravated by moral hazard incentives (e.g., Mailath and Mester (1994), Dam and Koetter (2012), and Fischer, Hainz, Rocholl, and Steffen (2014)).

To test the evergreening argument, I conduct the following examinations. First, the effects of deposit accounts and lending accounts are separated to isolate an alternative channel through which banks may favor potential clients for future business opportunities (e.g., Bolton, Freixas, Gambacorta, and Mistrulli (2016)). I find that lending accounts are responsible for most of the documented benefits. Deposit accounts also have relationship effects; however, the magnitude of the coefficient is smaller.[6] Additionally, comparing PPP firms' pre-loan credit quality and profitability to their respective non-PPP peers and industry, I find that PPP firms were significantly operationally weaker and riskier than their peers already in the pre-crisis period. This result suggests that future business opportunities are unlikely to drive lenders' favoritism. Finally, I examine the evolution of probabilities of default between firms' relationship types and for the period before and during the crisis. PPP firms are subject to significant deterioration in their credit quality, with relationship firms exhibiting a higher probability of defaulting than transaction firms. Altogether, this evidence supports the assumption that, in the absence of asymmetric information effects, lenders go to great lengths to help borrowers in mitigating default risk. However, unlike in traditional evergreen loans, where the extended loans come out of the lenders' own pocket, in PPP loans the evidence for this mechanism is unsettling. The reason is that the allocation of bailout

[6]This is the first time such a test has been conducted to the best of my knowledge.

loans to pre-crisis problematic borrowers not only mitigates lenders' concerns with pre-crisis debt, but also shifts part of the default risk from the bank portfolio to the Federal Reserve balance sheet.

Furthering the understanding of lenders' potential evergreening motivations, I assess whether documented benefits come with costs by testing whether the likelihood of borrowers that do not comply with PPP program rules accessing funds is affected by relationship lending effects. I find that relationship firms are more likely than transaction firms not to comply with the program rules (i.e., to have more than 500 employees). This result is consistent with the notion that lenders are willing to go to great lengths for their relationship borrowers, even to the extent of approving loans that should not be approved. The costs associated with relationship lending are also incurred by the borrowers. Relationship firms, that turn out to be ineligible for PPP loans following new eligibility guidelines issued by the SBA, are more likely to return their loans or to do so earlier than transaction firms, perhaps because of shared reputation and litigation concerns.

To support the external validity of the main findings, I examine whether the results for a small sample of large public firms extends to a large sample of small private firms. Since information on approval time priority, compliance, and paybacks is not available for private firms, the analysis focuses exclusively on assessing relationship effects on loan size. The results for private firms not only confirm the findings for public firms, but they also show that the magnitude of the relationship lending effect is larger for small private firms than for large public firms. This finding corroborates with the strand of the literature on financial intermediation that asserts that relationship effects are more relevant for small firms due to the limited access to credit markets (Diamond (1991) and Petersen and Rajan (1994)).

This study contribution to the literature is threefold. First, it contributes to the vast literature on relationship lending. Prior studies show that relationship lending benefits both lenders and borrowers (Petersen and Rajan (1994), Cole (1998), Cayseele and Degryse (2000), Bharath et al. (2007), Bharath et al. (2011), and Prilmeier (2017)). For instance, Bolton et al. (2016) find that spreads on Italian banks' loans to small relationship borrowers decreased after the Lehman Brothers collapse.[7]

[7]See also Liberti and Sturgess (2016), Deyoung, Gron, Torna, and Winton (2015) and Beck, Degryse, De Haas, and van Horen (2018) for other considerations related to the impact of credit supply shocks on lending relationship.

This study adds to the literature by documenting larger loans and faster approvals of bailout loans' disbursement to relationship firms. In contrast to the literature, which usually focuses on the benefits of relationship lending (e.g., Rajan (1992)), this study also documents the costs. Perhaps more importantly, unlike in the literature, which views information asymmetry as the primary source of relationship lending benefits, this study demonstrates that relationship lending effects are persistent also in a low information asymmetry environment.

Second, this study documents evidence in line with the traditional evergreening mechanism, where lenders have incentives to prioritize relationship borrowers in order to capitalize costs associated with default. The extant literature suggests that lenders tend to keep unprofitable firms alive since letting them go bankrupt is costlier (e.g., due to insufficient or undervalued assets) than letting them default on short-term payments (e.g., Caballero et al. (2008), Giannetti and Simonov (2013), Adalet McGowan and Millot (2018), Schivardi et al. (2017), Storz et al. (2017), Blattner et al. (2019), Anderson et al. (2019) and Acharya et al. (2020)). Although this practice seems to be more commonly employed by undercapitalized banks, it tends to generalize to bailout programs (Acharya, Borchert, Jager, and Steffen (2021)), likely driven by moral hazard incentives arising from bailout expectations (Mailath and Mester (1994), Dam and Koetter (2012), and Fischer et al. (2014)). This study is the first to document evidence consistent with the prevalent use of the evergreening mechanism during the largest stimulus program in U.S. history.

Finally, this paper contributes to a nascent literature analyzing the effects of the Paycheck Protection Program. Cororaton and Rosen (2021) and Granja, Makridis, Yannelis, and Zwick (2021) analyze whether funds reach industries and places most affected by the COVID-19 crisis. Barraza, Rossi, and Yeager (2020), Bartik, Bertrand, Lin, Rothstein, and Unrath (2021), Humphries, Neilson, and Ulyssea (2020) and Papanikolaou and Schmidt (2021) analyze the impact of the program on labor markets. Li and Strahan (2021) find that relationship lenders help borrowers in their core markets to access program funds. Unlike these studies' focus on the distribution of funds and employment effects, this study exploits the PPP setting to examine the benefits and costs of relationship lending.

2 Institutional Background and Literature

2.1 The PPP Across U.S. Publicly Listed Firms

The Paycheck Protection Program (PPP) was established by the U.S. Congress to provide $349 billion in relief to small businesses through the CARES Act. The Small Business Administration (SBA) initiated the program on April 3, 2020. However, on April 16, 2020, the program ceased due to exhaustion of funds. Congress then provided an additional $310 billion to the PPP, and lending resumed in the last week of April. The second round brought the total funds available to $659 billion. As of August 2020, after the program officially ended, the SBA had disbursed 525 billion dollars appropriated by Congress for this program, with $134 billion, or 20 percent of PPP funds, remaining available to the program.[8]

The program was designed by Congress to assist businesses that had less than five hundred employees. However, some exceptions were made for businesses in the food and hospitality sectors. The reason is that these businesses have several multi-unit branches with usually less than 500 employees per unit. Other exceptions were also made for businesses with total assets of less than $15 million and after-tax income of no more than $5 million. Applicants to the program were required only to provide payroll information, to fill a PPP request form, and to fill a declaration of good faith. The lax requirements for PPP loans deviate from standard SBA loans in which borrowers also need to show that they cannot borrow from another source.

The typical PPP loan amount is 2.5 times larger than the borrower's average monthly payroll costs capped at 10 million dollars. The calculation is based on previous year average payroll costs excluding salaries above 100,000 dollars. Proceeds, in order to be forgiven, are allocated to payroll, rent, utilities, and interest on certain debts. There is no requirement to use a specified percentage of the funds for payroll costs. However, to be forgiven, at least 75 percent of the PPP loan proceeds should cover payroll costs. Additionally, the borrower has to keep payroll levels and not lay off employees to keep the eligibility for forgiveness. Full repayment must occur within two years of

[8]The paper analyzes the first and second rounds of the program. A third-round implemented in 2021 disbursed additional funds, but it is not the subject of this paper analysis.

the loan date and the first payment is deferred for six months. The interest rate is 1.0%, and interest accrues from the date of loan dispersal.

Table 1, Panel A, shows that about 1,000 publicly traded firms disclosed their participation in the PPP. The vast majority of these funds were distributed to firms listed in major U.S. stock exchanges: Amex, Nasdaq, and NYSE. The remainder went to borrowers listed in smaller exchanges or traded over the counter. Panel B reports the frequencies of loan amounts in U.S. dollars and the quantity of deals aggregated by the firm's state and industry.[9] The largest portion, in dollar terms, of PPP loans went to California, Texas, and New York State. Interestingly, California and New York State were the first two states to issue a stay-at-home order (on March 19 and 20 (2020), respectively). Also, the large distribution of funds to Texas does not come as a surprise given the slump in oil prices during the COVID-19 pandemic.[10] The panel also reports the distribution of funds by industry. *Retail*, *Health*, *Restaurant* and *Hospitality* receive almost half of the total loan amount. These industries are the most affected by the COVID-19 crisis due to restrictions on mobility and to the fact that many Americans decided to postpone non-emergency medical procedures. Interestingly, firms in the high-tech sector account for 1.5% of the total borrowers, but they received 7.5% of the total funding—taking that into perspective, the average loan size of a high-tech company is six times larger than the average loan size of a hospitality company.

Using public firms' filings with the SEC, I identify 187 lenders that distribute funds via the PPP. Panel C reports the percentage of funds distributed and deals originated by the top 20 lenders according to the percentage of funds distributed.[11] *JP Morgan* tops the list of PPP lenders for large public firms, accounting for 14% of dollars distributed and 8.23% of deals. Subsidiaries of foreign banks are also included among the top 20 lenders. For instance, *BMO*, a subsidiary of the *Bank of*

[9]Borrowers' state information is drawn from the firms' headquarters location, which in reality may not reflect the firms' locality of operations. The Fama–French 49 industry classification is used to assign the frequencies for dollars and quantities of loans.

[10]The distribution of funds by state for publicly traded firms is similar to the SBA's reported funds released in August 2020.

[11]For each lender, aggregated dollars and deals are reported as a percentage of the respective totals. Firms where the lender's name is not disclosed are excluded from this calculation. Undisclosed lenders account for about 30% of the distributed amount.

Montreal, accounts for 3.17% of dollars distributed and 2.74% of deals.[12] Finally, the presence of regional banks, such as *Bank of Florida*, highlights their importance in the distribution of funds in this program.

2.2 Related Literature

The benefits of relationship lending are well known in the literature. Cole (1998) finds that a potential lender is more likely to extend credit to a relationship firm regardless of the relationship length. Using SBA data, Petersen and Rajan (1994) find that a primary benefit of relationship lending is that the availability of financing increases. However, if the firm borrows from multiple lenders, there is an increase in prices and a reduction in the availability of credit. They conclude that relationships appear to operate through quantities rather than prices. Relationship lending is also associated with lower spreads, larger loans, lower collateral requirements, and relaxed covenants, particularly for less transparent firms (Cayseele and Degryse (2000), Bharath et al. (2011), and Prilmeier (2017)). Relationship lending is also associated with benefits for lenders, such as decreased operational costs and increased probability of future lending (Bharath et al. (2007)).

The costs of relationship lending are less understood. Rajan (1992) noted that although banks reduce agency costs for firms, in practice, firms tend to diversify away from bank financing even when banks are willing to lend more. Therefore, relationships may not be sustainable when alternative sources of funding are available to the borrowers. In times of crisis this issue is particularly important because economic stimulus (e.g., helicopter money) disrupts the informational advantage that relationship lenders have over other lenders.

The features of the PPP program mitigate the asymmetric information between borrowers and lenders. This setting stimulates less informed lenders to engage in a competition for new clients since PPP loans are backed by the government. Additionally, as lenders are also in a crisis, especially small and medium-sized lenders, they may aggressively seize the opportunity to increase

[12] Subsidiaries of banks from Chile, Spain, France, and the United Kingdom are also included in the list.

demand. The combination of the program design and lenders' appetite for new customers during a crisis makes it difficult to theoretically predict whether lenders prioritize borrowers during a crisis—a question empirically addressed in this study.

The empirical contribution to the study of the benefits and costs of relationship lending during times of crisis is quite limited. Bolton et al. (2016) conjecture that relationship banks gather information on their borrowers during non-crisis periods, which allows them to provide loans to profitable firms during a crisis. This conjecture is consistent with the idea that lenders tend to assist those borrowers that they foresee as potential clients for future business opportunities.

An alternative motivation for lenders to support relationship borrowers finds room in the evergreening argument. The argument suggests that lenders tend to keep unprofitable firms alive since letting them go bankrupt is costlier (e.g., due to insufficient or undervalued assets) than letting them default on short-term payments (e.g., Caballero et al. (2008), Giannetti and Simonov (2013), Adalet McGowan and Millot (2018)), Schivardi et al. (2017), Storz et al. (2017), Blattner et al. (2019), Anderson et al. (2019) and Acharya et al. (2020)). Evergreen lending may derive from moral hazard incentives from bailout expectations (Mailath and Mester (1994), Dam and Koetter (2012), Fischer et al. (2014)), and may lead to broader consequences such as the zombification of the economy (e.g., Borio and Hofmann (2017), and Banerjee and Hofmann (2018)).

This study is also part of a nascent literature exploring the PPP setting and deriving interesting insights into the effects of the program on the economy. Cororaton and Rosen (2021) and Granja et al. (2021) analyze whether PPP funds reach the industries and firms most affected by the crisis. Barraza et al. (2020), Bartik et al. (2021), Humphries et al. (2020) and Papanikolaou and Schmidt (2021) analyze the impact of the program on labor markets. Other papers focus on how the distribution of PPP funds is affected by policy considerations (Barr, Jackson, and Tahyar (2020) and Chetty, Friedman, Hendren, Stepner, and Team (2020)), and the role of fin-tech (Erel and Liebersohn (2021)), fraud (Beggs and Harvison (2021)), discrimination (Soucek (2020)), politics Duchin and Hackney (2021), and ethics (Packin (2020)) on funds distribution.[13]

[13]See also Meier and Smith (2020), Beylin (2020), Chodorow-Reich, Darmouni, Luck, and Plosser (2021), Jiang, Liu, and Seltzer (2020), Joaquim and Netto (2021) and Lu (2020).

A related study, Li and Strahan (2021), find that relationship lenders help small businesses to access program funds in their core markets. They suggest that lenders know their relationship borrowers from previous interactions and, therefore, have an easier time filling in their PPP application. Although this assumption may hold for small firms, it is unlikely to hold in this paper's sample for two reasons. First, in contrast to small firms' ties with mainly one bank, large listed firms likely have relationships with several banks. Second, this assumption does not explain the variation in bigger loans granted to relationship firms. Therefore, examining the economic channel through which lenders prioritize relationship firms is also part of this study contribution.

3 Sample Selection

Hundreds of large publicly traded firms disclosed PPP loans in 8K, 10Q, and 10K filings in 2020 and 2021. For each firm disclosure, a textual analysis algorithm extracts the loan amount, loan date, and lender name. PPP disclosures follow similar standards, which provide higher accuracy to this procedure. If no value is returned for the variables of interest, I check the problematic disclosures manually. However, not all disclosures are transparent. Some firms in the sample did not disclose the name of the PPP lender. For these firms, the PPP loan information is extracted from SBA database.

Firms in the sample vary in relationship intensity with their PPP lender. I classify firms into two categories: (i) lending, and (ii) transaction relationship. The first category is restricted to firms with only a lending relationship with their PPP lender. That is, the firm has a credit facility where the PPP lender is either the sole creditor or the leading agent in a syndicate. This category also includes firms with lines of credit, revolving facilities, and term loans, and it is restricted to lending relationships that existed in the past five years. The second category includes firms that had no previous lending relationship with their PPP lender. For this set of firms, the relationship between borrower and lender starts with the PPP loan. This category also includes firms that have

soft relationships, such as a escrow account or a deposit account with their PPP lender.[14]

To construct the lending relationship indicator (*REL*), I search the EDGAR database for the PPP lender's name within the firm's filings. For instance, on April 21, 2020, *Adma Biologics Inc* borrowed approximately $4.6 million from *JPMorgan Chase* in the form of a PPP loan. A search for the lender's name within the borrower's SEC files reveals that the borrower had a past relationship with this lender. More specifically, the company opened a deposit account on October 11, 2017 and closed the account on December 2, 2019. Since these events occurred before the PPP loan, I categorize this firm as a transaction firm. To determine whether a PPP borrower is a lending relationship firm, I check the most updated filings (five years before the PPP loan) for whether a line of credit or a term loan with its PPP lender exists. This approach approximates the one suggested by Bharath et al. (2011), with the exception that EDGAR is used instead of DealScan database.

Table 2 reports the summary statistics of key characteristics for relationship and transaction firms. A typical PPP loan for relationship firms is 2.21 million dollars larger than that of transaction firms and the loan is approved about four days earlier—measuring disbursement velocity as the distance in days between the loan request date and the loan disbursement date. At the same time, a relationship firm is more likely than a transaction firm to be noncompliant with PPP rules and regulations (i.e., to have more than 500 employees) and more likely to pay back the loan. The leverage, returns on equity, cash to assets, and probability of defaulting of relationship firms are not significantly different from those of transaction firms. Relationship firms are also bigger than transaction firms. On average, the former has twice as many employees as the latter. This large difference in payroll size does not translate to a large difference in market capitalization. On average, relationship firms have a larger market capitalization by about 38%.

[14] An additional category, Any relationship, is also constructed. This category includes firms with any relationship with their PPP lender, ranging from having a simple deposit account to a senior secured term loan. However, any relationship firms are merely used as a contrast to accentuate the incremental information value of relationship lending. See Appendix B for replicated analysis with Any category included.

4 Research Design

To examine whether having an ongoing relationship with a lender, as captured by the indicator variable REL, affects key outcomes of the PPP loan at the firm level, I conduct a multivariate regressions analysis based on the following specification:

$$Y = \alpha + \beta REL + \Lambda + \Phi + \tau + \upsilon + \psi + \epsilon, \tag{1}$$

where Y (i) the logarithm of loan size in dollars; (ii) the velocity measured as the distance in days between the loan request and loan disbursement dates; (iii) the noncompliance indicator that switches on when the borrower has more than 500 employees in its most recent fiscal year report from the pre-crisis period; and (iv) the loan payback indicator that switches on when the borrower repays the loan. The right-hand side of equation (1) contains the following variables: an intercept α; the relationship indicator REL_j; a vector of lender's controls Λ; a vector of borrower's controls Φ; an industry fixed effect τ; a state fixed effect υ; a bank fixed effect ψ; and an error term ϵ.

In line with the literature, I control for borrower characteristics by including profitability (return to equity), liquidity (cash scaled by assets), and leverage (total debt to total assets). In practice, PPP loans are determined by the number of employees. Therefore, all regressions have the logarithm of the borrower's payroll size (i.e., number of employees) as a control for loan size. This simple control replaces the contract-based controls commonly used in the literature, such as whether the type of loan is a line of credit, a revolving facility, or a term loan. Additionally, it also controls for the borrower's information environment because payroll size is highly correlated with firm assets, revenues, and market capitalization.[15] Moreover, there is no need to control for loan purpose as all loans are destined for payroll costs.

Lender-specific characteristics are controlled for by using (i) an indicator variable that takes a value of one if the lender is an experienced SBA lender, and (ii) an indicator variable that takes a value of one if the lender's parent firm is a foreign entity. While the first indicator captures the

[15] In an untabulated regression analysis, firm size works as a proxy for payroll size, generating similar control effects on PPP loans.

ability of a lender to use SBA systems and to meet small business demand, the second indicator captures the transparency of the lender to local markets, as foreign entities have more relaxed disclosure requirements than U.S.-based banks. Finally, since the severity of the COVID-19 crisis varies across industries and U.S. states due to different timings and degrees of lockdown measures, industry and state fixed effects are used to mitigate the influence of unobserved characteristics. Additionally, I follow Bolton et al. (2016) and include bank fixed effects to control for banks' unobserved heterogeneity.[16]

5 Results

5.1 The Benefits of Relationship Lending

The analysis starts by reporting the effect of relationship lending on loan size. Table 3 shows that after controlling for the number of employees and firm and bank characteristics, relationship borrowers receive about 25% more than no-relationship borrowers.[17] This difference is economically and statistically significant. In column (2), industry fixed effects are added; in column (3), both industry and state fixed effects are added; and in column (4), the regression is incremented with bank fixed effects. The addition of these controls slightly reduces the estimated value of the coefficient of REL, but the large gap, favoring relationship firms, remains significant. To conclude, the last column mimics the specifications of columns (3) but restricts the sample to the subset of firms listed in large exchanges. This robustness test serves to a purpose. It could be that composition effects are driving the results on the discrepancies between relationship and transaction firms in such a way that the former are listed on larger exchanges, while the latter are listed on smaller

[16]The assumption that the OLS regression model errors are independent seems to hold in the empirical analysis. The reason is that each firm is surveyed only once and, therefore, there is no serial correlation at the firm level. However, the precision of the estimates may likely be affected by correlated errors at the industry and state levels. Therefore, I run the same regressions with standard errors clustered in time and at the industry and state levels. The results of these regressions do not alter those presented in the paper.

[17]Inferences are identical when loan scaled by payroll size is used as the dependent variable, see Table 11.

exchanges. The test results are robust to this alternative explanation. Finally, firm and bank characteristics do not load in the regressions. This result is not surprising as the PPP loan is determined by the firm's payroll size by design.

In Table 4, the focus shift to the velocity at which loans are provided. During a liquidity crisis, promptly accessing emergency funds can be crucial for a firm's survival. A delay of a few days in the disbursement of funding can lead to drastic measures such as layoffs, breach of covenants, and filing for bankruptcy.[18] Columns (1) to (4) in Table 4 show that relationship firms receive funds about three to four days earlier than transaction firms.[19] Note that in all regressions the number of employees is only marginally important in determining the distance between the loan request date and the loan disbursement date. The These results remain unchanged for the robustness tests in column (5). Overall, the results suggest that relationship lending is important also when there is little information asymmetry, as it allows firms to receive larger funds in a timelier manner.

5.2 Why Do Lenders Prioritize Relationship Borrowers?

The motivation to prioritize relationship firms when asymmetric information on the loan is limited is not examined in the relationship lending literature. However, it is possible that such a motivation is consistent with findings from the evergreening literature if the source of this favoritism is lenders' concerns about borrowers' default risk on existing loans (e.g., Caballero et al. (2008), Giannetti and Simonov (2013), Adalet McGowan and Millot (2018)), Schivardi et al. (2017), Storz et al. (2017), Blattner et al. (2019), Anderson et al. (2019) and Acharya et al. (2020))). I examine the evergreening argument by conducting several tests related to variation in the borrowers' bank account type, credit quality, and default probability.

The analysis starts by separating the effects of deposit accounts and lending accounts on loan size and velocity in order to test which of the two accounts is driving most of the effects. Table

[18] In the sample, 42 firms indicated severe corporate actions such as delisting from an exchange, filing for chapter 11, or expressing breach of debt covenants at the time of writing.

[19] This result is especially important given that the first round of funding was exhausted in just a few days and it took over a week for the second round to begin (https://www.wsj.com/articles/funding-exhausted-for-350-billion-small-business-paycheck-protection-program-11587048384).

5 reports the results of this test. As observed by the separation indicators, lending accounts drive almost all documented effects. Deposit accounts also have an effect on loan size, but the coefficient is smaller and insignificant in more restrictive specifications (i.e., with fixed effects). The test provides initial evidence that lenders' concerns with borrowers' default risk on existing loans seem to dominate the motivation to prioritize relationship borrowers in times of crisis.

To deepen our understanding about lenders' motivation, I analyze PPP firms key characteristics in relation to matched peers and industry in the pre-crisis period. The goal of this test is to understand whether firm's operational performance and credit quality signal default risks to existing lenders. Table 6, Panel A, shows the mean peer-adjusted portfolio characteristics for firms in the pre-crisis period (according to the most recent fiscal year report from that period). The left-hand side of the table reports statistics on the entire sample of U.S. public firms. The PPP firms are significantly less profitable, smaller, and less liquid than the mean publicly listed firm. To mitigate concerns that discrepancies in firm characteristics are driving these results, I build a vector of non-PPP control firms matched by size, number of employees, and in the same industry as PPP firms.[20]

The right-hand side of the table reports results on the matched sample. These results confirm that PPP firms are significantly less profitable and are less liquid than their matched non-PPP peers. This suggests that relative to industry PPP peers and closest non-PPP peers, PPP firms were operationally weaker and in need of cash already in the pre-crisis period.

For robustness, I also compare firms in the PPP loan portfolio with their industry, as defined by the Fama–French 49 Industry classification. In so doing, I aim to mitigate concerns about selecting improper peers. To recapitulate, the focus is on profitability, operational efficiency, leverage, and liquidity ratios as these are likely to play a crucial role in credit analysis. Table 6, Panel C, reports these ratios for the top five lenders and the full-sample summary statistics.[21] Firms in the PPP loan portfolio perform worse than their FF49 industry-adjusted peers in profitability, operational

[20] See Table 6, Panel B, for propensity matching score results.

[21] Since the comparison is at the firm level, I am able to report the industry-adjusted coefficients also in the lenders' portfolio level.

efficiency, and liquidity ratios. Their return on equity and return on assets are 107 and 71 basis points lower than those of their industry peers, respectively. The net profit margin follows with negative 15 (521) basis points in median (mean) terms. In liquidity terms, PPP firms are 27, 84, and 564 basis points lower than their industry peers in their cash-to-assets ratio, quick ratio, and interest coverage ratio, respectively. The relatively lower quality of PPP firms is persistent even among large lenders such as *JP Morgan*, *Bank of America*, and *Wells Fargo*. As the aforementioned ratios are crucial for assessing the credit quality and future profitability of a firm, these firms are unlikely to have access to lenders' funds without placing large collateral, committing to strict covenants, and increasing the cost of borrowing.

The previous analysis shows that, compared to industry and closest peers, PPP firms have weaker operational performance and poorer credit quality. This result suggests that the existence of debt may have already been a burden for these firms' operational efficiency even before the crisis started. To analyze whether the credit quality of these firms deteriorated during the crisis, I now turn to assess the evolution of default probabilities.

I use the Merton distance-to-default (MDD) model to calculate the default probability of each firm in the lender's PPP portfolio. The model estimates the probability of default by comparing a firm's value to the face value of its debt. Since the market value of a levered firm is not observable, the model attempts to infer it from the market value of the firm's equity. If the firm's debt is treated as a single zero-coupon bond with maturity T, then the firm's equity becomes a call option on the firm value with a strike price equal to its debt.[22] More specifically, the distance to default is obtained in the following equation.

$$DD = \frac{ln\frac{V}{D} + (\mu + 0.5\sigma\frac{2}{V})t}{\sigma V * \sqrt{t}} \tag{2}$$

where V is the firm's assets, D is the firm's debt, σ is the standard deviation of stock returns, μ

[22] As an example, consider a firm at maturity: if the firm value is below the face value of the firm's debt then the equity holders will walk away and let the firm default. But if the firm value exceeds the face value of the debt, then the equity holders would want to exercise the option and collect the difference between the firm value and the debt.

is the firm's expected asset drift estimated in interactions with peers, and t is the period indicator. For simplicity, it is assumed that the expected frequency of default follows normal distribution.[23] Then, the probability of default is given by:

$$DD = \nu(-DD) \tag{3}$$

To mitigate the concern that, in a period of crisis, default probabilities tend to increase for all firms because of price decline and increased market volatility, I conduct a difference-in-differences analysis for firms in the PPP loan portfolio and their respective industry peers. Peers are obtained using the same approach to the peer-adjusted portfolio characteristics analysis explained earlier. Then, the probability of default of each peer is assigned as if they were part of the lender's portfolio. Finally, I extract the median probability of default in each lender's portfolio. I conduct this procedure both for December 2019 (pre-crisis) and for March 2020 (crisis).

Table 7, Panel A, shows the default risk evolution of firms in the PPP portfolio. The difference between the default risk for firms in the PPP loan portfolio and their non-PPP peers increased more than sixfold (in median terms) between December 19 and March 20, 2020. The difference-in-differences coefficient indicates that the probability of default is 6.60 percent higher for PPP firms than for non-PPP firms in median terms.[24] The same table also reports the probabilities of default between transaction and relationship firms. The difference in the probabilities of default between these groups before the crisis is not significant. However, as firms enter the crisis the probability of default of relationship firms becomes twice as high as the probability of default of transaction firms. The difference-in-differences coefficient indicates that relationship firms' probability of default is 3.87 percent higher than that of transactions firms. These results suggest that the probability of default of a firm in the PPP loan portfolio is relatively larger than that of a firm in the portfolio composed of industry peers. It also suggests that relationship firms are more likely to default during the crisis relative to transaction firms. Finally, the default risk evolution of

[23]This assumption is usually relaxed for simply rank-ordering firms for creditworthiness purposes. However, if default probabilities are to be taken without relative valuation, then more sophisticated methods are appropriate.

[24]The parallel assumption holds, see Table 7, Panel B.

these portfolios suggests that the market observes long-term deterioration of these firms' ability to repay debt.

Overall, these results suggest that lenders have incentives to mitigate relationship firms' increasing probabilities of default by prioritizing them in times of crisis. The evidence is consistent with the evergreening mechanism where banks keep unprofitable firms alive since letting them go bankrupt is costlier than letting them default on short-term payments.

5.3 The Costs of Relationship Lending

Despite the PPP program's focus on small businesses, the summary statistics in Table 2 show that larger public firms also participated in the program. Notoriously, several large firms, each with a market cap above 100 million dollars, were also granted PPP funds. For instance, *Shake Shack Inc.*, a firm with a 1.9 billion market capitalization, received a total of 19.8 million dollars from the program through its subsidiaries.

Technically, these firms should have been aware of their ineligibility to participate in the program and several firms decided to return the loans once further guidance was issued by the SBA. However, mounting publicly available information on large firms provides an interesting setting in which to examine relationship lending effects on the likelihood of compliance with the program. Evidently, the SBA would not approve requests by firms with over 500 employees at the subsidiary level; therefore, this exercise applies to the parent firm and the aggregated number of employees as indicated in the most recent fiscal year report from the pre-crisis period.

To test whether relationship lending has an effect on the probability of ineligible firms to request a PPP loan, I construct a noncompliance indicator that takes a value of one if the PPP borrower has more than 500 employees and zero otherwise. This indicator is then used in logit regressions with the same specification as in equation 1.

Columns (1) to (4) in Table 8 report that noncompliant firms are between 3 and 8 times more likely to receive PPP loans when a lending relationship exists. The likelihood remains at similar level for the subset of firms listed on large exchanges. This evidence suggests that lenders are

willing to go great lengths to help relationship borrowers—even at the cost of approving loans that should not be approved.

I now turn to examine the interplay between the lender relationship and the likelihood of ineligible firms paying back PPP loans. It may be conjectured that an ineligible borrower will return the loan earlier if it realizes the litigation and reputation risks associated with these loans.[25] As a remedy for negative publicity, some ineligible firms voluntarily announced that they would return the loan. Other firms stated that their board decided that these loans better serve smaller businesses. Still other firms stated that their subsidiaries took the initiative and the parent firm ruled to return the loan in full. Furthermore, on April 23, 2020, the SBA issued new guidelines requesting paybacks from large firms. The new guidelines stated that borrowers must make a declaration of good faith, taking into account current business activity and their ability to access other sources of liquidity sufficient to support their ongoing operations in a manner that is not significantly detrimental to the business. Following the issuance of the new guidelines, several large firms started returning these loans. Seventy-four firms (8%) in the sample returned the loan. Of these, 9 firms returned loans before the guidelines were issued, 48 firms returned loans in the window between the SBA announcement and the last day of the grace period, and 32 firms returned loans after the grace period.

The fact that not all firms returned the loan may say something about those firms that did return it. It could be that firms that returned the loan were concerned with remaining on good terms with their lender as their lender also shares the litigation and reputation risks, perhaps on an even larger scale than the firm. If this is the case, then returning the loan earlier may be associated with the costs of the lender relationship. The results in columns (1) to (4) in Table 9 provide some support for this hypothesis. Relationship firms are about twice as likely to return PPP loans as transaction firms, even after controling for noncompliant firms. However, this relation weakens for firms listed in the large exchange subset.

[25]Consistent with that conjecture, untabulated results show that the average cumulative abnormal return in the window [-1,+1] for large (small) firms is negative 3.71% (positive 2.91%). The t-statistic for large firms is 2.92 while for small firms it is 2.73. The results are market-adjusted with an estimated window of 120 days ending ten days before the event.

6 Additional Tests

6.1 External Validity

In August 2020, the Small Business Administration (SBA) released PPP loan data at the firm level. The data contain some key information about the firm and loan characteristics, such as loan size range, firm and lender name, state, NAIC code, and reported number of employees.[26] I use this information to assess whether the results obtained for small sample of large publicly traded firms also hold for a large sample of small private firms. Because SBA data at the firm level disclose the loan range instead of the exact amount provided, I adjust it as follows. The difference between the maximum and minimum loan range is divide it by 500, and then multiply it by the number of jobs reported. Since each loan range category starts with a minimum loan equal to the minimum range, the minimum is also added. For instance, assume a firm is located in the 1M–2M range and reports 100 jobs. Then, the adjusted loan size is 1M + (2M-1M)/500 * 100 = 1.2M. Alternative measures are also tested, such as taking the maximum range, minimum range, or mean range as the loan amount. All measures generate similar results.[27]

To check whether a private firm has a past relationship with its PPP lender, I match the SBA data to DealScan data. After parsing for inconsistencies in the firm's name, I am able to identify 4,273 firms with a transaction relationship (e.g., having a term loan with a non-PPP lender) and 241 firms with a lending relationship (e.g., having a term loan with a PPP lender). Since the disclosed data is sizable (over a half million observations), I match these firms to firms in which there is no matching with the DealScan dataset. It cannot be ensured that the control group indeed has no relationship with its PPP lender as DealScan does not contain data for all U.S. private firms. Additionally, matching mistakes for firms in the DealScan dataset may introduce noise. Therefore, the procedure helps to mitigate issues arising from selection bias. Finally, because the SBA data neither discloses the date of the loan request nor whether these firms paid back the loan, the scope

[26] CEO fixed effects, such as ethnicity, gender, and whether the CEO is a veteran, are also reported.

[27] The SBA recently changed the loan amount variable from range to approximated value; the results also hold under the new specification.

of the analysis of private firms is limited to inferences about relationship effects on loan size.

Table 10 reports results for regressions of the indicator variable *REL* on loan size. Columns (1) to (4) report results for whether the private firm borrowed from its PPP lender in the past. Relationship lending results into a larger loan size as observed by positively significant coefficients across all specifications. Loans for relationship firms are about three times larger than transaction firms. Furthermore, the coefficient of the lending relationship on loan size for private firms is larger than the coefficient for publicly traded firms. Besides providing robustness to the examination of publicly traded firms, this result also supports the relationship lending literature finding that relationship lending is more relevant for small firms. Column (5) reports results in similar specifications for the relationship coefficient reported in columns (1) to (4), but is restricted to a matched sample by industry, state, and payroll size. The results confirm the findings in the full sample. However, the coefficient reduces slightly. The latter suggests that matching mitigates concerns about selection bias related to firms with information available in the DealScan dataset.

6.2 Specification Issues

I identify two possible model specifications to which the results in this study may be sensitive. The first model specification issue relates to the fact that the $employees_{log}$ variable is highly positively correlated with $loan_{log}$. This correlation does not indicate reverse causation or simultaneous causality as we know in advance that, by construction, loan size is determined by payroll size. Nevertheless, one may choose to scale the loan by the number of employees as an alternative measure. The advantage is that the resulting variable is no longer in the original range format. Table 11 reports the results under this alternative measure. The other model specification issue relates to other factors influencing the results. Due to the richness of the SBA dataset additional fixed effects, such as business and CEO, can be added to the regressions. While the former captures firm-reported business type (e.g., corporation, LLC, sole proprietorship, and another 14 categories), the latter captures the CEO's ethnicity, gender, and veteran status. Additionally, since the sample size is

relatively large, I follow Bolton et al. (2016) and include bank fixed effects to control for time-variant characteristics. Column (1) reports the results for the new response variable specification in the public firms sample. As observed from the significant coefficient, relationship lending is associated with larger loans even when loans are scaled by payroll size. Columns (2) to (4) report results for the full sample of private firms and confirms the positive effect of relationship lending on PPP loans. Overall, the results suggest that the previous findings are unlikely to be driven by model specifications.

6.3 Selection Issues

Selection bias potentially affects the results in two ways. First, the relationship lending effects may be stronger for firms that participated in the first round of the program. These firms were unaware of the eligibility guidelines later issued by the SBA, such as requesting a declaration of good faith, the possibility of litigation issues for improper approvals, and clarifications on the circumstances for loan forgiveness. The SBA guidelines were issued in the last week of April 2020, when the program had already allocated a large portion of the funds. Columns (5) and (6) of Table 11 divide the sample into the first and the second rounds of the program. The results suggest that relationship lending effects are mostly present in the first round of the program, in line with the SBA guidance mitigating these effects in the second round. Since the first round corresponds to about 80% of the data, the results obtained earlier in the paper are consistent with firms' relationship benefits being evident only in the first round.

The second adverse selection problem relates to DealScan data coverage. It is very likely that DealScan misses a large portion of debt contracts for private firms since these firms are small and data availability is scarce. Although this issue does not affect the results on public firms, as I relied on SEC disclosures for constructing the relationship indicators, the issue may be persistent for private firms. For instance, less than one percent of the SBA sample could be matched with the DealScan data. This issue may lead to the misclassification of transaction firms as they could have an existing lending relationship not captured by the DealScan algorithms. This issue is not

serious for the purposes of this paper as its direction goes against the results because it means that relationship firms are treated as transaction firms, which reflects a lower lending relationship effects. However, to mitigate this potential selection bias, I match both the firms in the DealScan dataset and those not in it. Since firms in the DealScan dataset may have unobserved characteristics that lead them to be included in the dataset, say firm asset size or profits, then matching observed characteristics likely results in matching unobserved characteristics. In other words, matched firms are more likely than unmatched firms to be in the DealScan dataset in the presence of relationship lending. However, it is still possible that the matching of observed characteristics may not match the firms' unobserved characteristics that are likely to effect inclusion in the DealScan dataset. Therefore, I also bootstrap the control group as an alternative strategy to deal with potential selection bias. The bootstrap technique consists of randomly pooling from the potential large control group (over half a million firms) ten thousand firms at a time, obtaining the regression coefficients, repeating the process for 250 runs, and reporting the average results. Columns (7) and (8) report results for these two methods. The magnitude of the coefficient of the lending relationship increases, indicating that both regression strategies cleared some of the noise potentially included by misclassifying relationship firms as transaction firms. Overall, the results suggest that earlier findings in this paper are unlikely to be driven by sample choices.

7 Conclusion

This paper is the first empirical paper to examine the source of relationship lending benefits in a setting where information asymmetry about the loan credit risk plays nearly no role. I draw on publicly listed firms that received loans from the Paycheck Protection Program, an emergency fund destined to cover small businesses' payroll costs. Exploiting the setting features, such as a general and clear debt contract, to obtain inferences on the role of relationship lending, I find that relationship firms receive economically significantly larger loans and faster approvals than transaction firms.

The results suggest that relationship lending effects are relevant in times of crisis since the velocity at which emergency funds are provided is crucial for firms to prevent an extremely negative event such as breach of covenants. More importantly, they provide evidence that lenders prioritize relationship firms mostly due to concerns with borrowers' increasing risk of default on existing loans. However, these benefits come at a cost. Firms that do not comply with the stimulus package rules are more likely to receive loans when a lender relationship exists. Moreover, when revised guidelines question the legitimacy of these firms to keep funds received, relationship firms are more likely to return loans earlier.

The findings align with traditional evergreening mechanisms, where lenders have incentives to prioritize relationship borrowers to capitalize costs associated with default. However, the presence of evergreening lending on the most prominent economic rescue program in the history of the United States is unsettling. Primary because the allocation of free credit to pre-crisis problematic borrowers shifts part of the default risk from the lender to the Federal Reserve balance sheet at the taxpayer costs. Therefore, the insights at hand are particularly relevant to borrowers and lenders engaged in the parsimonious usage of public funds and policymakers concerned with designing optimal economic rescue programs.

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Table 1. Distribution of funds

This table shows the distribution of funds across borrowers (Panel A), by geographical location and industry type (Panel B), and by lenders (Panel C). The data used to construct these panels is based on PPP loans allocated to U.S. public listed firms for the entire program duration.

Panel A: Distribution of borrowers

Exchange	Firms	Loans (usd)	Loans (%)
Nasdaq	432.00	1,392.00	60.59%
NYSE	49.00	418.74	18.23%
Amex	77.00	158.93	6.92%
OTCQB	170.00	137.72	5.99%
Pink	112.00	110.32	4.80%
Others	88.00	327.88	3.47%
Total	928.00	2,297.55	100.00%

Panel B: Flow of funds by state and industry

State	Dollars	Deals	Industry	Dollars	Deals
California	16.80%	14.24%	Retail	14.82%	9.42%
Texas	10.47%	13.82%	Health	11.03%	17.77%
New York	8.89%	12.85%	Restaurant	10.81%	3.64%
Florida	8.10%	9.10%	Hospitality	9.27%	11.78%
Colorado	4.94%	5.14%	High-Tech	7.44%	1.50%
Others	50.79%	44.86%	Others	46.63%	55.89%

Panel C: Top lenders

Lender	Dollars	Deals	Lender	Dollars	Deals
JPMorgan	14.00%	8.23%	Citizens	1.64%	0.81%
Silicon Valley Bank	7.22%	9.19%	Bank of the West	1.37%	0.48%
Bank of America	5.69%	10.00%	Fifth Third	1.20%	1.61%
PNC	3.61%	4.35%	East West	1.20%	1.29%
BMO	3.17%	2.74%	Citibank	1.15%	1.13%
Keybank	3.01%	2.74%	Texas Capital	1.09%	0.97%
Pinnacle	2.95%	0.97%	Midfirst	1.04%	0.97%
Wells Fargo	2.08%	2.90%	Huntington National	0.98%	0.97%
City National	1.91%	1.13%	M&T	0.93%	1.29%
Zions Bancorporation	1.64%	1.77%	Bank of Florida	0.82%	0.81%
Others				43.30%	45.65%

Table 2. Summary Statistics (TTM)
This table reports summary statistics within the PPP firms sample and between firms with past lender relationship (Rel.) and transaction borrowers (Trans.). The first three columns report statistics for relationship firms. Columns four to six report statistics for transactions firms. The last column reports the differences of firm characteristics between both categories. Firm's characteristics are labeled in the first column and follow the following specifications. *Loan* is the PPP loan amount in millions of US Dollars. *Velocity* is the distance in days between loan request and loan approval. *Employees* is the total number of employees. *Leverage* is firm's total debt scaled by total assets. *ROE* is firm's return on equity and it is calculated as net income scaled by shareholders equity. *Cash* is firm's total cash scaled by total assets report in percent. *PD* is firm's probability to default reported in percent. *LExchange* is an indicator that gets one whether the firm is listed in a large exchange. *NComplier* is an indicator that gets one whether the firm has more than 500 employees. *Payback* is an indicator that gets one whether the firm paid the PPP loan back. Coefficients in bold are significant at least at 95% confidence. Firms that did not disclose the name of their PPP lender are dropped from this analysis. All variables winsorized at [.01,.99].

	Rel. (obs = 265)			**Trans. (obs = 344)**			**Diff.**
	Min.	Mean	Max.	Min.	Mean	Max.	Mean
Loan	0.33	3.62	10.00	0.09	1.41	5.27	**2.21**
Velocity	8.00	20.02	35.00	8.00	23.91	43.00	-3.89
Employees	12.20	286.99	979.20	5.00	136.77	415.30	**150.22**
Leverage	0.20	0.71	1.75	0.06	1.24	7.62	-0.53
ROE	-3.59	-0.48	1.68	-6.13	-0.44	3.72	-0.04
Cash	0.00	18.23	95.48	0.00	9.04	45.53	9.18
PD	0.00	12.25	42.87	0.00	11.81	44.27	0.43
Mcap	4.69	75.12	358.23	1.80	54.24	260.04	20.88
LExchange	0.00	0.75	1.00	0.00	0.60	1.00	**0.15**
NComplier	0.00	0.18	1.00	0.00	0.00	0.00	**0.18**
Payback	0.00	0.14	1.00	0.00	0.07	1.00	**0.08**

Table 3. Relationship Lending Effects on Loan Size

This table reports regression results for relationship effects on loan size. The response variable captured as the logarithm of loan size in million of US dollars. The variable of interest captures relationship in the following specifications. For Columns I to IV, the indicator rel_{bin} gets one whether the firm has lending relationship with its PPP lender. Column V, the indicator rel_{bin} has the same specification as columns I to IV, but the sample is partitioned for a set of firms listed in large exchanges. The control variables follow the following specifications. $employees_{log}$ is the logarithm of number of employees. *leverage* is the firm leverage captured as firm's total debt scaled by assets. *roe* is the firm returns to equity captured as firm's net income scaled by equity. *cash* is the firm cash captured as firm's total cash scaled by assets. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	loan size$_{log.usd}$				
	Lending Relationship				**LR**$_{high}$
	I	**II**	**III**	**IV**	**V**
rel_{bin}	0.26 ***	0.22 **	0.22 **	0.20 *	0.22 **
	(0.08)	(0.07)	(0.08)	(0.08)	(0.08)
$employee_{log}$	0.64 ***	0.62 ***	0.67 ***	0.70 ***	0.64 ***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
leverage	0.00	0.00	0.00	0.00	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.04)
roe	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
cash	0.06	0.09	0.15	0.07	0.00
	(0.13)	(0.14)	(0.15)	(0.15)	(0.16)
top.sba	0.10	0.01	0.03	-	0.03
	(0.08)	(0.08)	(0.08)		(0.08)
$foreign.parent_{bin}$	0.00	-0.02	0.03	-	-0.02
	(0.17)	(0.16)	(0.16)		(0.17)
$industry_{fe}$	no	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	yes
$bank_{fe}$	no	no	no	yes	no
nobs	569	535	530	530	374
adj.r.squared	0.65	0.67	0.70	0.71	0.71

Table 4. Relationship Lending Effects on Velocity

This table reports regression results for relationship effects on velocity. The response variable is the distance in days between the loan request day and the its approval. The variable of interest captures relationship in the following specifications. For Columns I to IV, the indicator rel_{bin} gets one whether the firm has lending relationship with its PPP lender. Column V, the indicator rel_{bin} has the same specification as columns I to IV, but the sample is partitioned for a set of firms listed in large exchanges. The control variables follow the following specifications. $employees_{log}$ is the logarithm of number of employees. *leverage* is the firm leverage captured as firm's total debt scaled by assets. *roe* is the firm returns to equity captured as firm's net income scaled by equity. *cash* is the firm cash captured as firm's total cash scaled by assets. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	$velocity_{days}$				
	Lending Relationship				$\mathbf{LR}_{high}$
	I	**II**	**III**	**IV**	**V**
rel_{bin}	-3.16 **	-3.55 **	-4.14 ***	-4.56 ***	-3.99 **
	(1.13)	(1.14)	(1.15)	(1.13)	(1.37)
$employee_{log}$	-0.78 *	-1.09 **	-1.35 ***	-1.46 ***	-1.33 *
	(0.37)	(0.38)	(0.39)	(0.37)	(0.52)
leverage	0.04	0.04	-0.04	-0.07	-1.12
	(0.12)	(0.11)	(0.11)	(0.11)	(0.66)
roe	-0.05	-0.06	-0.06	-0.01	-0.03
	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)
cash	-5.45 **	-5.20 *	-5.13 *	-3.59	-6.55 *
	(2.01)	(2.22)	(2.20)	(2.15)	(2.80)
top.sba	-5.34 ***	-4.86 ***	-5.06 ***	-	-6.14 ***
	(1.19)	(1.18)	(1.21)		(1.39)
$foreign.parent_{bin}$	-1.95	-1.56	-2.61	-	-1.80
	(2.57)	(2.49)	(2.40)		(2.83)
$industry_{fe}$	no	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	yes
$bank_{fe}$	no	no	no	yes	no
nobs	569	535	530	530	374
adj.r.squared	0.08	0.09	0.21	0.30	0.26

Table 5. Relationship Effects on Deposit and Lending Accounts

This table reports logit regression results for relationship effects on depeosit and lendign accounts. For panel A The response variable is the logarithm of PPP loan size. For pane B the response variable is velocity calculated as the distance in days between the PPP loan request and disbursement date. The indicator $lending_{bin}$ gets one whether the firm has lending relationship with its PPP lender. $deposit_{bin}$ gets one whether the firm has deposit relationship with its PPP lender. $employees_{log}$ is the logarithm of number of employees. *leverage* is the firm leverage captured as firm's total debt scaled by assets. *roe* is the firm returns to equity captured as firm's net income scaled by equity. *cash* is the firm cash captured as firm's total cash scaled by assets. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	Panel A: $size_{log}$				**Panel B: $velocity_{days}$**			
$lending_{bin}$	0.29 ***	0.25 **	0.25 **	0.25 **	-3.19 **	-3.69 **	-4.42 ***	-5.31 ***
	(0.08)	(0.08)	(0.08)	(0.08)	(1.19)	(1.20)	(1.22)	(1.21)
$deposit_{bin}$	0.24 *	0.18	0.16	0.17	-0.15	-0.65	-1.18	-2.81
	(0.12)	(0.11)	(0.11)	(0.12)	(1.76)	(1.75)	(1.72)	(1.69)
$employee_{log}$	0.65 ***	0.64 ***	0.68 ***	0.69 ***	-0.77 *	-1.07 **	-1.30 ***	-1.32 ***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.37)	(0.39)	(0.39)	(0.37)
leverage	0.00	0.00	0.00	0.00	0.04	0.04	-0.04	-0.08
	(0.01)	(0.01)	(0.01)	(0.01)	(0.12)	(0.11)	(0.11)	(0.11)
roe	0.00	0.00	0.00	0.00	-0.05	-0.06	-0.06	-0.02
	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.05)	(0.05)	(0.04)
cash	0.04	0.08	0.14	0.09	-5.45 **	-5.20 *	-5.11 *	-3.55
	(0.13)	(0.14)	(0.15)	(0.15)	(2.02)	(2.22)	(2.20)	(2.15)
top.sba	0.07	-0.01	0.01		-5.33 ***	-4.81 ***	-4.98 ***	
	(0.08)	(0.08)	(0.08)		(1.20)	(1.19)	(1.21)	
$foreign.parent_{bin}$	0.01	-0.01	0.04		-1.96	-1.60	-2.69	
	(0.17)	(0.16)	(0.16)		(2.57)	(2.49)	(2.41)	
$industry_{fe}$	no	yes	yes	yes	no	yes	yes	yes
$state_{fe}$	no	no	yes	yes	no	no	yes	yes
$bank_{fe}$	no	no	no	yes	no	no	no	yes
nobs	569	535	530	530	569	535	530	530
adj.r.squared	0.65	0.67	0.70	0.71	0.08	0.09	0.21	0.30

Table 6. Panel A: Peer Adjusted Characteristics (Pre-Crisis)
This table shows peer adjusted characteristics for the pre-crisis period. The left hand side of the table report results for the adjusted characteristics between PPP firms and the entire market. The right hand side of the table report results for the adjusted characteristics between PPP firms and matched peers by firm's size (log of total assets), number of employees and industry. *Treated* corresponds to the sample of PPP firms. *Control* corresponds to the sample of control firms. *Diff* reports the difference in mean coefficients between treated and control groups. Firms characteristics are labeled in the first column. *ROE* is firm's return on equity and it is calculated as net income scaled by shareholders equity. *ROA* is firm's returns on assets and it is calculated as net income scaled by total assets. *Leverage* is firm's total debt scaled by total assets. *Size* is the logarithm of firm's market capitalization. *Employees* is the number of employees. *Cash* is firm's total cash scaled by total assets. *Quick Ratio* is calculated as the ratio of liquid assets (cash, marketable securities and accounts receivable) to current liabilities.

	All				**Matched**			
	Treated	**Control**	**Diff.**	**T-Stat**	**Treated**	**Control**	**Diff.**	**T-Stat**
ROE	-0.63	-0.07	-0.56	-8.65	-0.67	-0.46	-0.21	-2.49
ROA	-0.55	-0.06	-0.49	-11.15	-0.52	-0.51	-0.01	-0.16
Leverage	0.52	0.57	-0.05	-1.68	0.51	0.49	0.02	0.43
Size	3.61	7.15	-3.54	-57.93	3.65	3.68	-0.03	-0.39
Employees	0.23	8.33	-8.10	-123.57	0.24	0.24	-0.01	-0.14
Cash Ratio	0.26	0.21	0.05	2.06	0.26	0.45	-0.19	-5.38
Quick Ratio	-24.28	1.37	-25.65	-445.54	1.04	3.25	-2.21	-21.08
Obs.	455.00	4418.00			455.00	455.00		

Table 6. Panel B: Propensity Matching Score Results. This table shows results for propensity matching score between PPP firms and the entire population of publicly listed firms. use nearest neighborhood method and match peers by size, employees, state and industry.

Summary of balance for all data		
	Means treated	Means control
distance	0.3032	0.0718
size	3.6415	7.195
employees	0.4648	13.3054

Summary of balance for matched data		
	Means treated	Means control
distance	0.3032	0.2966
size	3.6415	3.6981
employees	0.4648	0.4377

Percent Balance Improvement		
	Mean Diff.	eQQ Med
distance	97.1695	99.856
size	98.4082	99.5602
employees	99.7887	95.0792

Sample sizes		
	Control	Treated
All	4418	455
Matched	455	455
Unmatched	3963	0
Discarded	0	0

Table 6. Panel C: Fama-French 49 Industry Adjusted Portfolio (Pre-Crisis)
This table reports the differences between PPP firms and their respective Fama-French 49 industry for several firm's characteristics in the pre-crisis period. Panel A report results for top lenders. Panel B report median and mean results for the entire sample.*ROE* is firm's return on equity and it is calculated as net income scaled by shareholders equity. *ROA* is firm's returns on assets and it is calculated as net income scaled by total assets. *NPM* is firm's net profit margin. *Cash* is firm's total cash scaled by total assets. *Quick Ratio* is calculated as the ratio of liquid assets (cash, marketable securities and accounts receivable) to current liabilities.*Int.Cov* stands for interest coverage ratio and is calculated as the ratio of earnings before interest and taxes to interest expense. Firms that did not disclose the name of their PPP lender are dropped from this analysis.

TOP 5 Lenders							
	ROE	**ROA**	**LEV**	**NPM**	**Cash.R**	**Quick.R**	**Int.Cov**
JP Morgan	-0.25	-0.19	-0.02	-0.10	-0.31	-0.54	1.49
Silicon Valley Bank	-0.68	-0.45	0.07	-0.60	-0.66	-0.58	-15.17
Bank of America	-0.13	-0.24	-0.13	-0.11	-0.32	-1.06	-3.52
PNC Bank	-0.08	-0.20	-0.16	-0.14	-0.31	-1.09	-3.94
Keybank	-0.11	-0.12	-0.06	-0.04	-0.24	-1.05	-2.34
Summary (455 firms)							
Median	-0.19	-0.24	-0.09	-0.15	-0.27	-0.84	-5.65
Mean	-1.07	-0.71	0.25	-5.21	-0.80	-0.64	-156.64

Table 7. Panel A: Portfolio Default Risk Evolution

This table reports median probabilities to default for (a) PPP firms (treated) and matched firms (control), and (b) relationship firms (treated) and transaction firms (control). The top panel reports coefficients for the pre-crisis period. The mid panel reports coefficients for the crisis period. The bottom panel reports coefficients for the differences between coefficients in pre-crisis and crisis period. Column *D.D.* reports the differences-in-differences estimates. Controls are omitted for a better visualization.

Pre-Crisis				
	Control	Treated	Diff.	T-Stat
Matched vs PPP	0.11	1.33	1.22	0.80
Transaction vs Relationship	0.41	1.48	1.07	0.94
Crisis				
	Control	Treated	Diff.	T-Stat
Matched vs PPP	2.18	10.00	7.82	4.21
Transaction vs Relationship	5.15	10.10	4.95	3.15
Evolution				
	Control	Treated	D.D.	T-Stat
Matched vs PPP	2.07	8.67	6.60	3.90
Transaction vs Relationship	4.75	8.62	3.87	2.37

Table 7. Panel B: Evolution of Mean Probability to Default (Parallel Assumption). This table shows the monthly evolution of probabilities to default for the differences between PPP firms and matched peers.

date	diff.mean	tstat.mean	diff.median	tstat.median
Jul-19	4.22	3.13	0.56	0.42
Aug-19	4.62	3.25	0.76	0.53
Sep-19	4.64	3.16	0.85	0.58
Oct-19	5.07	3.49	0.92	0.63
Nov-19	4.54	2.95	1.09	0.71
Dec-19	4.46	2.92	1.19	0.78
Jan-20	4.66	2.95	1.27	0.80
Feb-20	5.30	3.13	2.33	1.37
Mar-20	8.52	4.42	8.39	4.36
Apr-20	8.29	4.47	8.21	4.42

Table 8. Relationship Lending Effects on Non-compliance

This table reports logit regression results for relationship effects on non-compliance. The response variable is a binary indicator to whether a firm has more than 500 employees at the time of the loan. The variable of interest captures relationship in the following specifications. For Columns I to IV, the indicator rel_{bin} gets one whether the firm has lending relationship with its PPP lender. Column V, the indicator rel_{bin} has the same specification as columns I to IV, but the sample is partitioned for a set of firms listed in large exchanges. The control variables follow the following specifications. $employees_{log}$ is the logarithm of number of employees. *leverage* is the firm leverage captured as firm's total debt scaled by assets. *roe* is the firm returns to equity captured as firm's net income scaled by equity. *cash* is the firm cash captured as firm's total cash scaled by assets. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	$non\text{-}compliance_{bin}$				
	Lending Relationship				$\mathbf{LR}_{high}$
	I	**II**	**III**	**IV**	**V**
rel_{bin}	1.20 ***	1.36 ***	1.65 ***	2.24 ***	1.79 **
	(0.30)	(0.38)	(0.46)	(0.54)	(0.57)
leverage	-0.10	-0.10	-0.03	0.07	0.07
	(0.12)	(0.18)	(0.16)	(0.14)	(0.23)
roe	0.00	0.00	0.00	0.00	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
cash	-3.87 ***	-3.20 **	-5.56 **	-6.00 ***	-7.58 **
	(0.97)	(1.23)	(1.76)	(1.87)	(2.36)
top.sba	1.00 ***	1.11 **	0.97 *	-	0.64
	(0.30)	(0.36)	(0.45)		(0.52)
$foreign.parent_{bin}$	0.90	1.04	0.71	-	1.14
	(0.59)	(0.74)	(0.87)		(1.06)
$industry_{fe}$	no	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	yes
$bank_{fe}$	no	no	no	yes	no
nobs	564	531	526	526	372
pseudo.squared	0.23	0.47	0.60	0.64	0.69

Table 9. Lender Relationship Effects on Paybacks

This table reports logit regression results for relationship effects on loan paybacks. The response variable is a binary indicator to whether a firm paid the PPP loan back. The variable of interest captures relationship in the following specifications. For Columns I to IV, the indicator rel_{bin} gets one whether the firm has lending relationship with its PPP lender. Column V, the indicator rel_{bin} has the same specification as columns I to IV, but the sample is partitioned for a set of firms listed in large exchanges. The control variables follow the following specifications. $employees_{log}$ is the logarithm of number of employees. *leverage* is the firm leverage captured as firm's total debt scaled by assets. *roe* is the firm returns to equity captured as firm's net income scaled by equity. *cash* is the firm cash captured as firm's total cash scaled by assets. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	$payback_{bin}$				
	Lending Relationship				$\mathbf{LR}_{high}$
	I	**II**	**III**	**IV**	**V**
rel_{bin}	0.59 *	0.85 *	0.75 *	0.86 *	0.40
	(0.31)	(0.35)	(0.37)	(0.45)	(0.43)
$NComplier_{bin}$	1.28 ***	1.23 **	1.67 **	2.26 **	1.31 *
	(0.38)	(0.46)	(0.56)	(0.65)	(0.61)
leverage	-0.53 *	-0.38	-0.43	-0.35	-0.18
	(0.31)	(0.30)	(0.34)	(0.35)	(0.31)
roe	0.00	0.00	0.00	-0.01	0.00
	(0.02)	(0.02)	(0.02)	(0.34)	(0.02)
cash	1.27 *	1.58 *	1.65 *	1.80	1.62 *
	(0.57)	(0.70)	(0.77)	(0.85)	(0.85)
top.sba	0.94 **	0.95 **	0.93 *	-	0.76 *
	(0.3)	(0.32)	(0.38)		(0.41)
$foreign.parent_{bin}$	0.47	0.31	0.33	-	0.73
	(0.6)	(0.65)	(0.72)		(0.76)
$industry_{fe}$	no	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	yes
$bank_{fe}$	no	no	no	yes	no
nobs	564	531	526	526	372
pseudo.r.square	0.14	0.26	0.41	0.52	0.41

Table 10. Relationship Effects on Loan Size for Private Firms

This table reports OLS regression results for relationship effects on loan size for private firms. The response variable is the logarithm of loan size in million of US dollars. Columns I to IV report results for the full sample. Column V reports results for a sample matched by number of employees, industry (NAICS code) and state. The variable of interest captures relationship in the following specifications. For columns I to IV, the indicator rel_{bin} takes the value of one whether the firm has lending relationship as informed by DealScan dataset. The base category for all columns is transaction firms. The control variables follow the following specifications. $employees_{log}$ is the logarithm of number of employees. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	$loan\ size_{log.usd}$				
	Lending Relationship				**Matched**
	I	**II**	**III**	**IV**	**V**
rel_{bin}	0.99 ***	0.96 ***	1.15 ***	1.05 ***	0.94 ***
	(0.04)	(0.04)	(0.05)	(0.04)	(0.07)
$employees_{log}$	0.38 ***	0.38 ***	0.39 ***	0.48 ***	0.57 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
top.sba	0.02 ***	0.02 ***	0.01 ***	-	-
	(0.00)	(0.00)	(0.00)		
foreign.parent	0.06 ***	0.05 ***	0.06 ***	-	-
	(0.00)	(0.00)	(0.00)		
$industry_{fe}$	no	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	yes
$bank_{fe}$	no	no	no	yes	yes
nobs	615,292	615,292	615,292	615,292	8,996
adj.r.squared	0.24	0.27	0.28	0.36	0.55

Table 11. Robustness Tests for Variable Specification and Sample Choices

This table reports OLS regression results for relationship effects on loan size for private firms with different specifications of the response variable and sample choices. Column I results for the entire sample of public firms. Columns II to IV report results for the entire sample of private firms. Columns V and VI report results for the first phase of the program (April) and the second phase of the program (May to July), respectively. Column VII reports results for a sample matched on number of employees, industry (NAICS code) and state. The last column reports the average results of bootstrap regression with 250 runs and where the control group accommodates ten thousand firms randomly pooled without replacement from the entire population of private firms. The response variable is the logarithm of loan size in millions of US dollars scaled by number of employees. The variable of interest has two specifications. The first specification $lending_{bin}$ takes the value of one whether the firm has lending relationship with its PPP lender, and zero otherwise. The base category for this specifications is transaction borrowers. The control variables follow the following specifications. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $business_{fe}$ indicates business type fixed effects. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. ceo_{fe} indicates CEO characteristics fixed effects. $bank_{fe}$ indicates bank fixed effects. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	loan / emp$_{log.usd}$							
	public	**private**			**phases**		**matched**	**bootstrap**
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
$lending_{bin}$	0.23 **	0.41 ***	0.41 ***	0.44 ***	0.39 ***	0.26	0.52 ***	0.49 ***
	(0.08)	(0.07)	(0.07)	(0.06)	(0.06)	(0.28)	(0.09)	(0.11)
top.sba	-	-0.02 ***	-0.03 ***	-	-	-	-	-
		(0.00)	(0.00)					
foreign.parent	-	-0.08 ***	-0.08 ***	-	-	-	-	-
		(0.01)	(0.01)					
$business_{fe}$	no	yes	yes	yes	yes	yes	yes	yes
$industry_{fe}$	yes	yes	yes	yes	yes	yes	yes	yes
$state_{fe}$	yes	yes	yes	yes	yes	yes	yes	yes
ceo_{fe}	no	no	yes	yes	yes	yes	yes	yes
$bank_{fe}$	yes	no	no	yes	yes	yes	yes	yes
nobs	526	615,292	615,292	615,292	480,818	134,474	8,996	14,861
adj.r.squared	0.30	0.07	0.08	0.34	0.31	0.19	0.36	0.34

Appendices

Appendix A

Appendix A contains the following content. Figures (A1), (A2), (A3), and (A4), shows related forms firms use in the Paycheck Protection Program. (Table A1) lists the top 80 lenders by aggregated loan size. (Table A2) lists Ashford's loans broken down by affiliated hotels.

Appendix B

Appendix B contains an extended analysis including a broader category for any relationship. (Table B1) reports regression results for relationship effects on loan size. (Table B2) reports regression results for relationship effects on velocity. (Table B3) reports logit regression results for relationship effects on non-compliance. (Table B4) reports logit regression results for relationship effects on loan paybacks. (Table B5) reports regression results for relationship effects on loan size for private firms.

Figure 1A: Example of promissory PPP note

EX-10.1 [redacted] UNSECURED NOTE

EXHIBIT 10.1

U.S. Small Business Administration

Unsecured NOTE "Note"

SBA Loan #	[redacted]
SBA Loan Name	N/A
Date	May 15, 2020
Loan Amount	$10,000,000.00
Interest Rate 1.00%	
Borrower	[redacted]
Operating Company	N/A
Lender	TEXAS CHAMPION BANK 6124 S. Staples, Corpus Christi, Texas 78413

Terms of the Note:

1. PROMISE TO PAY: In return for the Loan, Borrower promises to pay to the order of Lender the amount of Ten Million Dollars, interest on the unpaid principal balance, and all other amounts required by this Note.

2. DEFINITIONS: "Collateral" means any property taken as security for payment of this Note or any guarantee of the Note. "Guarantor" means each person or entity that signs a guarantee of payment of this Note. "Loan" means the loan evidenced by this Note. "Loan Documents" means the documents related to this loan signed by Borrower and/or Guarantor. "SBA" means the Small Business Administration, an Agency of the United States of America. "Unsecured" means this note is unsecured. All References to Collateral shall not be applicable to this loan.

3. PAYMENT TERMS: Borrower must make all payments at the place Lender designates. The payment terms for this Note are: The interest rate is 1% per year. Borrower must pay principal and interest payments of $562,774.99 every month beginning seven (7) months from the date of the note. Payments must be made on the 15th calendar day in the month they are due. Loan Prepayment: Notwithstanding any provision of this Note to the Contrary, Borrower may prepay this Note at any time without penalty. All remaining principal and accrued interest is due and payable 2 years from the date of the Note. Late Charge: If a payment of this Note is more than 10 days late, Lender may charge Borrower a late fee of up to 5% of the unpaid portion of the regularly scheduled payment.

4. DEFAULT: Borrower is in default under this Note if Borrower does not make a payment when due under this Note, or if Borrower or Operating Company: A. Fails to do anything required by this Note and other Loan Documents: (i) with respect to payments, following a 10-day grace period, and (ii) with respect to all other requirements, following a 30-day grace period; B. Defaults on any other loan with Lender; C. Does not preserve, or account to Lender's satisfaction for, any of the Collateral or its proceeds; D. Does not disclose, or anyone acting on their behalf does not disclose, any material fact to Lender or SBA; E. Makes, or anyone acting on their behalf makes, a materially false or misleading representation to Lender or SBA; F. Defaults on any loan or other indebtedness with another creditor with an aggregate principal amount in excess of $2,500,000, and such creditor has the right (following any grace period to cure such default) to accelerate such loan; G. Fails to pay any federal, state or other material taxes when due, unless: (i) such taxes are being properly contested in good faith by appropriate proceedings timely instituted and diligently pursued, and (ii) appropriate reserves in regard thereto have been established in accordance with GAAP; H. Becomes the subject of a proceeding under any bankruptcy or insolvency law; I. Has a receiver or liquidator appointed for any substantial part of their business or property; J. Makes an assignment for the benefit of creditors; K. Reorganizes, merges, consolidates, or otherwise changes ownership resulting in any person (other than an existing equity owner) becoming the beneficial owner of 35% or more of Borrower's equity without Lender's prior written consent; or L. Becomes the subject of a civil or criminal action resulting in a monetary judgment in excess of the greater of the insurance coverage therefor and $1,000,000 or a nonmonetary judgment that could reasonably be expected to

materially affect Borrower's ability to pay this Note, which in each case remains undischarged, unvacated, unbounded or unstayed for a period of 60 days.

5. LENDER'S RIGHTS IF THERE IS A DEFAULT: Without notice or demand and without giving up any of its rights, Lender may: A. Require immediate payment of all amounts owing under this Note; B. Collect all amounts owing from any Borrower or Guarantor; C. File suit and obtain judgment; D. Take possession of any Collateral; or E. Sell, lease, or otherwise dispose of, any Collateral at public or private sale, with or without advertisement. 6. LENDER'S GENERAL POWERS: Without notice and without Borrower 's consent, Lender may: A. Bid on or buy the Collateral at its sale or the sale of another lienholder, at any price it chooses; B. Incur expenses to collect amounts due under this Note, enforce the terms of this Note or any other Loan Document, and preserve or dispose of the Collateral. Among other things, the expenses may include payments for property taxes, prior liens, insurance, appraisals, environmental remediation costs, and reasonable attorney's fees and costs. If Lender incurs such expenses, it may demand immediate repayment from Borrower or add the expenses to the principal balance; C. Release anyone obligated to pay this Note; D. Compromise, release, renew, extend or substitute any of the Collateral; and E. Take any action necessary to protect the Collateral or collect amounts owing on this Note.

7. WHEN FEDERAL LAW APPLIES: When SBA is the holder, this Note will be interpreted and enforced under federal law, including SBA regulations. Lender or SBA may use state or local procedures for filing papers, recording documents, giving notice, foreclosing liens, and other purposes. By using such procedures, SBA does not waive any federal immunity from state or local control, penalty, tax, or liability. As to this Note, Borrower may not claim or assert against SBA any local or state law to deny any obligation, defeat any claim of SBA, or preempt federal law.

8. SUCCESSORS AND ASSIGNS: Under this Note, Borrower and Operating Company include the successors of each, and Lender includes its successors and assigns

9. GENERAL PROVISIONS: A. All individuals and entities signing this Note are jointly and severally liable. B. Borrower waives all suretyship defenses. C. Borrower must sign all documents necessary at any time to comply with the Loan Documents. D. Lender may exercise any of its rights separately or together, as many times and in any order it chooses. Lender may delay or forgo enforcing any of its rights without giving up any of them. E. Borrower may not use an oral statement of Lender or SBA to contradict or alter the written terms of this Note. F. If any part of this Note is unenforceable, all other parts remain in effect. G. To the extent allowed by law, Borrower waives all demands and notices in connection with this Note, including presentment, demand, protest, and notice of dishonor. Borrower also waives any defenses based upon any claim that Lender did not obtain any guarantee; did not obtain, perfect, or maintain a lien upon Collateral; impaired Collateral; or did not obtain the fair market value of Collateral at a sale.

10. ADDITIONAL PROVISIONS: This loan was made under a United States Small Business Administration (SBA) nationwide program which uses tax dollars to assist small business owners. Payment Protection Program: Loan Forgiveness. This loan has been made under the Small Business Administration Paycheck Protection Program (PPP). Up to the full amount of principal and accrued interest may qualify for forgiveness under the PPP. Any loan forgiveness is subject to the terms and any limitations under the PPP and will be granted at the sole discretion of the Small Business Administration. Lender's right to enforce any default remedies including changes in interest rate are subject to the terms of the PPP. Dishonored Item Fee: Borrower will pay a fee to Lender of $30.00 if Borrower makes a payment on Borrower's loan and the check or preauthorized charge with which Borrower pays is later dishonored. Governing Law: This note will be governed by federal law applicable to Lender and, to the extent not preempted by federal laws, the laws of the State of Texas without regard to its conflicts of law provisions. This Note has been accepted by Lender in the State of Texas. Agreement to Use Electronic Documents. The Lender and Borrower(s) hereby (i)agree that for all purposes, including, without limitation, in connection with any workout, restructuring, enforcement of remedies, bankruptcy proceedings or litigation, electronic images (facsimile or PDF) of these documents signed by any party to this loan transaction shall have the same legal effect, validity, and enforceability as any paper original and (ii) waiver any argument, defense, or right to contest the validity or enforceability of these documents based solely on the lack of paper original copies, including with respect to any signatory pages thereto. Borrower acknowledges receipt of a completed copy of this Note.

11. BORROWER'S NAME(S) AND SIGNATURE(S): By signing below, each individual or entity becomes obligated under this Note as Borrower.

Figure 2A: Example of PPP loan disclosure

Item 1.01 Entry into a Material Definitive Agreement.

On April 14, 2020, [redacted] Inc. (the "Company") entered into a promissory note (the "Note") evidencing an unsecured loan (the "Loan") in the amount of $4,780,600 made to the Company under the Paycheck Protection Program (the "PPP"). The PPP was established under the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") and is administered by the U.S. Small Business Administration. The Loan to the Company is being made through Zions Bancorporation, N.A. dba National Bank of Arizona (the "Lender").

The Note matures on April 14, 2022 and bears interest at a rate of 1% per annum. Beginning November 14, 2020, the Company is required to make 18 monthly payments of principal and interest in the amount of $269,037.75. The Loan may be prepaid by the Company at any time prior to maturity with no prepayment penalties. The proceeds from the Loan may only be used for payroll costs (including benefits), interest on mortgage obligations, rent, utilities and interest on certain other debt obligations.

The Note contains customary events of default relating to, among other things, payment defaults, making materially false and misleading representations to the Lender or breaching the terms of the Loan documents. The occurrence of an event of default will result in an increase in the interest rate to 18% per annum and provides the Lender with customary remedies, including the right to require immediate payment of all amounts owed under the Note.

Pursuant to the terms of the CARES Act and the PPP, the Company may apply to the Lender for forgiveness for the amount due on the Loan. The amount eligible for forgiveness is based on the amount of Loan proceeds used by the Company (during the eight-week period after the Lender makes the first disbursement of Loan proceeds) for the payment of certain covered costs, including payroll costs (including benefits), interest on mortgage obligations, rent and utilities, subject to certain limitations and reductions in accordance with the CARES Act and the PPP. No assurance can be given that the Company will obtain forgiveness of the Loan in whole or in part.

The foregoing description of the Note is not complete and is qualified in its entirety by reference to the full text of the Note, which is filed herewith as Exhibit 10.1, and incorporated herein by reference in its entirety.

Item 2.03 Creation of a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement of a Registrant.

The information set forth in Item 1.01 above is incorporated by reference into this Item 2.03.

Figure 3A: Example of PPP loan payback disclosure

Item 8.01 Other Events

On April 22, 2020, [redacted] (the "Company") received proceeds from a loan in the amount of $5,911,000 (the "PPP Loan") from Silicon Valley Bank as the lender (the "Lender"), pursuant to the Small Business Association (the "SBA") Paycheck Protection Program (the "PPP") of the Coronavirus Aid, Relief, and Economic Security Act. At the time when the Company applied for the PPP Loan, it had qualified to receive the funds pursuant to the then published qualification requirements.

On April 23, 2020, the SBA, in consultation with the Department of Treasury, issued new guidance regarding qualification requirements for public companies. Based on the Company' assessment of the new guidance, on May 1, 2020, it has determined to repay the principal and interest on the PPP Loan on or before May 7, 2020.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

[redacted], INC.

May 1, 2020

By: [redacted]

Name: [redacted]

Title: Chief Financial Officer

Figure 4A: PPP loan forgiveness application

Paycheck Protection Program
Loan Forgiveness Application Revised June 16, 2020

OMB Control Number 3245-0407
Expiration Date: 10/31/2020

PPP Loan Forgiveness Calculation Form

Business Legal Name ("Borrower")	DBA or Tradename, if applicable	
Business Address	**Business TIN (EIN, SSN)**	**Business Phone**
		( ) -
	Primary Contact	**E-mail Address**

SBA PPP Loan Number: _____ **Lender PPP Loan Number:** _____

PPP Loan Amount: _____ **PPP Loan Disbursement Date:** _____

Employees at Time of Loan Application: _____ **Employees at Time of Forgiveness Application:** _____

EIDL Advance Amount: _____ **EIDL Application Number:** _____

Payroll Schedule: The frequency with which payroll is paid to employees is:

☐ **Weekly** ☐ **Biweekly** (every other week) ☐ **Twice a month** ☐ **Monthly** ☐ **Other** _____

Covered Period: _____ to _____

Alternative Payroll Covered Period, if applicable: _____ to _____

If Borrower (together with affiliates, if applicable) received PPP loans in excess of $2 million, check here: ☐

Forgiveness Amount Calculation:

Payroll and Nonpayroll Costs
Line 1. Payroll Costs (enter the amount from PPP Schedule A, line 10): _____

Line 2. Business Mortgage Interest Payments: _____

Line 3. Business Rent or Lease Payments: _____

Line 4. Business Utility Payments: _____

Adjustments for Full-Time Equivalency (FTE) and Salary/Hourly Wage Reductions
Line 5. Total Salary/Hourly Wage Reduction (enter the amount from PPP Schedule A, line 3): _____

Line 6. Add the amounts on lines 1, 2, 3, and 4, then subtract the amount entered in line 5: _____

Line 7. FTE Reduction Quotient (enter the number from PPP Schedule A, line 13): _____

Potential Forgiveness Amounts
Line 8. Modified Total (multiply line 6 by line 7): _____

Line 9. PPP Loan Amount: _____

Line 10. Payroll Cost 60% Requirement (divide line 1 by 0.60): _____

Forgiveness Amount
Line 11. Forgiveness Amount (enter the smallest of lines 8, 9, and 10): _____

Table A1: TOP 80 Lenders (to Publicly Listed Firms).
This table lists the top 80 lenders by aggregated loan size. The variables *Loan*, *Market.Cap* and *Revenue* are in millions of dollars.

Lender Name	Loan (sum)	Loan (avg)	Loan (count)	Market.Cap	Revenue	Employees	Time to file
JP MORGAN	194.03	3.80	51.00	456.38	108.84	1138.34	25.71
SILICON VALLEY BANK	136.46	2.39	57.00	102.00	48.35	130.28	20.25
BANK OF AMERICA	118.50	1.91	62.00	331.83	244.39	5569.32	26.11
KEYBANK NATIONAL ASSOCIATION	110.67	6.51	17.00	100.38	264.40	282.00	18.56
PNC BANK	72.91	2.70	27.00	82.13	83.63	304.95	24.58
BANK OF MONTREAL	45.86	2.70	17.00	37.46	82.46	331.91	20.69
PINCLE BANK	40.45	6.74	6.00	56.30	123.50	1557.25	14.00
WELLS FARGO BANK	32.24	1.90	17.00	49.19	121.29	1863.64	14.53
FIFTH THIRD BANCORP	28.17	2.82	10.00	54.16	95.50	139.00	3.90
CIBC BANK	27.83	5.57	5.00	146.79	106.83	518.50	56.60
HANCOCK WHITNEY BANK	27.25	9.08	3.00	75.70	379.80	875.00	16.33
BANK OF OKLAHOMA	24.15	3.02	8.00	97.08	31.83	61.50	31.25
CITIZENS BANK	23.89	4.78	5.00	63.34	126.41	954.67	41.00
TEXAS CAPITAL BANK	23.50	3.92	6.00	21.38	102.37	1944.80	8.80
M&T BANK	22.75	2.84	8.00	81.91	121.68	289.40	20.13
BBVA USA	21.97	3.66	6.00	120.12	23.98	424.60	21.00
ZIONS BANCORPORATION	20.44	1.86	11.00	89.39	51.82	267.11	12.40
BANK OF THE WEST	19.46	6.49	3.00	228.74	100.50	330.00	9.67
EAST WEST BANK	19.06	2.38	8.00	101.17	73.66	353.00	26.57
TD BANK	18.94	3.79	5.00	63.96	390.89	574.33	4.00
HARVEST SMALL BUSINESS FINCE	18.17	3.63	5.00	13.94	32.10	183.00	16.25
CITIBANK	17.68	2.53	7.00	95.80	114.47	257.80	36.14
CROSS RIVER BANK	17.52	4.38	4.00	35.32	56.70	472.00	38.00
FROST BANK	17.40	4.35	4.00	66.40	172.18	200.00	6.00
TEXAS CHAMPION BANK	16.80	8.40	2.00	4.30	221.83	786.00	5.50
CITY NATIONAL BANK OF FLORIDA	15.55	3.11	5.00	43.79	52.55	348.75	5.50
HSBC BANK USA	13.83	2.77	5.00	83.12	73.26	258.50	8.80
CADENCE BANK	13.48	3.37	4.00	9.09	58.11	2368.00	37.00
WESTERN ALLIANCE BANK	13.17	1.46	9.00	20.98	22.75	93.63	3.78
UNITED BANK	13.14	13.14	1.00	11.34	151.27	464.00	14.00
CHOICE FINCIAL GROUP	13.04	13.04	1.00	23.58	82.27	440.00	1.00
TRUIST BANK	12.30	1.76	7.00	67.76	76.50	1031.33	30.29
THE HUNTINGTON NATIONAL BANK	12.07	2.01	6.00	159.07	52.54	177.67	41.00
US BANK NATIONAL	10.90	1.56	7.00	60.51	80.22	1027.67	31.83
BLUE RIDGE BANK	10.00	10.00	1.00	0.85	171.29		7.00
CITY BANK	10.00	10.00	1.00	22.86	203.60	900.00	4.00
FIRST FINCIAL BANK	10.00	10.00	1.00	20.86	317.44	848.00	1.00
CITY NATIONAL BANK	9.88	1.41	7.00	138.83	55.29	108.80	8.43
MINNESOTA BANK & TRUST	9.58	4.79	2.00	50.99	150.95	427.50	6.00
STAR FINCIAL BANK	9.51	4.75	2.00	17.83	112.51	323.00	4.00
NEWTON FEDERAL BANK	9.40	9.40	1.00	4.93	288.74	270.00	3.00
BNB BANK	9.01	2.25	4.00	14.03	43.28	155.00	32.00
STEARNS BANK	8.73	4.37	2.00	190.35	54.32	219.00	4.00
BROADWAY NATIONAL BANK	8.45	8.45	1.00	0.00	0.00		6.00
SAINT LOUIS BANK	8.18	8.18	1.00	529.29	186.37		28.00
IBERIA BANK	8.05	2.68	3.00	460.33	489.39		109.00
LIBERTY CAPITAL BANK	7.80	3.90	2.00	284.43	35.00	277.00	3.00
MIDFIRST BANK	7.63	1.27	6.00	65.62	51.87	100.67	30.17
AXOS BANK	7.38	2.46	3.00	52.46	73.50	12.00	40.00
PEOPLES BANK	6.55	6.55	1.00	256.29	168.96	800.00	5.00
SUNWEST BANK	6.49	6.49	1.00	108.34	49.65	321.00	5.00
BERKSHIRE BANK	6.49	2.16	3.00	29.83	35.31	100.67	2.50
FIRST INTERSTATE BANK	6.02	3.01	2.00	15.68	260.64	1300.00	6.00
FIRST REPUBLIC BANK	5.87	1.17	5.00	36.08	44.19	146.25	38.67
TBK BANK	5.87	2.93	2.00	31.79	30.59	20.00	5.00
WOOD & HUSTON BANK	5.18	5.18	1.00	14.09	840.63	329.00	6.00
COMERICA BANK	5.08	0.73	7.00	16.72	6.10	49.25	19.71
IDAHO FIRST BANK	4.93	4.93	1.00	39.58	114.29	540.00	2.00
ORIGIN BANK	4.92	4.92	1.00	25.47	56.45	238.00	3.00
GREENWOOD CREDIT UNION	4.40	4.40	1.00	44.92	133.45	365.00	8.00
CIT BANK	4.37	1.46	3.00	43.25	47.16	102.50	43.67
TEXAS CITZENS BANK	4.22	4.22	1.00	28.24	163.37	215.00	2.00
SANTANDER BANK	3.86	1.29	3.00	10.92	28.15	91.33	5.33
AMERICAN AGCREDIT	3.82	3.82	1.00	146.04	67.14	185.00	4.00
NORTHEAST BANK	3.69	3.69	1.00	228.19	134.99		93.00
ARVEST BANK	3.19	3.19	1.00	29.99	22.11	192.00	2.00
UNIVERSITY BANK	3.17	3.17	1.00	23.00	62.55	294.00	2.00
INTERNATIONAL BANK OF COMMERCE	3.03	3.03	1.00	22.69	78.82		136.00
HERITAGE BANK OF COMMERCE	3.02	1.01	3.00	15.59	11.42	66.50	5.50
PACIFIC MERCANTILE BANK	2.98	2.98	1.00	13.36	37.80	190.00	2.00
RESANT BANK	2.96	1.48	2.00	61.02	31.38	134.00	19.00
CITIZENS BANK MINNESOTA	2.90	2.90	1.00	82.88	64.94		25.00
TRI COUNTIES BANK	2.85	2.85	1.00	7.15	59.83	208.00	2.00
FIRST-CITIZENS BANK & TRUST COMPANY	2.84	1.42	2.00	14.91	10.44	95.00	39.00
SUMMIT COMMUNITY BANK	2.70	2.70	1.00	23.40	46.69	195.00	0.00
MERCHANTS BANK FO INDIA	2.70	2.70	1.00	24.81	26.32		2.00
WEBSTER BANK	2.66	1.33	2.00	15.54	18.28	69.50	0.50
TCF NATIONAL BANK	2.55	2.55	1.00	26.01	70.81	337.00	5.00
LIVE OAK BANKING	2.44	1.22	2.00	17.08	20.05	70.50	2.00
EVOLVE BANK & TRUST	2.37	2.37	1.00	0.99	17.75	105.00	5.00
TOTAL	2297.55	2.51	916.00	147.58	124.36	872.86	87.73

Table A2: Ashford's PPP loans broken down by affiliated hotels.

Hotel Name	Loan Size	Hotel Name	Loan Size
One Ocean Atlantic Beach	1,412,300	Silversmith Chicago	540,925
Embassy Suites Santa Clara	953,400	Courtyard Gaithersburg	453,408
Hilton Alexandria	343,315	Courtyard Basking Ridge	452,440
Courtyard Plano	232,903	Annapolis Inn Annapolis	440,453
Courtyard Bloomington	144,533	Courtyard Oakland	439,380
Marriott Fremont	1,248,500	Embassy Suites West Palm Beach	404,025
Marriott Sugarland	934,630	Courtyard Newark	390,865
Residence Inn Newark	230,673	Embassy Suites Houston	283,975
SpringHill Suites Plymouth Meeting	206,605	Residence Inn Phoenix	265,255
SpringHill Suites Baltimore	172,413	Embassy Suites Flagstaff	256,668
Hampton Inn Evansville	127,228	Marriott Arlington	3,853,988
SpringHill Suites Buford	121,363	Renaissance Palm Springs	1,478,560
Fairfield Inn Kennesaw	104,900	Hyatt Regency Savannah	1,456,848
Hilton Boston	1,702,778	Hilton Parsippany	1,293,633
W Hotel Atlanta	1,450,960	Hyatt Regency Hauppauge	1,212,788
Hilton Saint Petersburg	992,100	Embassy Suites Portland	1,048,248
SpringHill Suites Kennesaw	113,493	Hilton Fort Worth	941,715
Sheraton Hotel San Diego	651,500	Hilton Bloomington	920,095
Sheraton Hotel Minneapolis	558,573	Embassy Suites Philadelphia	779,375
Residence Inn Las Vegas	431,068	Le Pavillon	669,553
Residence Inn Lake Buena Vista	407,438	Crowne Plaza Key West	589,225
Courtyard Denver	376,665	Courtyard Fort Lauderdale	311,950
Courtyard Scottsdale	318,470	Hilton Garden Inn Baltimore	298,485
SpringHill Suites Manhattan Beach	298,553	Hilton Garden Inn Virginia Beach	250,285
Courtyard Louisville	269,418	Hampton Inn Phoenix	181,608
Marriott Bridgewater	1,426,000	Hampton Inn Parsippany	154,723
Courtyard Crystal City	749,383	Embassy Suites New York Midtown Manhattan	1,240,595
WorldQuest Resort Orlando	350,203	W Hotel Minneapolis	883,843
Residence Inn Fairfax Merrifield	305,828	Hilton Scotts Valley/Santa Cruz	634,010
Embassy Suites Austin	291,513	Residence Inn Orlando	474,938
Residence Inn San Diego	264,205	Courtyard Manchester	188,893
Embassy Suites Herndon	335,908	Residence Inn Jacksonville	182,805
Courtyard Billerica Boston	395,105	Residence Inn Salt Lake City	175,748
La Posada de Santa Fe	1,201,873	Courtyard Overland Park	174,935
Sheraton Hotel Indianapolis	989,373	SpringHill Suites Durham	171,920
Westin Princeton	938,282	Residence Inn Manchester	168,263
Sheraton Hotel Langhorne	544,695	SpringHill Suites Charlotte	163,878
Total	45,424,448		
Hotels	74		
Avg Loan	613,844		

Table B1. Relationship lending effects on loan size

This table reports regression results for relationship effects on loan size. The response variable captured as the logarithm of loan size in million of US dollars. The variable of interest captures relationship in the following specifications. For Columns I to IV, the indicator rel_{bin} gets one whether the firm has any relationship with its PPP lender. For columns V to VIII, the indicator rel_{bin} gets one whether the firm has lending relationship with its PPP lender. Column IX, the indicator rel_{bin} has the same specification as columns I to IV, but the sample is partitioned for a set of firms listed in large exchanges. Column X, the indicator rel_{bin} has the same specification as columns V to VIII, but the sample is partitioned for a set of firms listed in large exchanges. The control variables follow the following specifications. $employees_{log}$ is the logarithm of number of employees. *leverage* is the firm leverage captured as firm's total debt scaled by assets. *roe* is the firm returns to equity captured as firm's net income scaled by equity. *cash* is the firm cash captured as firm's total cash scaled by assets. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	$loan\ size_{log.usd}$									
	Any Relationship				**Lending Relationship**				$\mathbf{AR}_{high}$	$\mathbf{LR}_{high}$
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**
rel_{bin}	0.29 ***	0.24 ***	0.24 **	0.23 **	0.26 ***	0.22 **	0.22 **	0.20 *	0.29 ***	0.22 **
	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)
$employee_{log}$	0.64 ***	0.62 ***	0.66 ***	0.69 ***	0.64 ***	0.62 ***	0.67 ***	0.70 ***	0.62 ***	0.64 ***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
leverage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.04)	(0.04)
roe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
cash	0.04	0.06	0.12	0.05	0.06	0.09	0.15	0.07	-0.05	0.00
	(0.13)	(0.14)	(0.14)	(0.15)	(0.13)	(0.14)	(0.15)	(0.15)	(0.16)	(0.16)
top.sba	0.08	0.00	0.01	-	0.10	0.01	0.03	-	0.02	0.03
	(0.08)	(0.08)	(0.08)		(0.08)	(0.08)	(0.08)		(0.08)	(0.08)
$foreign.parent_{bin}$	0.02	0.00	0.05	-	0.00	-0.02	0.03	-	0.00	-0.02
	(0.17)	(0.16)	(0.16)		(0.17)	(0.16)	(0.16)		(0.16)	(0.17)
$industry_{fe}$	no	yes	yes	yes	no	yes	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	no	no	yes	yes	yes	yes
$bank_{fe}$	no	no	no	yes	no	no	no	yes	no	no
nobs	564	531	526	526	569	535	530	530	372	374
adj.r.squared	0.66	0.68	0.71	0.72	0.65	0.67	0.70	0.71	0.71	0.71

Table B2. Relationship lending effects on velocity

This table reports regression results for relationship effects on velocity. The response variable is the distance in days between the loan request day and the its approval. The variable of interest captures relationship in the following specifications. For Columns I to IV, the indicator rel_{bin} gets one whether the firm has any relationship with its PPP lender. For columns V to VIII, the indicator rel_{bin} gets one whether the firm has lending relationship with its PPP lender. Column IX, the indicator rel_{bin} has the same specification as columns I to IV, but the sample is partitioned for a set of firms listed in large exchanges. Column X, the indicator rel_{bin} has the same specification as columns V to VIII, but the sample is partitioned for a set of firms listed in large exchanges. The control variables follow the following specifications. $employees_{log}$ is the logarithm of number of employees. *leverage* is the firm leverage captured as firm's total debt scaled by assets. *roe* is the firm returns to equity captured as firm's net income scaled by equity. *cash* is the firm cash captured as firm's total cash scaled by assets. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	$velocity_{days}$									
	Any Relationship				**Lending Relationship**				$\mathbf{AR}_{high}$	$\mathbf{LR}_{high}$
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**
rel_{bin}	-2.44 *	-2.96 **	-3.63 **	-4.73 ***	-3.16 **	-3.55 **	-4.14 ***	-4.56 ***	-3.24 *	-3.99 **
	(1.11)	(1.12)	(1.14)	(1.14)	(1.13)	(1.14)	(1.15)	(1.13)	(1.40)	(1.37)
$employee_{log}$	-0.83 *	-1.07 **	-1.29 **	-1.30 ***	-0.78 *	-1.09 **	-1.35 ***	-1.46 ***	-1.30 *	-1.33 *
	(0.37)	(0.39)	(0.40)	(0.38)	(0.37)	(0.38)	(0.39)	(0.37)	(0.54)	(0.52)
leverage	0.05	0.04	-0.04	-0.08	0.04	0.04	-0.04	-0.07	-1.15	-1.12
	(0.12)	(0.12)	(0.11)	(0.11)	(0.12)	(0.11)	(0.11)	(0.11)	(0.66)	(0.66)
roe	-0.05	-0.07	-0.07	-0.02	-0.05	-0.06	-0.06	-0.01	-0.04	-0.03
	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)	(0.06)	(0.05)
cash	-5.23 *	-4.83 *	-4.82 *	-3.32	-5.45 **	-5.20 *	-5.13 *	-3.59	-6.05 *	-6.55 *
	(2.03)	(2.24)	(2.22)	(2.16)	(2.01)	(2.22)	(2.20)	(2.15)	(2.83)	(2.80)
top.sba	-5.30 ***	-4.79 ***	-4.91 ***	-	-5.34 ***	-4.86 ***	-5.06 ***	-	-6.07 ***	-6.14 ***
	(1.21)	(1.19)	(1.22)		(1.19)	(1.18)	(1.21)		(1.40)	(1.39)
$foreign.parent_{bin}$	-2.15	-1.74	-2.86	-	-1.95	-1.56	-2.61	-	-1.94	-1.80
	(2.58)	(2.50)	(2.42)		(2.57)	(2.49)	(2.40)		(2.86)	(2.83)
$industry_{fe}$	no	yes	yes	yes	no	yes	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	no	no	yes	yes	yes	yes
$bank_{fe}$	no	no	no	yes	no	no	no	yes	no	no
nobs	564	531	526	526	569	535	530	530	372	374
adj.r.squared	0.08	0.09	0.21	0.30	0.08	0.09	0.21	0.30	0.25	0.26

Table B3. Relationship Lending Effects on Non-compliance

This table reports logit regression results for relationship effects on non-compliance. The response variable is a binary indicator to whether a firm has more than 500 employees at the time of the loan. The variable of interest captures relationship in the following specifications. For Columns I to IV, the indicator rel_{bin} gets one whether the firm has any relationship with its PPP lender. For columns V to VIII, the indicator rel_{bin} gets one whether the firm has lending relationship with its PPP lender. Column IX, the indicator rel_{bin} has the same specification as columns I to IV, but the sample is partitioned for a set of firms listed in large exchanges. Column X, the indicator rel_{bin} has the same specification as columns V to VIII, but the sample is partitioned for a set of firms listed in large exchanges. The control variables follow the following specifications. *leverage* is the firm leverage captured as firm's total debt scaled by assets. *roe* is the firm returns to equity captured as firm's net income scaled by equity. *cash* is the firm cash captured as firm's total cash scaled by assets. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	$non\text{-}compliance_{bin}$									
	Any Relationship				**Lending Relationship**				$\mathbf{AR}_{high}$	$\mathbf{LR}_{high}$
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**
rel_{bin}	1.04 **	1.17 **	1.52 **	2.33 ***	1.20 ***	1.36 ***	1.65 ***	2.24 ***	1.87 **	1.79 **
	(0.32)	(0.39)	(0.47)	(0.01)	(0.30)	(0.38)	(0.46)	(0.54)	(0.61)	(0.57)
leverage	-0.11	-0.14	-0.03	0.09	-0.10	-0.10	-0.03	0.07	0.05	0.07
	(0.12)	(0.20)	(0.17)	(0.14)	(0.12)	(0.18)	(0.16)	(0.14)	(0.24)	(0.23)
roe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
cash	-3.98 ***	-3.29 **	-5.46 **	-5.83 **	-3.87 ***	-3.20 **	-5.56 **	-6.00 ***	-7.32 **	-7.58 **
	(0.96)	(1.21)	(1.70)	(1.82)	(0.97)	(1.23)	(1.76)	(1.87)	(2.31)	(2.36)
top.sba	1.00 ***	1.06 **	0.91 *	-	1.00 ***	1.11 **	0.97 *	-	0.59	0.64
	(0.29)	(0.36)	(0.45)		(0.30)	(0.36)	(0.45)		(0.52)	(0.52)
$foreign.parent_{bin}$	1.01 *	1.12	0.85	-	0.90	1.04	0.71	-	1.3	1.14
	(0.58)	(0.74)	(0.87)		(0.59)	(0.74)	(0.87)		(1.07)	(1.06)
$industry_{fe}$	no	yes	yes	yes	no	yes	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	no	no	yes	yes	yes	yes
$bank_{fe}$	no	no	no	yes	no	no	no	yes	no	no
nobs	564	532	526	526	564	531	526	526	372	372
pseudo.squared	0.22	0.45	0.59	0.55	0.23	0.47	0.60	0.64	0.69	0.69

Table B4. Relationship Lending Effects on Paybacks

This table reports logit regression results for relationship effects on loan paybacks. The response variable is a binary indicator to whether a firm paid the PPP loan back. The variable of interest captures relationship in the following specifications. For Columns I to IV, the indicator rel_{bin} gets one whether the firm has any relationship with its PPP lender. For columns V to VIII, the indicator rel_{bin} gets one whether the firm has lending relationship with its PPP lender. Column IX, the indicator rel_{bin} has the same specification as columns I to IV, but the sample is partitioned for a set of firms listed in large exchanges. Column X, the indicator rel_{bin} has the same specification as columns V to VIII, but the sample is partitioned for a set of firms listed in large exchanges. The control variables follow the following specifications. $NComplier_{bin}$ is an indicator variable that gets one whether the firm has more than 500 employees. *leverage* is the firm leverage captured as firm's total debt scaled by assets. *roe* is the firm returns to equity captured as firm's net income scaled by equity. *cash* is the firm cash captured as firm's total cash scaled by assets. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gets one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	$payback_{bin}$									
	Any Relationship				**Lending Relationship**				AR_{high}	LR_{high}
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**
rel_{bin}	0.31	0.45	0.51	0.40	0.59 *	0.85 *	0.75 *	0.86 *	0.68	0.40
	(0.31)	(0.34)	(0.40)	(0.46)	(0.31)	(0.35)	(0.37)	(0.45)	(0.42)	(0.43)
$NComplier_{bin}$	1.26 ***	1.21 **	1.64 **	2.14 **	1.28 ***	1.23 **	1.67 **	2.26 **	1.25 *	1.31 *
	(0.37)	(0.46)	(0.55)	(0.64)	(0.38)	(0.46)	(0.56)	(0.65)	(0.60)	(0.61)
leverage	-0.55 *	-0.40	-0.43	-0.30	-0.53 *	-0.38	-0.43	-0.35	-0.17	-0.18
	(0.32)	(0.32)	(0.35)	(0.36)	(0.31)	(0.30)	(0.34)	(0.35)	(0.31)	(0.31)
roe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.34)	(0.02)	(0.02)
cash	1.33 *	1.70 *	1.67 *	1.72 *	1.27 *	1.58 *	1.65 *	1.80	1.57 *	1.62 *
	(0.57)	(0.71)	(0.77)	(0.86)	(0.57)	(0.70)	(0.77)	(0.85)	(0.86)	(0.85)
top.sba	0.89 **	0.89 **	0.89 *	-	0.94 **	0.95 **	0.93 *	-	0.69 *	0.76 *
	(0.3)	(0.32)	(0.38)		(0.3)	(0.32)	(0.38)		(0.42)	(0.41)
$foreign.parent_{bin}$	0.49	0.38	0.36	-	0.47	0.31	0.33	-	0.77	0.73
	(0.61)	(0.66)	(0.72)		(0.6)	(0.65)	(0.72)		(0.76)	(0.76)
$industry_{fe}$	no	yes	yes	yes	no	yes	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	no	no	yes	yes	yes	yes
$bank_{fe}$	no	no	no	yes	no	no	no	yes	no	no
nobs	564	531	526	526	564	531	526	526	372	372
pseudo.r.square	0.15	0.21	0.42	0.53	0.14	0.26	0.41	0.52	0.41	0.41

Table B5. Relationship Effects on Loan Size for Private Firms

This table reports OLS regression results for relationship effects on loan size for private firms. The response variable is the logarithm of loan size in million of US dollars. Columns I to VIII report results for the full sample. Columns IX and X report results for a sample matched by number of employees, industry (NAICS code) and state. The variable of interest captures relationship in the following specifications. For columns I to IV, and IX, the indicator rel_{bin} takes the value of one whether the firm has any relationship as informed by DealScan dataset. For columns V to VIII, and X, the indicator rel_{bin} takes the value of one whether the firm has lending relationship as informed by DealScan dataset. The base category for all columns is transaction firms. The control variables follow the following specifications. $employees_{log}$ is the logarithm of number of employees. *top.sba* is an indicator variable that gest one whether the PPP lender is in the TOP 100 SBA lenders for the last quarter of 2019. *foreign.parent* is an indicator variable that gest one whether the PPP lender is subsidiary of a foreign parent bank. $industry_{fe}$ indicates industry fixed effects based on NAICS three digits. $state_{fe}$ indicates state fixed effects. $bank_{fe}$ indicates bank fixed effects set as binary indicators for the top 20 lenders. All continuous predictors are mean-centered and scaled by 1 standard deviation. Standard errors are heteroskedasticity robust. *** p < 0.001; ** p < 0.01; * p < 0.05.

	$loan\ size_{log.usd}$									
	Any Relationship				**Lending Relationship**				**Matched**	
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**
rel_{bin}	0.47 ***	0.44 ***	0.43 ***	0.38 ***	0.99 ***	0.96 ***	1.15 ***	1.05 ***	0.14 ***	0.94 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.04)	(0.04)	(0.05)	(0.04)	(0.02)	(0.07)
$employees_{log}$	0.38 ***	0.38 ***	0.39 ***	0.48 ***	0.38 ***	0.38 ***	0.39 ***	0.48 ***	0.58 ***	0.57 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
top.sba	0.02 ***	0.02 ***	0.01 ***	-	0.02 ***	0.02 ***	0.01 ***	-	-	-
	(0.00)	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)			
foreign.parent	0.06 ***	0.05 ***	0.06 ***	-	0.06 ***	0.05 ***	0.06 ***	-	-	-
	(0.00)	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)			
$industry_{fe}$	no	yes	yes	yes	no	yes	yes	yes	yes	yes
$state_{fe}$	no	no	yes	yes	no	no	yes	yes	yes	yes
$bank_{fe}$	no	no	no	yes	no	no	no	yes	yes	yes
nobs	615,292	615,292	615,292	615,292	615,292	615,292	615,292	615,292	8,996	8,996
adj.r.squared	0.24	0.27	0.29	0.36	0.24	0.27	0.28	0.36	0.50	0.55