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Judit Temesvary and Andrew Wei

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Domestic Lending and the Pandemic:

How Does Banks' Exposure to Covid-19 Abroad

Affect Their Lending in the United States?

By Judit Temesvary and Andrew Wei[1]

Board of Governors of the Federal Reserve System

Washington, DC 20551

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Abstract:

Shortly after the onset of the pandemic, U.S. banks cut their term lending to businesses–but little is known about how much, and why, banks' choice to ration credit contributed to this contraction. Afforded by a unique combination of several highly granular bank regulatory datasets, we identify the role of banks' exposure to Covid-related restrictions abroad – a balance sheet "shock" that affects only banks' credit supply, but not their US borrowers' demand for loans. We find that US banks with higher foreign Covid exposure cut their lending to US firms, and tightened terms on such loans, significantly more. Banks having become less risk tolerant, as well as foreign borrowers defaulting and drawing down on their cross-border credit lines, were potent mechanisms through which foreign Covid exposure reduced banks' domestic lending.

Keywords: Cross-border exposure, bank lending, bank capital, bank balance sheet liquidity

JEL codes: F34; F65; G15; G21

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Corresponding author: Judit Temesvary, judit.temesvary@frb.gov; 202-379-6229.

1. Introduction

The onset of the pandemic had profound effects on US banks and the availability of bank credit in the United States. A quickly expanding literature (Kapan and Minoiu, 2021; Li et al, 2020; Chodorow-Reich et al, 2021; Berger et al, 2021) has given us three main messages. First, after the onset of the pandemic, banks continued to serve the liquidity needs of their large corporate borrowers via credit lines (Li et al, 2020; Chodorow-Reich et al, 2021; Kapan and Minoiu, 2021). Second, at the same time banks substantially tightened terms on credit to other corporate borrowers. They did so especially in their term lending (Kapan and Minoiu, 2021) and via shorter-term credit lines, particularly to smaller firms (Chodorow-Reich et al, 2021) and to known borrowers (Berger et al, 2021) – making such firms particularly liquidity-constrained (Chodorow-Reich et al, 2021). Third, reduced lender risk tolerance served as a driver of banks' choice to cut loans (Kapan and Minoiu, 2021), while they remained amply liquid and capitalized (Li et al, 2020), despite sharp stock declines (Acharya et al, 2021).

A very important question that has remained unanswered thus far is: *why did banks contract their lending? Specifically, how have the pandemic and Covid-19-related restrictions affected banks' supply of credit?* The fact that this question has remained unanswered thus far is not surprising, given that trying to disentangle the credit supply vs. demand-side effects of the pandemic – or any crisis – is fraught with difficulties. Afforded by the novel combination of several highly granular bank regulatory datasets, we tackle this identification issue by focusing on the role of US banks' exposure to Covid-related restrictions in *foreign* countries via their direct cross-border lending (henceforth, foreign Covid exposure) – "shocks" that affect banks' US balance sheet directly, but not their US-based borrowers. We find that (especially worse-capitalized banks) with heavier foreign Covid exposure cut their domestic lending and tightened lending standards

much more. We point to three mechanisms through which higher exposure to economic restrictions has reduced banks' domestic lending: lower risk tolerance by banks, high drawdowns by foreign borrowers on their cross-border credit lines, and higher foreign defaults. Our uniquely detailed data also allow us to ensure that these results are robust to controls for banks' "global-ness" and for firms' Covid exposure in the US, including adding state-level restrictions, bank*firm*maturity /credit rating and industry*quarter fixed effects and cutting by size and industry Covid sensitivity.

To our knowledge, our identification strategy and results are unique in the Covid banking literature. More broadly, we contribute to the historical strand of papers that have attempted to delineate credit supply and demand effects during crises. Our contribution this way is largely due to our ability to overcome the high data needs that tackling several related identification issues requires. First, the pandemic (and other crises) and the associated economic restrictions affected borrowers and banks simultaneously (Baltik et al, 2020; Hasan et al, 2021). Therefore, to identify credit supply-side effects, one needs to focus on an exogenous "shock" that affected US banks (and thus their credit supply) only, but not US corporates (and thus their credit demand) – rendering the identification of supply-side drivers in a *domestic* context infeasible. Second, to successfully identify the *supply*-side effects of Covid (and other large shocks), one needs loan, or at least bank-borrower, level data, to control for changes in demand at the firm level (Khwaja and Mian, 2008).

Afforded by the novel combination of three highly granular confidential banking datasets (the loan-level FR Y14, the FFIEC 009 on banks' foreign exposures, and the Senior Loan Officer Opinion Survey (SLOOS) on bank lending standards and reasons), in this paper we implement a unique identification strategy that effectively meets both these requirements. First, for a "shock" that affects banks only, but not their US borrowers, we focus on banks' exposure to Covid-related effects *abroad,* through their (on-balance-sheet) *cross-border* lending. Arguably, for US banks

that lend across borders, these shocks impact balance sheets directly, like how US restrictions do, but without the confounding effects on domestic borrowers. Indeed, starting around the onset of the pandemic, governments in countries to which US banks lent the most imposed strict measures to curb the spread of the disease, closing down large segments of their economies and instituting stay-at-home orders (Hale et al, 2021; Figure A1), leading to higher corporate loan defaults (Hasan et al, 2021) and, as we show, also to higher drawdowns and charge-offs on loans to foreigners.

Claims abroad make up around 30 percent of larger US banks' assets; therefore, these foreign exposures are economically meaningful. Accessing highly detailed regulatory data on individual US banks' cross-border claims at the bank*country*sector level (from the FFIEC 009 Country Exposure reports), we construct for each bank a foreign Covid exposure measure (our "shock") as the portfolio-weighted average of Covid-related economic restrictions (from Hale et al, 2021), Covid cases and deaths, and corporate bankruptcies across all foreign countries whose borrowers the bank lends directly to. As an example, we utilize the fact that Covid-related "effects" in Germany – such as economic restrictions there, and the resulting credit line drawdowns by German clients, or losses incurred on direct loans to German borrowers – affect those US banks that have held cross-border claims (e.g. loans) in Germany, but not these banks' US-based borrowers (such as a small firm in Minnesota) –thus serving as an exogenous balance sheet shock.

Our approach has several benefits. By focusing on the *domestic* (US) lending effects of banks' *foreign* exposures that leaves US borrowers unaffected, we can isolate the pandemic's effects on the *supply* of credit. In other words, we rely on the geographic separation of the foreign "shock" (a bank's Covid exposure abroad) and its domestic lending – allowing us to argue that the economic fallout from Covid in foreign countries are highly unlikely to affect the borrowing decisions of firms in the United States. By focusing on exposures via *cross-border* claims –that

are held on the US (parent) bank's balance sheet directly, similar to how domestic (US) loans are held – we can examine *direct* balance sheet shocks, as opposed to shocks transmitted indirectly via foreign affiliates. To measure changes in lending to US firms in detail, we study loan-level data from the FR Y14 (the US "credit registry"), on both the intensive and extensive margins. To further aid the identification of credit *supply* effects, we bring in SLOOS micro data on changes in banks' lending standards, an established proxy of credit supply changes (Bassett et al, 2014).

Second, afforded by the loan-level Y14 data, we include a wide range of extensive and time-varying fixed effects and firm traits (such as credit quality), to account for the confounding credit demand-side effects of the pandemic. Returning to our example above, we are able to explicitly control for Covid-related restrictions in Minnesota, the location of our example borrowing firm – accounting for Covid's effect on firms' credit demand. Similarly, our use of bank*firm*maturity and bank*firm*risk rating fixed effects means comparing (foreign Covid exposure-induced) changes in lending within each bank-firm pair, abstracting away from differential effects by relationship type (Berger et al, 2021). The detailed Y14 data also enables us to study effects on both the intensive (lending volumes) and extensive (number of loans) margins.

We find that US banks with heavier foreign Covid exposures cut their lending via term loans, and tightened their lending standards, to firms in the United States and lower bank capitalization intensified this effect. The magnitudes are economically significant. A one percentage point increase in a bank's exposure reduced that bank's lending and the growth in its number of loans to US firms by 6-7 percentage points –equivalent to a 7.9-billion-dollar decline. Furthermore, the effect of a one percentage point higher foreign Covid exposure is more than twice as large for a low vs. well-capitalized bank (at the 10^{th} and 90^{th} percentiles, respectively).

We also dig deeper to uncover the mechanisms through which foreign Covid exposure led banks to cut back on their US lending. Using data from banks' 009 Country Exposure Reports, we show that foreign borrowers who experienced stricter Covid-related economic restrictions drew down significantly more on the cross-border credit lines that US banks pre-committed to them. This suggests that banks' foreign commitments via credit lines may have restricted banks' ability to serve domestic borrowing needs. In addition, bringing in survey micro data on banks' reasons for tightening lending standards, we find that US banks with heavier foreign Covid exposures also cited reduced risk tolerance more – a factor that Kapan and Minoiu (2021) found to be associated with bigger domestic credit cuts. More exposed banks also cited a deteriorated capital position as a reason for tightening, suggesting that foreign Covid exposure limited credit to US borrowers in part by driving up banks' risk aversion as they grew concerned about their capital positions. Consistently, banks with heavy foreign Covid exposure saw higher charge-offs on foreign loans.

Our results have important policy implications. Specifically, our finding on the domestic credit crunching effect of credit line drawdowns by foreign borrowers highlights the importance of carefully monitoring banks' commitments abroad. More broadly, our results on the crisis-induced contraction in credit supply suggest that balance sheet shocks can have important spillover effects even when capital and liquidity are abundant, if such shocks make banks more risk averse and concerned about capital, amid reputational concerns. We find strong credit supply effects *despite* aggressive policy actions globally to address the fallout from Covid (Demirguc-Kunt et al, 2021), suggesting that credit outcomes may have been even worse, absent accommodative policies.

The paper proceeds as follows. Section 2 describes our hypotheses and in the context of the related literature. Section 3 presents the econometric methodology and Section 4 details the data. Section 5 presents the empirical results and Section 6 summarizes and concludes the paper.

2 Hypothesis development and literature review

We consider our work as a primarily "domestic lending" paper; we utilize the cross-border dimension of Covid exposures primarily to ensure the exogeneity of our direct balance sheet "shock". As such, our study is closest related to the evolving literature on the pandemic's US lending effects. We hypothesize that *US banks restricted their supply of credit to US-based corporate borrowers (both in volume and standards), and banks with heavier exposure to Covid's economic effects (via cross-border claims abroad) did so substantially more (Hypothesis #1)*. We base this conjecture on a common result from the growing Covid literature: new corporate bank credit contracted during the pandemic. Specifically, US banks served the liquidity needs of their corporate clients by accommodating drawdowns on existing credit lines (Kapan and Minoiu, 2021; Li et al, 2020), and, as a result, banks cut (and tightened standards on) new term loans (Kapan and Minoiu, 2021), making small firms particularly credit constrained (Chodorow-Reich et at, 2021).

We link these documented pandemic-era reductions in the supply of bank credit to disruptions in banks' willingness/ability to lend (specifically, banks' foreign Covid exposure). Our work is related with another strand of the banking literature which shows that balance sheet disruptions/shocks can cause banks to rebalance their asset portfolio and ration lending. Several notable papers in this strand have documented national and international spillover effects from asset losses in one region to other areas (Kleimeier et al, 2013 among others). In recent work, Hasan et al (2021) document Covid's negative effect on global syndicated lending via corporate defaults across regions. Earlier (non-Covid) papers found spillover effects from sovereign downgrades (Schertler and Moch, 2021), nuclear tests (Khwaia and Mian, 2008), and regional

floods (Choudhary and Jain, 2017).[2] Our focus on international asset exposures being a source of bank "shocks" relates to Peek and Rosengren (1997) who find that stock market-induced losses at Japanese banks reduced lending by their US affiliates.[3] Unlike Peek and Rosengren (1997) and subsequent papers, we focus on direct balance sheet effects resulting from cross-border exposure to foreign shocks, rather than international spillovers into affiliate activities via internal capital markets. *We show that US banks with heavier foreign Covid exposures cut their US lending more.*

Next, we explore the role of balance sheet constraints in propagating the effect of foreign Covid exposure into domestic lending. We assert that banks differ in how much foreign Covid exposure causes them to ration credit to US borrowers. Specifically, we point to capitalization as a determinant of the extent of transmission effects into US lending. We hypothesize that *lower-capitalized banks saw stronger lending effects from foreign Covid exposure (Hypothesis #2)*. Recognizing that due to the decade-long, post-GFC buildup of capital and liquidity and the influx of deposits from fiscal policy interventions, banks went into the crisis with ample liquidity (Li et al, 2020), we base this conjecture on two reasons. First, lower capitalized banks are perceived as "riskier" by external funding markets and thus pay higher borrowing costs (Bernanke and Gertler, 1995; Bernanke et al, 1999; Halvorsen and Jacobsen, 2016). Indeed, in the pandemic, banks with lower capital ratios saw larger increases in their CDS spreads (BCBS, 2021) and larger Covid-19-related declines in stock prices (Acharya et al, 2021), implying higher reputational effects for these

[2] More broadly, our hypothesized effects of banks' Covid-19 exposure are consistent with papers on natural disasters (Cortes and Strahan, 2017; Berg and Schrader, 2016; Hosono et al, 2016) and on pandemics (Gong et al, 2020; Houle et al, 2015; Leoni, 2011; Zhang et al, 2020; Lagoarde-Sego and Leoni, 2013).

[3] Focusing on the transmission of a liability-side shock into lending, papers have found strong lending effects from funding shocks that Peruvian banks suffered due to the 1998 Russian debt crisis (Schnabl, 2012) and that European branches suffered due to the European sovereign debt crisis (Correa et al, 2021). More broadly, the literature has found that banks' international exposure brings not only benefits (additional funding sources (Cetorelli and Goldberg. 2012); higher-yield investments (Temesvary, 2014), and shock absorption (Cetorelli and Goldberg, 2011)), but also risks (Frame et al, 2020; Karolyi et al, 2018) and to spillovers from abroad (Brauning and Ivashina, 2018, Hale et al, 2020).

banks. Second, despite having ample liquidity and capital and despite regulatory calls to draw on their buffers to lend, large banks were reluctant to lower their risk-weighted capital (Abboud et al, 2021), perhaps due to concerns about an adverse market reaction. *We find that higher foreign Covid exposure led to loan cuts especially at lower-capitalized banks.*

Third, we explore several mechanisms through which foreign Covid exposure affected domestic lending. Using SLOOS micro data, we examine if *foreign Covid exposure reduced banks' risk tolerance (Hypothesis #3a)*. This conjecture further explores Kapan and Minoiu's (2021) result that US banks that tightened their corporate loan standards reported reduced risk tolerance as an important reason for doing so. Next, we examine if *foreign borrowers who faced economic restrictions drew down more on the cross-border credit lines that US banks pre-committed to them (Hypothesis #3b)*, serving as a mechanism through which foreign Covid exposure led to lending cuts.[4] Lastly, we study if *foreign economic restrictions causing banks to face higher defaults on their corporate loans (Hypothesis #3c)* was a path to domestic lending cuts. The idea is that foreign borrowers who faced stricter economic restrictions not only drew down their credit lines more, but also suffered more bankruptcies – leading to loan and investment losses to banks (Ari et al, 2020; Park and Shin, 2021) and lower credit supply (Serrano, 2021). W*e find that all three mechanisms were at play in connecting banks' foreign Covid exposure to credit cuts.*

[4] We study the effect of foreign Covid exposure on existing bank-firm relationships. The emerging literature on relationship lending and credit supply during Covid is mixed. Hasan et al (2021) show that relationships lower the credit effects of Covid-19, but Berger et al (2021) find that clients with closer banking relationships suffered deeper credit cuts and worse terms. Given our focus on lending in already existing relationships, Berger et al (2021)'s results in the context of our work suggests that the credit cuts may be partly due to banks cutting loans especially to firms with existing relationships – which can be costly to replace (James, 1987; Slovin et al, 1993).
Foreign exposures can lead to domestic lending cuts also via large movements in the value of investments (such as the stock market; Zhang, Hu and Ji, 2020; Acharya, Engle and Steffen, 2021).

3 Econometric methodology

3.1. Foreign Covid Exposure and Domestic Lending (Hypotheses #1 and #2)

Our main explanatory variable is bank *i*'s foreign Covid-19 exposure in quarter *t*, denoted by $X_{i,t}$. We take the weighted average of country-specific restrictions proxies (such as the government stringency index) $x_{n,t}$ across all country *n*'s that bank *i* lends to at time *t*.

1. $X_{i,t} = \sum_{n=1}^{N} \beta_{i,n,t}\, x_{n,t}$

To construct the country-specific weights $\beta_{i,n,t}$, we use the fraction of bank *i*'s cross-border claims in country *n* in quarter *t-1* in bank *i*'s total cross-border claims in *t-1*.

2. $\beta_{i,n,t} = \frac{Claims_{i,n,t-1}}{\sum_{n=1}^{N} Claims_{i,n,t-1}}$

In our benchmark specification, we estimate (at the bank-firm-loan maturity or bank-firm-credit rating level) $\Delta \ln(Y)_{i,j,t}$, which is the quarterly change in the natural logarithm of total lending volume (or the number of loans). In some estimations, $\Delta \ln(Y)_{i,j,t}$ denotes loan rates and spreads.

3. $$\Delta\, ln(Y)_{i,j,t,g} = \alpha_1 + \sum_{k=1}^{2}[\alpha_{2,k}\, X_{i,t-k} + \alpha_{3,k}\, C_{i,t-k} + C_{i,t-k} \times \Big[\alpha_{4,k}\, X_{i,t-k} + \\ + \alpha_{5,k} \left(\begin{matrix} Firm \\ Controls \end{matrix}\right)_{j,t} + \alpha_{6,k}\left(\begin{matrix} Bank \\ Controls \end{matrix}\right)_{i,t}\Big] + \alpha_{7,k} \left(\begin{matrix} Firm \\ Controls \end{matrix}\right)_{j,t} + \\ + \alpha_{8,k}\left(\begin{matrix} Bank \\ Controls \end{matrix}\right)_{i,t}] + \left(\begin{matrix} Fixed \\ Effects \end{matrix}\right)_{i,j,g} + \varepsilon_{i,j,t,g}$$

where *i, j,* and *t* index banks, firms, and quarters respectively, and *g* indexes either loan maturity or credit rating category. *Firm Controls* and *Bank Controls* are firm and bank-specific balance sheet control variables, respectively, and *Fixed Effects* has bank, bank*firm, bank*firm*maturity or bank*firm*credit rating fixed effects. We interact each explanatory variable with bank capital ratio *C,* and we include two lags of all the right-hand-side variables. As per Hypothesis #1, we

expect greater foreign Covid exposure to translate into lower US-based lending: $\sum_{k=1}^{2} \alpha_{2,k} < 0$. Hypothesis #2 suggests that this effect is larger for worse-capitalized banks: $\sum_{k=1}^{2} \alpha_{4,k} > 0$.

In our study of foreign exposure' effects on lending standards, our dependent variable is the quarterly change in bank *i*'s standards on lending to large and middle-market firms from the SLOOS micro data, denoted by $\Delta\, SLOOS\_STDS_{i,t}$, where higher values mean easier standards.

4. $$\Delta\, SLOOS\_STDS_{i,t} = \beta_1 + \sum_{k=1}^{2}[\beta_{2,k}\, X_{i,t-k} + \beta_{3,k}\, C_{i,t-k} + C_{i,t-k} \times \beta_{4,k}\, X_{i,t-k}] + \begin{pmatrix} Fixed \\ Effects \end{pmatrix}_{i,t} + \mu_{i,t}$$

We conjecture that greater foreign Covid exposure means tighter C&I lending standards: $\sum_{k=1}^{2} \beta_{2,k} < 0$ (Hypothesis #1), and especially so for worse-capitalized banks: $\sum_{k=1}^{2} \beta_{4,k} > 0$.

3.2. Mechanisms (Hypothesis #3)

We examine the relationship between bank risk tolerance and foreign Covid exposure by estimating Equation (4) for the set of banks that reported tighter C&I standards. We replace the dependent variable with three reasons $SLOOS\_RSNS_{i,t}$ banks cited for tightening C&I loan standards: reduced risk tolerance, unfavorable economic outlook, and deteriorated capital position. As higher values mean banks chose the reason as more important, higher foreign exposure translates into reduced risk tolerance, and especially so for lower-capitalized banks (Hypothesis #3a) if the sum of coefficients on $X_{i,t-k}$ and $C_{i,t-k} \times X_{i,t-k}$ are positive and negative, respectively.

Next, we examine (at the bank-country level) if stricter economic restrictions $x_{n,t}$ in country *n* caused bank *i* to experience higher cross-border credit line drawdowns $\Delta COMMIT_{i,n,t}$ on its pre-committed credit lines to borrowers in that country *n* (Hypothesis #3b), as follows:

5. $\Delta COMMIT_{i,n,t} =$

$$\gamma_1 + \sum_{k=1}^{2}[\gamma_{2,k}\, x_{i,n,t-k} + \gamma_{3,k}\, C_{i,t-k} + C_{i,t-k} \times \gamma_{4,k}\, x_{i,n,t-k}] + \begin{pmatrix} Fixed \\ Effects \end{pmatrix}_{i,n,t} + \nu_{i,n,t}$$

with bank and bank*country *Fixed Effects*. By Hypothesis #3b, $\sum_{k=1}^{2} \gamma_{2,k} > 0$ and $\sum_{k=1}^{2} \gamma_{4,k} < 0$.

Lastly, we examine if higher foreign Covid exposure reduces domestic lending by causing the bank to face more defaults on foreign loans (Hypothesis #3c) in two ways. First, we run bank-level regressions in which we relate bank *i*'s foreign Covid exposure $X_{i,t}$ to losses it faces on its foreign corporate loans, denoted by $CHARGE\_OFFS_{i,t}$.

6. $CHARGE\_OFFS_{i,t} =$

$$\delta_1 + \sum_{k=1}^{2}[\delta_{2,k}\, X_{i,t-k} + \delta_{3,k}\, C_{i,t-k} + C_{i,t-k} \times \delta_{4,k}\, X_{i,t-k}] + \begin{pmatrix} Fixed \\ Effects \end{pmatrix}_{i,t} + \omega_{i,t}$$

With bank and year-quarter *Fixed Effects*. By Hypothesis #3c, $\sum_{k=1}^{2} \delta_{2,k} > 0$ and $\sum_{k=1}^{2} \delta_{4,k} < 0$. Second, we examine if country *n*'s restrictions $x_{n,t}$ lead to higher (total or corporate) *Bankruptcies* there, with Hypothesis #3c implying a positive relationship. We then calculate a weighted average exposure to bankruptcies $B_{i,t}$, akin to $X_{i,t}$, for each bank and run regressions as in Equation (3). By Hypothesis #3c, the coefficients on $B_{i,t}$ and $C_{i,t} \times X_{i,t}$ are negative and positive, respectively.

4 Data

4.1 Measures of US-based corporate lending: Changes in C&I loans and lending standards

We measure changes in US-based corporate lending in two ways: via changes in loan volumes and number of loans (at the bank-firm-maturity or bank-firm-credit rating levels) and via changes in

C&I lending standards (at the bank level). For the former, we collect data on banks' US-based loan originations from the FR Y14 database. For the latter, we utilize micro data from the SLOOS.

In more detail, the (FR) Y14 database is a highly detailed regulatory database (the closest to a credit registry available for the United States) that provides quarterly data on all corporate loans made by the largest US bank holding companies.[5] US banks report loan originations with commitments over 1 million dollars with quarterly frequency, covering about three-fourths of all US commercial and industrial lending. Our sample covers 33 large US banks, for which we have data on loans to 138,975 unique firms. During our sample period, less than 10 percent of firms borrowed from more than one bank in each quarter. For our dependent variables, we focus on the dollar volume and number of US-based loan originations over 2020. We are interested in how a bank's foreign Covid exposure affects the way in which the *intensity of its lending relationships evolves* over time. Therefore, to capture the *intensity* of lending relationships, we aggregate loan-level data at the bank-firm-loan maturity or bank-firm-credit rating level. To capture the *evolution* of these relationships, we use as our dependent variables the quarterly changes in the dollar volume and the number of loans, for the given bank-firm-maturity or bank-firm-credit rating bucket. Corporate lending declined in 2020 at a quarterly average rate of 1.5 percent within bank-firm-maturity/credit rating pairs (Table 1). The number of loans issued each quarter was little changed.

We measure changes in C&I lending standards using micro (bank-level) data from banks' quarterly responses to the SLOOS. Specifically, we use banks' responses to the following question:

[5] The respondent panel is comprised US BHCs, US IHCs of foreign banking organizations, and covered SLHCs with $100 billion or more in total consolidated assets, as based on: (i) the average of the firm's total consolidated assets in the four most recent quarters as reported quarterly on the firm's Consolidated Financial Statements for Holding Companies (FR Y9C); or (ii) if the firm has not filed an FR Y9C for each of the most recent four quarters, then the average of the firm's total consolidated assets in the most recent consecutive quarters as reported quarterly on the firm's FR Y9Cs. Participation in reporting is mandatory. For further details, please refer to the reporting form at https://www.federalreserve.gov/apps/reportforms/reportdetail.aspx?sOoYJ+5BzDZGWnsSjRJKDwRxOb5Kb1hL.

"Over the past three months, how have your bank's credit standards for approving applications for C&I loans or credit lines—other than those to be used to finance mergers and acquisitions—to large and middle-market firms changed?". We focus on standards for large firms, which (defined by SLOOS as those with annual sales over 50 million dollars) make up nearly 90 percent of our sample. Higher values of responses indicate easing standards and lower values show that the respondent bank has tightened C&I standards compared to the prior quarter. On average, banks reported having left their C&I lending standards unchanged from one quarter to the next over 2020, with responses ranging from having tightened standards significantly to having eased them somewhat. From the SLOOS, we also include banks' responses for select reasons as to "why" they tightened C&I loan standards. On average, banks reported that an uncertain economic outlook is a very important reason for having tightened standards, reduced risk tolerance is a somewhat important reason, and deterioration in their capital position was cited as not an important reason.

4.2 Measures of foreign Covid-19 exposure

Our primary proxy for a bank's foreign Covid exposure is the weighted average of the country-specific government response *Stringency Index* from the Oxford COVID-19 Government Response Tracker database (Hale et al., 2021).[6] This index incorporates several sub-indices: Measures related to *Containment and closure* (School closing; Workplace closing; Cancellation of public events; Restrictions on gathering size; Closing of public transport; Stay-at-home requirements; Restrictions on internal movement; Restrictions on international travel) and *Health systems* (Public information campaign). As such, increasing values of this index over time (Figure A1) testify to increasing government intervention in response to the pandemic, corresponding to

[6] The historical series of the data, including the Stringency Index and its subcomponents, are available at: https://github.com/OxCGRT/covid-policy-tracker/raw/master/data/timeseries/OxCGRT_timeseries_all.xlsx

more restrictive economic actions. We also use additional measures of the fallout from Covid, in alternative specifications. We examine the number of *new Covid-19 cases* and *new Covid-19-related deaths*, scaled by population, for the countries a bank holds claims in. Importantly, therefore, these measures are *independent* of the steps that the US government and states have taken in response to the US Covid epidemic (which we include additional controls for). This separation of *foreign* exposure and *domestic* lending effects is a notable identification advantage of our estimation setup. Furthermore, these measures capture interference that can translate into higher credit needs by firms abroad – or even defaults and losses for the bank. Indeed, we later show that across countries, higher values of the *Stringency Index* indeed translate into higher cross-border credit line drawdowns (measured from the FFIEC 009, Table 7) and ultimately, higher bankruptcies (from OECD Statistics, Table 9A) and charge-offs (from the Y9-C, Table 8).

To understand how exposed each bank is to Covid-related restrictions abroad, we need to have a full picture of the extent of individual banks' foreign activities. For this purpose, we utilize a rarely accessed regulatory database on U.S. banks' cross-border and foreign affiliate claims from the FFIEC 009 Data Report form.[7] This dataset shows claims which, in addition to loans, include bonds, stocks, and guarantees, enabling us to capture a bank's cross-border exposure via a wide range of foreign investments. Banks report on this supervisory form if they have 30 million dollars or more in claims on residents of foreign countries.[8] We construct the bank and country-specific weights $\beta_{i,j,t}$ (Equation (1)) using claims on both ultimate and immediate counterparty risk bases.[9]

[7] For more information on this regulatory reporting form, see https://www.ffiec.gov/forms009_009a.htm.
[8] Cross-border claims and foreign affiliate claims are reported separately for each foreign country-bank-time (i.e., year-quarter) combination. In additional specifications, for each bilateral bank-foreign country pair, we use cross-border claims data delineated by target sector of investment (financial sector and non-financial private sector).
[9] Lending calculated on an immediate counterparty basis captures the actual amount of claims the bank invests in a foreign country, while lending calculated on an ultimate risk basis is adjusted for transfer of risk exposure. This implies that the ultimate risk amount may differ from the actual (immediate counterparty) amount extended to the host country. The ultimate risk amounts reflect the claims for the repayment of which the given host country is responsible. For

The banks in our sample have substantial holdings abroad: In the fourth quarter of 2019, before the onset of the Covid crisis, foreign claims made up 30 percent of the average sample bank's assets. Not only the scale, but the scope of US banks' foreign exposure is notable: US banks are well diversified across foreign countries. Any one country sees an average of only 0.9 percent of a US bank's cross-border portfolio and the average bank holds cross-border claims in as many as 93 countries; only about one-fourth of our observations come from banks that hold claims in 33 or fewer foreign countries. As a result, the weighted average foreign Covid exposure that we construct by combining the FFIEC 009 data (for weights) with the *Government Stringency Index* (Equation (1)) varies substantially in the cross-section: with a mean of 57 and standard deviation of near 20, the index ranges from 23 (at the 10th percentile) to 69 (at the 90th percentile; Table 1).

We differentiate the lending effect of foreign Covid exposure by bank capitalization. In our main specifications, we use banks' Tier1 capital ratio: a bank's core capital relative to its risk-weighted assets. This key regulatory capital ratio remained high near 13 percent in our sample; the largest US banks were well capitalized on average even during the crisis (Li et al, 2020).[10]

4.3 Bank and firm-specific control variables

In addition to the detailed fixed effects, we include in our specifications a set of measures for balance sheet and financial health at both the bank and firm levels. *Total Assets* capture the scale of operations.[11] *Return on Assets* is a direct and well-established measure of profitability and is

instance, if Country A issues guarantees for the loans that the U.S. banks made to Country B, then Country A's ultimate risk exposure would exceed the immediate counterparty claims in that country. Similarly, Country B's reported ultimate risk claims would be less than the immediate counterparty claims the bank acquired there.

[10] In alternative specifications, we use the common equity Tier1 (CET1) capital ratio, which excludes preferred shares and non-controlling interests from Tier1 capital. This ratio remained at 12.4 percent of risk-weighted assets in 2020.

[11] For borrowing firms, Total assets (firm size) can proxy for international exposure: the extent to which they are exposed to the effects of the economic fallout from foreign governments' Covid-related restrictions. Hence, in some specifications, we delineate firms by size, examining those below and above the sample median asset size separately.

hence a potentially important driver of a bank's ability to supply credit, and a firm's need for financing. Bank *Leverage Ratio* is a measure of a bank's capital relative to its total assets, and hence proxies the bank's ability to withstand economic shocks. For firms, this variable captures the extent of a bank's liabilities relative to its assets, and hence measures vulnerability to shocks. We collect bank-level control variables from a merger-adjusted version of the quarterly Y9C data and firm-level controls from the Y14 dataset. Table 1 shows definitions and summary statistics.

In select specifications, we include the Covid government restrictions *Stringency Index* for the US state in which the borrowing firm is headquartered (from the Oxford COVID-19 database), to control for restriction effects on credit demand. We also add a bank's share of foreign assets in some specifications, to control for more global banks being more affected by foreign restrictions.

5 Results

We structure our results as follows. In Tables 2-5, we show evidence that higher foreign Covid exposure caused banks to cut their US (term) lending and tighten standards on such loans – results that are robust to alternative measures of bank Covid exposure and capital, and to controlling for bank "globalness" and borrowers' Covid exposure (Tables A1-A8). Then, in Tables 6-9 we explore the mechanisms through which foreign Covid exposure reduced bank lending to US firms.

5.1 Foreign Covid Exposure and Domestic Lending (Hypotheses #1 and #2)

5.1.1 Loan Volumes and Number of Loans

We start by examining how a bank's foreign Covid exposure has affected its corporate lending in the United States. We proxy foreign Covid exposure with each bank's portfolio-weighted exposure

to the economic fallout from government restrictions related to the pandemic in the foreign countries it lends to. We measure lending as quarterly percent changes in the volume of new loans (the intensive margin) and the number of newly originated loans (the extensive margin) at the bank-firm level within a given maturity/credit rating bucket, and as quarterly changes in C&I lending standards (at the bank level). As discussed in Section 2, we expect foreign Covid exposure to reduce US-based lending and tighten standards, and especially so for lower-capitalized banks.

In our benchmark specifications shown in Table 2, we focus on changes in banks' US-based lending flows (Columns 1-5, the intensive margin) and changes in the number of loans (Columns 6-10, the extensive margin) separately, on lending data that is pooled by *loan maturity*. Panel A shows the foreign Covid exposure measure weighted by a bank's bilateral cross-border lending to each country on an *ultimate risk* basis, and Panel B shows results using as weights a bank's bilateral cross-border claims calculated on an *immediate counterparty* basis.

Table 2 shows consistent evidence that foreign Covid exposure has a negative effect on banks' US-based lending (first row), and especially so for lower-capitalized banks (second row) on the intensive margin (Columns 1-5), and, consistent with Kapan and Minoiu (2021), on the extensive margin as well (Columns 6-10). The significant negative lending effect prevails as we add more stringent sets of fixed effects, including at the bank (Columns 1 and 6), bank-firm (Columns 2 and 7), and bank-firm-maturity (Columns 3 and 8) levels.[12] The lending effects are economically significant. Evaluated at the sample-average capital ratio, a one percentage point higher foreign Covid exposure (measured via *Stringency*) reduces lending flows and the growth in the number of loans by 6-7 percentage points—equivalent to a 7.9 billion dollar decline in loans.

[12] Robustness to the inclusion of maturity fixed effects ensures that our results are not driven by the confounding effects of a bank's potential reallocation of credit from longer-term to shorter-term lending.

Figure 1 plots the marginal effects on the intensive margin (left panel, for Column 3) and the extensive margin (right panel, for Column 8), to illustrate how lower bank capital amplifies the negative lending effects of foreign Covid exposure. A one percentage point higher foreign Covid exposure reduces US lending by more than twice as much for a low-capitalized bank (at the 10^{th} percentile) than for a well-capitalized bank (at the 90^{th} percentile).

We delineate the sample into shorter-term (with maturity below one year, Columns 4-5) and longer-term (with maturity over one year, Columns 9-10) loans, motivated by earlier results that the transmission of shocks affects different loan maturities differentially (Black and Rosen, 2008; Temesvary et al, 2018; Morais et al, 2019). The negative effect of foreign Covid exposure operates through longer-term lending, which makes up the vast majority of our sample. Foreign Covid exposure has no significant effect on shorter-term loans – consistent with such shorter-term loans being generally more volatile and driven by idiosyncratic factors. Altogether, we do not find that banks are reallocating funds from longer-term to shorter-term lending in response to Covid.

An important issue to address is that banks might cut loans if firms' borrowing ability worsens due to the US-based effects of the pandemic. In fact, there is evidence of a wave of credit downgrades in the second quarter of 2020 (the "fallen angels"). Or, banks might reallocate credit to higher-rated borrowers. In Table 3 we present results derived from data for 11 distinct credit rating categories. Categorizing by credit rating lets include fixed effects to explicitly control for credit quality on the demand side, and for (changes in) lender risk preference on the supply side.

In Table 3, we continue to find strong evidence that foreign Covid exposure reduces US lending (both on the intensive and extensive margins) and more so for lower-capitalized banks, even when we hold credit quality "constant" by including bank*firm*credit rating fixed effects. A one percentage point higher foreign Covid exposure lowers lending and the growth in the number

of loans by 5-8 percentage points (a 7.9-billion-dollar lending decline). The effect at the 10th percentile of capital is 2 to 4 times larger than at the 90th percentile. Our results are significant for both speculative-grade (BB or below, Columns 4 and 9) and investment-grade (above BB, Columns 5 and 10) loans and hold on both the intensive (Columns 1-5) and extensive (Columns 6-10) margins. The results are robust to measuring pandemic effects via *Cases* and *Deaths* (Table A1) and to using CET1 ratios to proxy funding resilience (Tables A2 and A3).

Could it be the scale of a bank's global activities (and the various risks such exposure brings), rather than its foreign Covid exposure, that made a bank more vulnerable to balance sheet shocks during Covid? This may be the case if globally more active banks were systematically more affected by the pandemic, or if the effect of foreign Covid exposure depends on the extent of banks' foreign activities. Though our use of bank fixed effects controls for the role of time-invariant bank features such as international openness, in Table A4 we interact each regressor with the share of foreign assets. We continue to find that higher foreign Covid exposure lowers US lending, both on the intensive (Columns 1-4) and extensive (Columns 5-8) margins, even when we bank*firm*maturity and bank*firm*credit rating fixed effects ((Columns 3 and 7, and 4 and 8).

Next, we examine whether the spillover effects of foreign Covid-19 exposure differ for US corporate *term loans* or *credit lines* (Table 4). Our benchmark results are driven by term lending (Columns 1-5); we find no spillover effects into credit lines (Columns 6-10). In other words, banks continued to serve cash flow needs for existing customers but did not extend loans to new clients.

5.1.2 Loan interest rates and spreads and foreign Covid exposure

There is evidence that the Covid crisis affected pricing terms, in addition to bank loan volumes (Berger et al, 2021; Kapan and Minoiu, 2021). Afforded by the rich Y14 dataset, we explore the

relationship between banks' foreign Covid exposure and the *levels and spreads of interest rates* that banks charge on their newly issued loans to US borrowers (Table A5, Columns 1-4 and Columns 5-8, respectively). If banks with higher foreign Covid exposure tightened loan pricing terms, we should see positive coefficients on *Stringency.* Negative coefficients on the interaction terms would reflect stronger effects for lower capitalized banks. We do not find a relationship between a bank's foreign Covid exposure and the interest rate it charges on its new loans. However, in our more stringent specifications, we find that a bank's greater foreign Covid exposure leads to higher loan spreads, and this effect is larger for lower capitalized banks (Table A5, Columns 7-8).

5.1.3 C&I Lending Standards and foreign Covid-19 exposure

In Table 5, we home in on the effect of foreign Covid exposure on changes in banks' SLOOS C&I lending standards, an established measure of credit supply conditions. Using this survey micro data, we find that banks with heavier foreign Covid exposures tightened C&I standards significantly more (first now) and lower capitalized banks did so even more (second row).

5.2 Accounting for Covid-19's Effects on Borrowing Firms

The pandemic hit economies around the world nearly simultaneously; when foreign governments responded to the pandemic with strict restrictions, most US states also did so. There are two related issues for our identification: (1) Covid-related restrictions imposed in the US might have lowered US firms' credit demand and (2) foreign Covid restrictions may affect large US firms directly.[13]

Specifically, the first concern is that restrictions by U.S. states also inflicted losses on U.S. firms operating within their jurisdictions, limiting those firms' credit demand and their ability to borrow from banks. We address this concern in three ways. First, we explicitly include government

[13] Bloom, Fletcher and Yeh (2021) provide evidence of the negative economic impact of Covid on firms in the US.

stringency indices calculated for the US state of borrowing firms' headquarters (Table A6). Even after controlling for state-level economic restrictions in the US, we find that more foreign Covid exposed banks cut their lending more, and especially so for lower capitalized banks. The results hold on the intensive (Columns 1-5) and the extensive (Columns 6-10) margins and when we control for maturities and for credit ratings. State-level restrictions (*Firm Stringency)* and its interaction with the capital ratio come in insignificantly throughout (third and fourth rows).

A second way we examine the confounding effect of firms' exposure to the pandemic is by separating firms in industries more affected by Covid (such as hotel and retail) from those in less affected industries (Table A7). We run specifications with bank*firm*maturity or bank*firm*credit rating fixed effects for firms in Covid sensitive (Columns 1, 3, 5 and 7) and insensitive (Columns 2, 4, 6 and 8) industries, as defined by Kaplan et al (2020). On both the intensive (Columns 1-4) and extensive (Columns 5-8) margins, we find strong results for Covid insensitive industries also, alleviating concerns about Covid-induced reductions in credit *demand*. In Table A8, we run specifications with first industry*year:quarter fixed effects, effectively comparing banks with different foreign Covid exposures lending to firms in the same industry and same quarter – the closest approximation of the Khwaja-Mian (2008) identification strategy that we can do. We continue to find a significant negative coefficient on bank foreign Covid exposure.

The second concern relating to firms' exposure to the pandemic is that large, globally active firms can be directly exposed to the same foreign restrictions-related economic fallout, the effect of which we study on banks. To address this concern, in Table A9 we examine borrowers by firm size (Chodorow-Reich et al, 2021), separating our sample into small (below the median sample asset size) and large (above the median size) firms. Our results are significant across firm sizes, alleviating concerns that the effect on borrowing firms of our "shock" might drive our results.

5.2 Mechanisms

After establishing the robustly negative relationship between foreign Covid exposure and domestic lending, we now turn to disentangling the mechanisms through which this causal effect prevails.

First, afforded by our access to bank-level SLOOS responses, we study banks' reported *reasons* for having tightened C&I loan standards (Table 6). We examine how foreign Covid exposure affected the extent banks cited a deteriorated capital position (Columns 1-2), an unfavorable/uncertain economic outlook (Columns 3-4) and reduced risk tolerance (Columns 5-6) as reasons for tightening. We find that a heavier foreign Covid exposure is strongly related to banks citing a reduction in risk tolerance as a reason for tightening C&I standards (first row), and especially so for lower capitalized banks (second row). In addition, banks with heavier foreign Covid exposure cited a deterioration in their capital position as a reason for tightening standards (especially the lower capitalized ones; Column 1, first two rows), but also cited that a worsening economic outlook was not an important reason (negative coefficients in the first row of Columns 3-4). Together, these results suggest that heavier foreign Covid exposure caused (especially low capitalized) banks to cut loans in part by making lenders more risk averse, as they grew concerned about their capital positions while remaining unconcerned about the economic outlook.

Second, we study if a mechanism through which foreign Covid exposure reduced domestic lending may have been by causing foreign borrowers to draw down on their cross-border credit lines with US banks. We tackle this question by studying the relationship between Covid-related government response *Stringency* abroad and drawdowns by foreign borrowers on the cross-border credit lines that US bank had committed to them. We are uniquely able to study this relationship at the *bank-country level*, afforded by the highly detailed FFIEC 009 dataset. Indeed, Table 7 shows that more *Stringency* in a country leads to higher drawdowns by residents of that country

on their credit lines with US banks. A unit increase in *Stringency* raises credit line drawdowns by 2 to 4 percent (Columns 1-2, first row), a finding that is robust to bank*country fixed effects. We conclude that the strain on balance sheet liquidity that US banks experience from foreign borrowers' credit line drawdowns may be a channel through which restrictions abroad cause banks to cut domestic lending. Such effects can be potent even when banks have abundant liquidity, if they are reluctant to cut into buffers (Abboud et al, 2021; BCBS, 2021) for reputational concerns.

Third, we study if a channel through which banks' foreign exposure led to their lower US lending is by foreign restrictions abroad causing losses on banks' books. We do so in two ways. In Table 8, we examine how each bank's foreign Covid exposure relates to charge-offs on its foreign corporate lending. We find conclusive evidence that a bank's higher exposure to foreign economic restrictions corresponds to six to ten percent higher charge-offs on its foreign C&I portfolio in the subsequent quarters (first row) and this effect is 0.4 to 0.7 percent larger for lower-capitalized banks (second row). The effects, robust to bank and year:quarter fixed effects, are even larger when we calculate foreign Covid exposure on an immediate counterparty basis (Panel B).

Next, we examine the relationship between foreign bankruptcies and domestic lending cuts. First, we run country-level regressions of foreign bankruptcies (from the OECD) and government response *Stringency* (Table 9, Panel A). We find that a five-unit increase in a country's *Stringency* subsequently translates into a 2.5 percentage point higher quarterly growth in total bankruptcies (Column 1) and a one percentage point higher growth in corporate bankruptcies (Column 2). Having established this relationship, next we relate each bank's weighted-average exposure (via foreign lending) to bankruptcies abroad to changes in their US lending (Table 9, Panel B). Results suggest that a bank's higher exposure to bankruptcies abroad corresponds to subsequently lower US lending (Column 1, first row), especially for lower capitalized banks (Columns 2-3, second

row). Overall, we conclude from Tables 8 and 9 that the balance sheet effects of losses that banks incur on their cross-border lending to borrowers who face strict restrictions at home is a mechanism through which banks' foreign Covid exposure leads to lower domestic lending to firms.

5.3 Additional specifications

5.3.1 Exposure to OECD vs non-OECD countries

Are the spillover effects of foreign Covid exposure stronger from developed countries or economically less developed regions? We study the role of the *source region* of exposure by calculating two foreign exposure measures for each bank: one that captures its exposure to Covid restrictions in OECD countries, and another one for its exposure in non-OECD countries. In results available by request, we find that the spillover effects we document above reflect banks' Covid exposure in *OECD* countries, and there are no spillover effects from *non-OECD* countries.

5.3.2 Exposure to foreign financial vs non-financial sectors

We explore if the spillover effects of a bank's foreign Covid exposure into its US lending depend on the *sector* of exposure in foreign countries. Afforded by the rich FFIEC 009 data, we calculate two foreign exposure measures: one that captures its exposure to Covid using weights based on the bank's bilateral cross-border claims on the *financial sector* in foreign countries, and another one that captures exposure to foreign *non-financial sectors*. In results available by request, we find that the spillover effects we document earlier reflect banks' Covid exposure through both foreign financial and non-financial sectors. The spillover results are consistently significant across the delineation of loans (by maturity or by credit rating) and the intensive and extensive margins.

6 Conclusion

In this paper, we study US banks' exposure to the economic fallout from Covid-related economic restrictions has affected their supply to credit to US firms. Afforded by a novel combination of several highly granular banking datasets, we employ an identification strategy in which we focus on large US banks that lend abroad. We study the domestic lending effects of these banks' exposure to Covid-related economic restrictions abroad through their cross-border lending – a shock we argue affects banks' credit supply, without affecting borrowing US firms' credit demand.

We show that US banks with higher exposures in foreign regions with stricter Covid-related restrictions cut their US lending (and tightened lending standards) substantially more, and this effect is particularly strong for lower-capitalized banks. The results are robust to a wide range of controls for borrowing firms' simultaneous Covid exposure, including explicitly including US state-level Covid restrictions and industry*quarter fixed effects. We also show that banks having become less risk tolerant, as well as foreign borrowers defaulting and drawing down on their cross-border credit lines, were potent mechanisms through which foreign Covid exposure reduced credit.

Our results have important policy implications. Specifically, our finding on the domestic credit crunching effect of credit line drawdowns by foreign borrowers highlight the importance of carefully monitoring banks' commitments abroad. More broadly, our findings on the crisis-induced contraction of credit supply suggest that balance sheet shocks can have important spillover effects even when bank capital and liquidity are abundant, if such shocks make banks more risk averse and concerned about capital, amid reputational concerns.

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Figure 1. Marginal effect of Foreign Covid-19 Exposure on Quarterly Change in Domestic Bank Lending at different Tier1 Capital Ratios

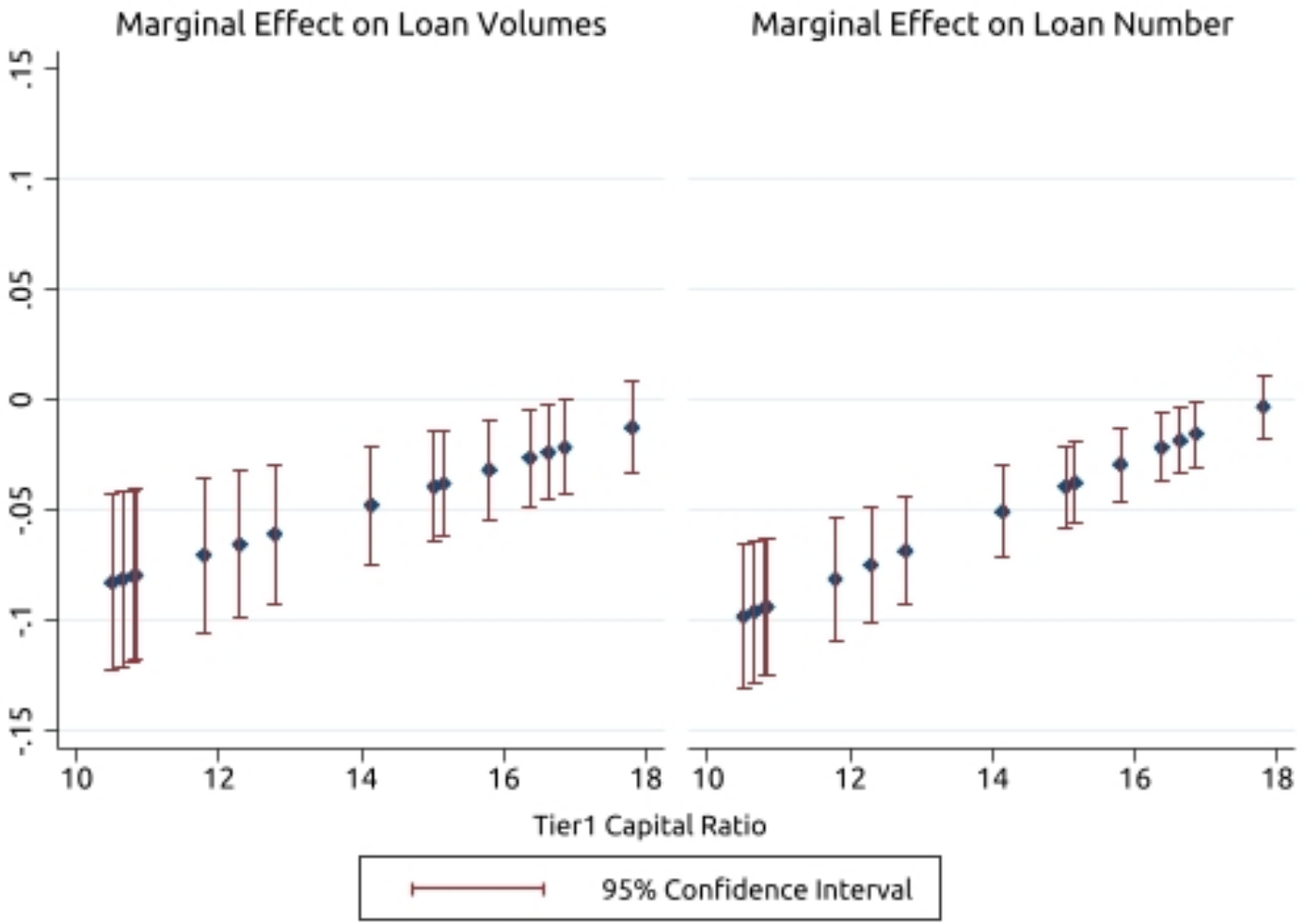

Table 1. Variable Definitions and Summary Statistics.

VARIABLES	Definition	Source	N	mean	SD	p10	p25	p50	p75	p90
Dependent variables:										
Quarterly Change in the Log of Lending	Quarterly change in the natural log of total C&I lending over 1 million between a bank and firm in a quarter.	FR Y-14	428,255	-0.014	0.227	-0.0596	-0.0127	0	0	0.00336
Quarterly Change in the Log of the Number of Loans	Quarterly change in the natural log of total number of C&I loans over 1 million between a firm and bank in a quarter.	FR Y-14	428,255	-0.00324	0.139	0	0	0	0	0
Ln[Lending]	Natural log of total C&I lending over 1 million between a bank and firm in some quarter.	FR Y-14	604,647	15.78	1.543	14	14.47	15.42	16.96	18.1
Ln[Number of Loans]	Natural log of total number of C&I loans over 1 million between a firm and bank in a quarter.	FR Y-14	604,647	0.24	0.478	0	0	0	0.693	0.693
SLOOS C&I Standards	Individual bank responses from the quarterly Senior Loan Officer Opinion Survey, to the question: "Over the past three months, how have your bank's	SLOOS	107	2.776	0.756	2	2	3	3	4
	Deteriorated Capital Position (1=not important; 3=very important reason)		50	1.2	0.404	1	1	1	1	2
SLOOS Reasons for Tightening C&I Standards	Unfavorable/uncertain Economic Outlook (1=not important; 3=very important reason)	SLOOS	53	2.698	0.54	2	2	3	3	3
	Reduced Risk Tolerance (1=not important; 3=very important reason)		50	1.82	0.629	1	1	2	2	3
Foreign Covid-19 exposure measures:										
Government Stringency (unweighted)	An index of government response stringency from Hale et al. [2020]	Hale et al. (2021)	132	57.14	11.66	40.11	49.19	58.01	64.83	72.88
Foreign Covid Exposure [UR Weighted]	An index of government response stringency from Hale et al. [2020], weighted by ultimate risk exposure.	Hale et al. (2021) and FFIEC 009	132	56.75	19.38	22.64	43.08	66.44	68.51	71.99
Foreign Covid Exposure [IC Weighted]	An index of government response stringency from Hale et al. [2020], weighted by immediate counterparty exposure.	Hale et al. (2021) and FFIEC 009	132	57.02	19.48	22.67	43.66	66.53	68.62	72.04
Covid-19 Cases [UR Weighted]	New cases per 1000 individuals in each quarter, averaged across all countries a bank lends to, weighted by ultimate risk exposure.	Hale et al. (2021) and FFIEC 009	132	14	13.74	0.578	3.045	8.149	21.13	38.37
Covid-19 Cases [IC Weighted]	New cases per 1000 individuals in each quarter, averaged across all countries a bank lends to, weighted by immediate counterparty exposure.	Hale et al. (2021) and FFIEC 009	132	14.04	13.7	0.575	2.954	8.15	21.14	38
Covid-19 Deaths [UR Weighted]	New deaths per 1000 individuals in each quarter, averaged across all countries a bank lends to, weighted by ultimate risk exposure.	Hale et al. (2021) and FFIEC 009	132	0.25	0.156	0.0163	0.0868	0.258	0.371	0.434
Covid-19 Deaths [IC Weighted]	New deaths per 1000 individuals in each quarter, averaged across all countries a bank lends to, weighted by immediate counterparty exposure.	Hale et al. (2021) and FFIEC 009	132	0.251	0.156	0.0163	0.0856	0.26	0.374	0.432

Table 1 continued. Variable Definitions and Summary Statistics.

VARIABLES	Definition	Source	N	mean	SD	p10	p25	p50	p75	p90
Foreign Covid-19 exposure measures (continued):										
Bankruptcies (unweighted)	Number of corporate bankrupcties per country, indexed to 2007	OECD Statistics	165	89.86	12.13	76.5	80.74	88.9	99.17	107.4
Bankruptcies [UR Weighted]	Number of corporate bankrupcties per country, weighted by ultimate risk exposure.	OECD Statistics and FFIEC 009	165	76.2	4.408	70.69	73.12	75.77	79.58	81.53
Covid-19 Deaths [IC Weighted]	Number of corporate bankrupcties per country, weighted by immediate counteroarty exposure.	OECD Statistics and FFIEC 009	165	76.09	4.382	70.68	73.06	75.76	79.47	81.62
Capitalization measures:										
Tier 1 Capital Ratio	Total Tier1 capital of a bank divided by total risk weighted assets.	FR Y9-C	819	12.83	4.718	10.13	11.01	12.37	13.95	16.66
CET1 Capital Ratio	Total common equity Tier1 capital of a bank divided by total risk weighted assets.	FR Y9-C	786	12.37	3.127	9.608	10.46	11.76	13.18	15.93
Bank-level variables:										
Drawdowns on Cross-border Credit Lines	Quarterly change in unused commitments (at the bank-country level)	FFIEC 009	20,755	-25.53	1,656	-3	0	0	0	1
Bank Leverage Ratio	Total Tier1 capital of a bank divided by consolidated assets.	FR Y9-C	819	9.596	1.818	7.799	8.493	9.312	10.28	11.64
Bank ROA	Net income divided by total consolidated assets.	FR Y9-C	819	0.198	0.446	0.0405	0.149	0.236	0.317	0.406
Ln[Bank Size]	Natural log of bank total assets.	FR Y9-C	819	16.74	1.447	15.35	15.66	16.39	17.34	18.94
Firm Leverage Ratio	Total liabilities of a firm divided by total assets.	FR Y-14	460,318	0.61	0.26	0.232	0.426	0.636	0.811	0.969
Firm ROA	Operating income of a firm divided by total assets.	FR Y-14	454,583	0.145	0.318	-0.0334	0.022	0.073	0.161	0.337
Ln[Firm Size]	Natural log of total assets.	FR Y-14	460,552	16.97	2.387	14.51	15.52	16.63	18.12	20.18
Ln[Net Charge-offs]	Nature log of net charge-offs on foreign C&I loans	FR Y9-C	12,471	0.933	3.543	0	0	0	0	0
Ln[Gross Charge-offs]	Nature log of gross charge-offs on foreign C&I loans	FR Y9-C	12,471	1.398	5.25	0	0	0	0	0
Share of Foreign Assets [UR Weighted]	Total cross-border claims (aggregated across countries) divided by total bank assets.	FFIEC 009 and FR 9Y-C	224	0.00213	0.000364	0.00183	0.002	0.00202	0.002	0.00269
Share of Foreign Assets [IC Weighted]	Total cross-border claims (aggregated across countries) divided by total bank assets.	FFIEC 009 and FR 9Y-C	224	0.00213	0.000358	0.00183	0.002	0.00202	0.002	0.00268

Table 2. Quarterly Change in Domestic Bank Lending across Firms and Credit Maturities for banks with different Tier1 Capital Ratios.

Measure of U.S.-based lending:	Quarterly Change in the Log of Lending					Quarterly Change in the Log of the Number of Loans				
Included Maturities	All	All	All	≤ 1 year	> 1 year	All	All	All	≤ 1 year	> 1 year
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Panel A: Ultimate Risk Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.191***	-0.193***	-0.184***	0.156	-0.200***	-0.229***	-0.237***	-0.235***	0.259	-0.247***
	[0.0296]	[0.0438]	[0.0439]	[0.506]	[0.0444]	[0.0236]	[0.0358]	[0.0360]	[0.402]	[0.0364]
∑ Foreign Covid Exposure * Capital	0.0104***	0.0102***	0.00961***	-0.0159	0.0106***	0.0127***	0.0132***	0.0130***	-0.0133	0.0137***
{t-2 to t-1}	[0.00160]	[0.00239]	[0.00240]	[0.0252]	[0.00242]	[0.00127]	[0.00194]	[0.00194]	[0.0198]	[0.00197]
∑ Capital {t-2 to t-1}	-1.030***	-0.986***	-1.030***	2.742	-1.127***	-1.357***	-1.430***	-1.474***	3.133	-1.577***
	[0.217]	[0.328]	[0.330]	[4.070]	[0.329]	[0.174]	[0.268]	[0.270]	[3.337]	[0.267]
Observations	144,261	144,261	144,261	5,390	138,871	144,261	144,261	144,261	5,390	138,871
R-squared	0.002	0.483	0.528	0.641	0.516	0.003	0.443	0.473	0.562	0.468
Panel B: Immediate Counterparty Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.185***	-0.184***	-0.177***	0.209	-0.190***	-0.230***	-0.238***	-0.236***	0.194	-0.246***
	[0.0277]	[0.0410]	[0.0412]	[0.426]	[0.0417]	[0.0219]	[0.0332]	[0.0334]	[0.319]	[0.0337]
∑ Foreign Covid Exposure * Capital	0.0103***	0.00996***	0.00947***	-0.0188	0.0103***	0.0129***	0.0134***	0.0133***	-0.0106	0.0139***
{t-2 to t-1}	[0.00154]	[0.00230]	[0.00232]	[0.0231]	[0.00235]	[0.00122]	[0.00185]	[0.00187]	[0.0167]	[0.00188]
∑ Capital {t-2 to t-1}	-0.945***	-0.894***	-0.956***	2.816	-1.037***	-1.300***	-1.367***	-1.417***	2.617	-1.514***
	[0.209]	[0.318]	[0.319]	[3.473]	[0.319]	[0.165]	[0.256]	[0.258]	[2.702]	[0.255]
Observations	144,261	144,261	144,261	5,390	138,871	144,261	144,261	144,261	5,390	138,871
R-squared	0.002	0.483	0.528	0.641	0.516	0.003	0.443	0.473	0.562	0.468
Year-Quarter FE	X	X	X	X	X	X	X	X	X	X
Bank FE	X					X				
Bank-Firm FE		X		X	X		X		X	X
Bank-Firm-Maturity FE			X					X		

Notes: In Columns 1-5, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms and loan maturities [i.e. loan with a maturity less than one year and loan with a maturity more than one year]. In Columns 6-10, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and loan maturities. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: *Ln[Total Assets], Return on Asset,* and *Leverage Ratio* . Robust Standard errors (clustered at the bank-firm level) are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 3. Quarterly Change in Domestic Bank Lending across Firms and Credit Ratings for banks with different Tier1 Capital Ratios.

Measure of U.S.-based lending:	Quarterly Change in the Log of Lending					Quarterly Change in the Log of the Number of Loans				
Included Maturities	All	All	All	≤ BB	> BB	All	All	All	≤ BB	> BB
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Panel A: Ultimate Risk Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.184***	-0.181***	-0.169***	-0.165**	-0.226***	-0.205***	-0.201***	-0.196***	-0.225***	-0.171**
	[0.0304]	[0.0494]	[0.0492]	[0.0712]	[0.0821]	[0.0235]	[0.0396]	[0.0396]	[0.0554]	[0.0688]
∑ Foreign Covid Exposure * Capital	0.0102***	0.00970***	0.00897***	0.00959**	0.0114***	0.0117***	0.0115***	0.0112***	0.0129***	0.0100***
{t-2 to t-1}	[0.00166]	[0.00275]	[0.00273]	[0.00394]	[0.00437]	[0.00128]	[0.00217]	[0.00216]	[0.00303]	[0.00366]
∑ Capital {t-2 to t-1}	-1.048***	-1.071***	-0.898**	-0.956*	-1.242**	-1.186***	-1.205***	-1.122***	-1.244***	-1.094**
	[0.217]	[0.372]	[0.365]	[0.510]	[0.572]	[0.171]	[0.297]	[0.294]	[0.399]	[0.487]
Observations	143,596	143,596	143,596	103,033	40,563	143,596	143,596	143,596	103,033	40,563
R-squared	0.002	0.531	0.557	0.545	0.534	0.003	0.489	0.513	0.502	0.502
Panel B: Immediate Counterparty Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.174***	-0.167***	-0.157***	-0.156**	-0.206***	-0.205***	-0.203***	-0.197***	-0.230***	-0.170***
	[0.0288]	[0.0467]	[0.0464]	[0.0679]	[0.0758]	[0.0223]	[0.0373]	[0.0372]	[0.0523]	[0.0633]
∑ Foreign Covid Exposure * Capital	0.00993***	0.00922***	0.00854***	0.00933**	0.0106***	0.0118***	0.0117***	0.0114***	0.0133***	0.0100***
{t-2 to t-1}	[0.00161]	[0.00265]	[0.00262]	[0.00383]	[0.00410]	[0.00125]	[0.00211]	[0.00209]	[0.00294]	[0.00344]
∑ Capital {t-2 to t-1}	-0.955***	-0.962***	-0.794**	-0.872*	-1.064**	-1.132***	-1.150***	-1.068***	-1.240***	-1.001**
	[0.210]	[0.361]	[0.354]	[0.500]	[0.536]	[0.165]	[0.285]	[0.283]	[0.386]	[0.459]
Observations	143,596	143,596	143,596	103,033	40,563	143,596	143,596	143,596	103,033	40,563
R-squared	0.002	0.531	0.557	0.545	0.534	0.003	0.49	0.513	0.503	0.502
Year-Quarter FE	X	X	X	X	X	X	X	X	X	X
Bank FE	X					X				
Bank-Firm FE		X		X	X		X		X	X
Bank-Firm-Credit Rating FE			X					X		

Notes: In Columns 1-5, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms and credit ratings [i.e. AAA, AA, A, BBB, BB, B, CCC, CC, C, D, Not Rated]. In Columns 6-10, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and credit ratings. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio. Robust Standard errors (clustered at the bank-firm level) are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 4. Quarterly Change in Domestic Bank Lending across Firms and Credit Maturities for banks with different Tier1 Capital Ratios.

Depemdent Variable	Quarterly Change in the Log of Lending					Quarterly Change in the Log of Lending				
Type of Credit:	*Term Loans*					*Credit Lines*				
Included Maturities	All	All	All	≤ 1 year	> 1 year	All	All	All	≤ 1 year	> 1 year
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Panel A: Ultimate Risk Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.224***	-0.206**	-0.203**	7.738	-0.199**	-0.0570*	-0.044	-0.0402	-0.201	-0.0407
	(0.06)	(0.09)	(0.09)	(20.79)	(0.09)	(0.03)	(0.04)	(0.04)	(0.64)	(0.04)
∑ Foreign Covid Exposure * Capital	0.0131***	0.0117**	0.0117**	-0.361	0.0112*	0.00311**	0.00165	0.0014	0.00978	0.00156
{t-2 to t-1}	(0.00)	(0.01)	(0.01)	(0.97)	(0.01)	(0.00)	(0.00)	(0.00)	(0.03)	(0.00)
∑ Capital {t-2 to t-1}	-1.631***	-1.681**	-1.670**	76.67	-1.696**	-0.309	-0.158	-0.124	0.765	-0.0858
	(0.43)	(0.69)	(0.69)	(196.80)	(0.69)	(0.22)	(0.32)	(0.32)	(2.99)	(0.32)
Observations	56,322	56,322	56,322	783	55,539	88,805	88,805	88,805	3,737	85,068
R-squared	0.01	0.57	0.59	0.56	0.60	0.00	0.48	0.49	0.65	0.49
Panel B: Immediate Counterparty Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.245***	-0.212**	-0.210**	3.97	-0.208**	-0.0515*	-0.0367	-0.0337	-0.182	-0.035
	(0.07)	(0.11)	(0.11)	(9.62)	(0.11)	(0.03)	(0.04)	(0.04)	(0.47)	(0.04)
∑ Foreign Covid Exposure * Capital	0.0142***	0.0120*	0.0120*	-0.182	0.0117*	0.00286*	0.00135	0.00115	0.009	0.00133
{t-2 to t-1}	(0.00)	(0.01)	(0.01)	(0.47)	(0.01)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)
∑ Capital {t-2 to t-1}	-1.714***	-1.687**	-1.687**	53.92	-1.735**	-0.265	-0.113	-0.084	0.92	-0.0492
	(0.46)	(0.75)	(0.75)	(116.10)	(0.76)	(0.21)	(0.30)	(0.31)	(2.78)	(0.30)
Observations	56,322	56,322	56,322	783	55,539	88,805	88,805	88,805	3,737	85,068
R-squared	0.01	0.57	0.59	0.57	0.60	0.00	0.48	0.49	0.65	0.49
Year-Quarter FE	X	X	X	X	X	X	X	X	X	X
Bank FE	X					X				
Bank-Firm FE		X		X	X		X		X	X
Bank-Firm-Maturity FE			X					X		

Notes: In Columns 1-5, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic term lending across firms and loan maturities [i.e. loan with a maturity less than one year and loan with a maturity more than one year]. In Columns 6-10, the dependent variable is the quarterly change in the natural logarithm of U.S. banks' domestic credit line commitments across firms and loan maturities. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio. Robust Standard errors [clustered at the bank-firm level) are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 5. Quarterly Change in Banks' Lending Standards for Domestic Corporate Loans, for banks with different Capital Ratios.

Measure of U.S.-based lending:	C&I Lending Standards			
VARIABLES	[1]	[2]	[3]	[4]
Panel A: Ultimate Risk Weighted				
∑ Foreign Covid Exposure {t-2 to t-1}	-0.460**	-1.138***	-0.241*	-0.594**
	(0.081)	(0.291)	(0.076)	(0.242)
∑ Foreign Covid Exposure * Capital	0.0256**	0.0627***	0.0144	0.0352**
{t-2 to t-1}	(0.006)	(0.018)	(0.006)	(0.017)
∑ Capital {t-2 to t-1}	-1.726**	-4.233***	-0.981	-2.400**
	(0.370)	(1.224)	(0.387)	(1.135)
Panel B: Immediate Counterparty Weighted				
∑ Foreign Covid Exposure {t-2 to t-1}	-0.458**	-1.130***	-0.231*	-0.565***
	(0.080)	(0.269)	(0.069)	(0.214)
∑ Foreign Covid Exposure * Capital	0.0252**	0.0616***	0.0134	0.0322**
{t-2 to t-1}	(0.005)	(0.017)	(0.005)	(0.015)
∑ Capital {t-2 to t-1}	-1.700**	-4.162***	-0.913	-2.207**
	(0.358)	(1.121)	(0.350)	(0.990)
Observations	75	75	75	75
Year-Quarter FE	X	X	X	X
Capital Ratio	Tier1	Tier1	CET1	CET1
Estimation Method	OLS	probit	OLS	probit

Notes: The dependent variable is individual banks' responses to the question on the Senior Loan Officer Opinion Survey, as follows: "Over the past three months, how have your bank's credit standards for approving applications for C&I loans or credit lines—other than those to be used to finance mergers and acquisitions—to large and middle-market firms changed?", with higher values indicating easing standards and lower values indicating tightening lending standards. Robust Standard errors (clustered at the quarter level) are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 6. SLOOS Reasons for Banks' Tightening of Corporate Lending Standards, for banks with different Capital Ratios.

Reason for Tightening Corporate Lending Standards:	Deteriorated Capital Position		Unfavorable/Uncertain Economic Outlook		Reduced Risk Tolerance	
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]
Panel A: Ultimate Risk Weighted						
∑ Foreign Covid Exposure {t-2 to t-1}	1.518*	1.124	-2.564*	-2.849*	1.498**	1.334
	(0.468)	(0.583)	(0.717)	(0.962)	(0.211)	(0.889)
∑ Foreign Covid Exposure * Capital	-0.101**	-0.0842	0.191**	0.207*	-0.0939*	-0.103
{t-2 to t-1}	(0.023)	(0.033)	(0.035)	(0.059)	(0.024)	(0.060)
∑ Capital {t-2 to t-1}	6.222**	5.157	-13.59**	-14.16*	4.903	5.78
	(1.382)	(2.015)	(2.404)	(3.969)	(2.092)	(4.187)
Panel B: Immediate Counterparty Weighted						
∑ Foreign Covid Exposure {t-2 to t-1}	1.547*	1.113	-2.909**	-2.851*	1.607*	1.475
	(0.402)	(0.479)	(0.625)	(0.914)	(0.504)	(0.928)
∑ Foreign Covid Exposure * Capital	-0.104**	-0.0826*	0.218**	0.207*	-0.107	-0.12
{t-2 to t-1}	(0.019)	(0.026)	(0.038)	(0.059)	(0.047)	(0.064)
∑ Capital {t-2 to t-1}	6.387**	5.016	-15.40**	-14.21*	5.911	7.013
	(1.224)	(1.722)	(2.772)	(4.129)	(3.764)	(4.500)
Observations	28	28	28	28	28	28
Year-Quarter FE	X	X	X	X	X	X
Capital Ratio	Tier1	CET1	Tier1	CET1	Tier1	CET1

Notes: The dependent variable is individual banks' responses to the question on the Senior Loan Officer Opinion Survey, as follows: "f your bank has tightened or eased its credit standards or its terms for C&I loans or credit lines over the past three months, how important have been the following possible reasons for the change?", with higher values indicating the given reason being more important and lower values indicating the reason being less important or unimportant. The sample includes responses from the subset of banks that reported tightening corporate lending standards, as analyzed in Table 5. Robust Standard errors (clustered at the quarter level) are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Government Response Stringency and Credit Line Drawdowns by Foreign Borrowers.

	Quarterly Drawdowns by Foreign Borrowers on their Cross-border Credit Lines at US Banks	
VARIABLES	[1]	[2]
Country-specific Stringency Index$_{t-1}$	2.294**	3.906***
	(0.990)	(1.376)
Observations	12,224	12,224
R-squared	0.002	0.088
Bank FE	X	--
Bank-Country FE		X

Note: The table shows bank-country-level regressions for the relationship between drawdowns by foreign borrowers on their credit lines at US banks and country-specific responses to the economic fallout resulting from sovereigns' actions to prevent the spread of Covid-19, as captured by the Government Stringency Index. Standard errors in parentheses. "--" means that the given set of fixed effects is included within the more restrictive set of a fixed effects shown below. *** p<0.01, ** p<0.05, * p<0.1

Table 8. Charge-offs on Foreign C&I Loans, for banks with different Capital Ratios.

	Log of Gross Charge-offs on Foreign C&I Loans		Log of Net Charge-offs on Foreign C&I Loans	
VARIABLES	[1]	[2]	[3]	[4]
Panel A: Ultimate Risk Weighted				
∑ Foreign Covid Exposure {t-2 to t-1}	10.39**	8.082*	6.482*	4.737
	(4.776)	(4.514)	(3.207)	(2.997)
∑ Foreign Covid Exposure * Capital	-0.730**	-0.718**	-0.472**	-0.444*
{t-2 to t-1}	(0.299)	(0.341)	(0.202)	(0.226)
∑ Capital {t-2 to t-1}	37.5	15.33	26.26	8.228
	(54.830)	(51.410)	(38.190)	(36.950)
Panel B: Immediate Counterparty Weighted				
∑ Foreign Covid Exposure {t-2 to t-1}	13.97**	10.33*	8.826**	6.204*
	(5.280)	(5.125)	(3.567)	(3.372)
∑ Foreign Covid Exposure * Capital	-0.919**	-0.870**	-0.596**	-0.544**
{t-2 to t-1}	(0.334)	(0.396)	(0.228)	(0.261)
∑ Capital {t-2 to t-1}	34.01	20.36	24.14	11.66
	(54.030)	(52.770)	(37.760)	(38.100)
Observations	81	81	81	81
Year-Quarter FE	X	X	X	X
Bank FE	X	X	X	X
Capital Ratio	Tier1	CET1	Tier1	CET1

Notes: The dependent variable is individual banks' charge-offs on foreign C&I loans, from the merger-adjusted version of the Y9-C. Columns 1-2 show results for gross charge-offs on such loans, and Columns 3-4 show results for net charge-offs. Robust Standard errors are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 9 Panel A: Government Response Stringency and Bankruptcies in Foreign Countries

Dependent Variable:	%Δ Total Bankruptcies	%Δ Corporate Bankruptcies
	[1]	[2]
Country-specific Stringency Index$_{t-1}$	0.513**	0.118*
	[0.213]	[0.0621]
Constant	-29.22**	-11.58***
	[11.06]	[3.249]
Observations	36	39
R-squared	0.145	0.089

Note: The table shows country-level regressions of the change in total bankruptcies (Column 1) and in corporate bankruptcies (Column 2) in response to the economic fallout resulting from sovereigns' actions to prevent the spread of Covid-19, as captured by the Government Stringency Index. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9 Panel B. Quarterly Change in Domestic Bank Lending across Firms and Credit Ratings for banks with different Tier1 Capital Ratios - Role of Exposure to Foreign Bankruptcies.

Measure of U.S.-based lending:	Quarterly Change in the Log of Lending		Quarterly Change in the Log of the Number of Loans	
VARIABLES	[1]	[2]	[3]	[4]
Panel A: Ultimate Risk Weighted				
∑ Exposure to Foreign Bankruptcies {t-2 to t-1}	-0.00832*	-0.0013	-0.000794	-0.000454
	(0.005)	(0.001)	(0.003)	(0.001)
∑ Exposure to Foreign Bankruptcies * Capital	0.000388	0.000159**	0.000276*	6.43E-05
{t-2 to t-1}	(0.000)	(0.000)	(0.000)	(0.000)
∑ Capital {t-2 to t-1}	-0.0975**	-0.0749	-0.0042	-0.00175
	(0.046)	(0.050)	(0.032)	(0.035)
Observations	214,464	214,464	214,464	214,464
R-squared	0.002	0.002	0.002	0.002
Panel B: Immediate Counterparty Weighted				
∑ Exposure to Foreign Bankruptcies {t-2 to t-1}	-0.00537	-0.00138	0.000769	-0.00143**
	(0.004)	(0.001)	(0.003)	(0.001)
∑ Exposure to Foreign Bankruptcies * Capital	0.000196	0.000161**	0.000107	0.000150***
{t-2 to t-1}	(0.000)	(0.000)	(0.000)	(0.000)
∑ Capital {t-2 to t-1}	-0.0827*	-0.0669	-0.00878	-0.00786
	(0.045)	(0.047)	(0.031)	(0.033)
Observations	214,464	214,464	214,464	214,464
R-squared	0.002	0.002	0.002	0.002
Bank FE	X	X	X	X
Type of Bankruptcy	Corporate	Total	Corporate	Total

Notes: In Columns 1-2, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms and credit ratings [i.e. AAA, AA, A, BBB, BB, B, CCC, CC, C, D, Not Rated]. In Columns 3-4, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and credit ratings. Exposure to Foreign Bankruptcies is the weighted average of bankruptcies in the countries the bank lends to, where the weights are each country's share in the bank's foreign portfolio. Robust Standard errors (clustered at the bank-firm level) are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Figure A1. The government response Stringency Index over time in countries that U.S. banks have the highest exposure to.

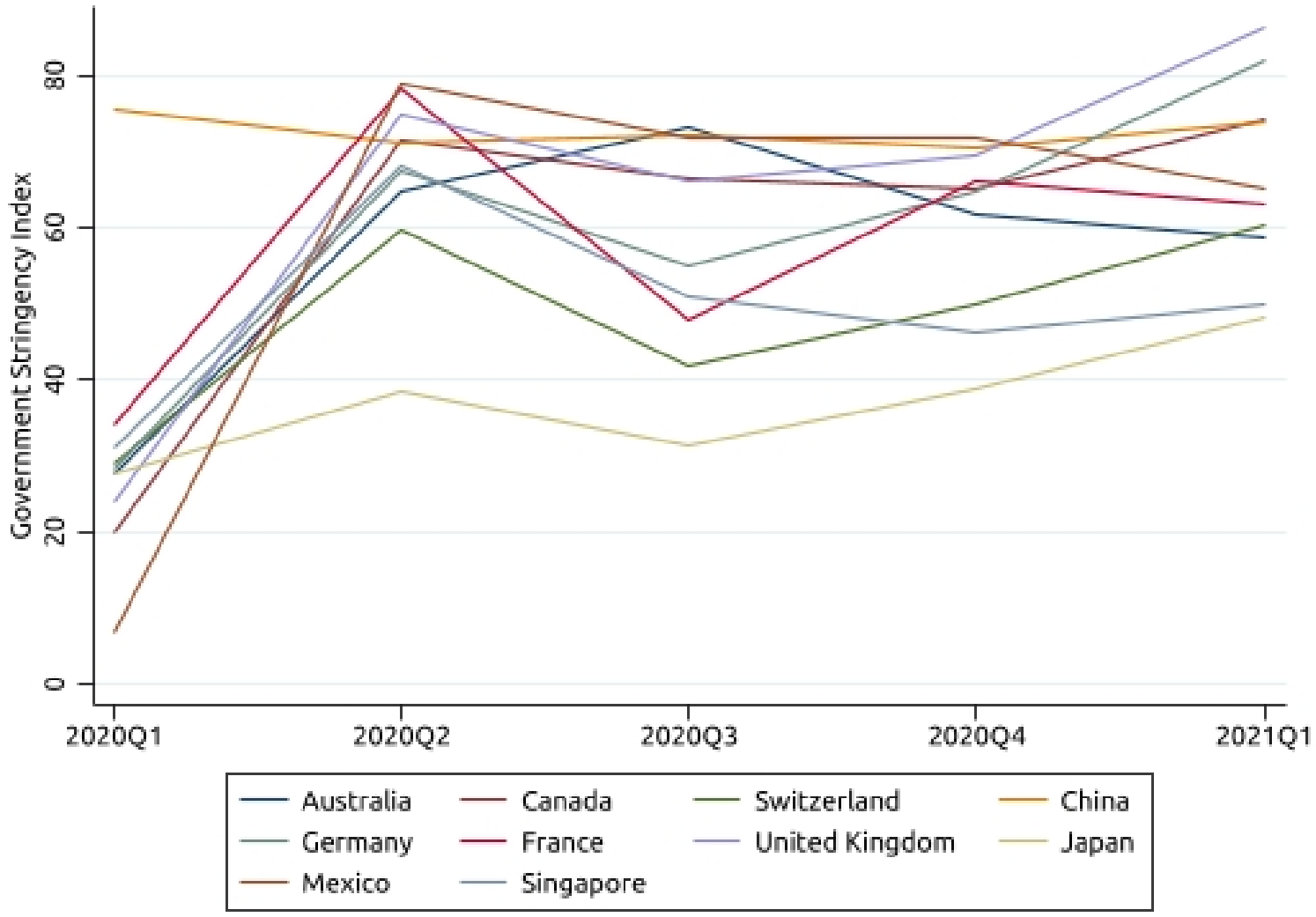

Table A1. Quarterly Change in Domestic Bank Lending across Firms, Credit Maturities and Credit Ratings, for banks with different Tier1 Capital Ratios - using Cases and Deaths as Foreign Covid-19 Exposure Measure.

Foreign Covid-19 exposure measure:	*Cases*				*Deaths*			
Measure of U.S.-based lending:	Quarterly Change in Log of Lending Volume		Quarterly Change in Log of Number of Loans		Quarterly Change in Log of Lending Volume		Quarterly Change in Log of Number of Loans	
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Panel A: Ultimate Risk Weighted								
∑ Exposure {t-2 to t-1}	-0.0356*	-0.0408*	-0.0429***	-0.0395***	-14.36***	-12.17**	-19.67***	-16.15***
	[0.0188]	[0.0211]	[0.0129]	[0.0143]	[4.279]	[4.786]	[3.291]	[3.620]
∑ Exposure * Capital	0.00189***	0.00174**	0.00165***	0.00143**	0.892***	0.761***	1.242***	1.033***
{t-2 to t-1}	[0.000720]	[0.000810]	[0.000527]	[0.000583]	[0.258]	[0.289]	[0.201]	[0.222]
∑ Capital {t-2 to t-1}	-0.721**	-0.511*	-0.992***	-0.568**	-0.203	-0.0957	-0.358**	-0.155
	[0.286]	[0.307]	[0.224]	[0.232]	[0.230]	[0.260]	[0.170]	[0.190]
Observations	144,261	143,596	144,261	143,596	144,261	143,596	144,261	143,596
R-squared	0.528	0.557	0.472	0.513	0.527	0.557	0.472	0.513
Panel B: Immediate Counterparty Weighted								
∑ Exposure {t-2 to t-1}	-0.0238	-0.0335	-0.0287**	-0.0312**	-8.248***	-8.131**	-11.27***	-10.37***
	[0.0185]	[0.0210]	[0.0125]	[0.0143]	[3.075]	[3.695]	[2.479]	[2.832]
∑ Exposure * Capital	0.00200***	0.00196**	0.00193***	0.00176***	0.535***	0.529**	0.755***	0.700***
{t-2 to t-1}	[0.000762]	[0.000875]	[0.000560]	[0.000631]	[0.191]	[0.230]	[0.155]	[0.178]
∑ Capital {t-2 to t-1}	-0.779**	-0.636*	-1.128***	-0.764***	-0.387	-0.335	-0.688***	-0.519**
	[0.324]	[0.363]	[0.255]	[0.278]	[0.275]	[0.315]	[0.216]	[0.243]
Observations	144,261	143,596	144,261	143,596	144,261	143,596	144,261	143,596
R-squared	0.527	0.557	0.472	0.513	0.527	0.557	0.472	0.513
Year-Quarter FE	X	X	X	X	X	X	X	X
Bank-Firm-Maturity FE	X		X		X		X	
Bank-Firm-Credit Rating FE		X		X		X		X

Notes: In Columns 1-2 and 5-6, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms. In Columns 3-4 and 7-8, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and credit ratings. In Columns 1, 3, 5 and 7, the dependent variable is pooled across loan maturities [i.e. loan with a maturity less than one year and loan with a maturity more than one year], and in Columns 2, 4, 6 and 8 it is pooled across credit ratings [i.e. AAA, AA, A, BBB, BB, B, CCC, CC, C, D, Not Rated]. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio. All standard errors clustered at the bank-firm level. Robust Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A2. Quarterly Change in Domestic Bank Lending across Firms and Credit Maturities for banks with different Common Equity Tier1 Capital Ratios.

	Quarterly Change in the Log of Lending					Quarterly Change in the Log of the Number of Loans				
Included Maturities	All	All	All	≤ 1 year	≥ 1 year	All	All	All	≤ 1 year	≥ 1 year
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Panel A: Ultimate Risk Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.0996***	-0.102***	-0.0901***	-0.307	-0.0946***	-0.121***	-0.126***	-0.121***	0.0278	-0.126***
	[0.0230]	[0.0339]	[0.0335]	[0.576]	[0.0334]	[0.0159]	[0.0240]	[0.0241]	[0.262]	[0.0245]
∑ Foreign Covid Exposure * Capital	0.00632***	0.00603***	0.00538***	0.00654	0.00585***	0.00865***	0.00890***	0.00864***	-0.00171	0.00899***
{t-2 to t-1}	[0.00140]	[0.00208]	[0.00207]	[0.0275]	[0.00210]	[0.000984]	[0.00148]	[0.00149]	[0.0134]	[0.00152]
∑ Capital {t-2 to t-1}	-0.186	-0.0619	-0.101	-0.74	-0.138	-0.0529	-0.0224	-0.0601	1.985	-0.111
	[0.155]	[0.240]	[0.238]	[4.671]	[0.233]	[0.107]	[0.167]	[0.168]	[2.305]	[0.167]
Observations	144,261	144,261	144,261	5,390	138,871	144,261	144,261	144,261	5,390	138,871
R-squared	0.001	0.482	0.527	0.641	0.516	0.003	0.442	0.472	0.562	0.467
Panel B: Immediate Counterparty Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.0832***	-0.0825***	-0.0730**	-0.281	-0.0735**	-0.112***	-0.116***	-0.113***	-0.0173	-0.115***
	[0.0215]	[0.0315]	[0.0312]	[0.503]	[0.0312]	[0.0144]	[0.0216]	[0.0217]	[0.207]	[0.0220]
∑ Foreign Covid Exposure * Capital	0.00581***	0.00538***	0.00484**	0.00408	0.00513**	0.00862***	0.00885***	0.00863***	0.000161	0.00890***
{t-2 to t-1}	[0.00138]	[0.00205]	[0.00206]	[0.0234]	[0.00209]	[0.000958]	[0.00144]	[0.00145]	[0.0113]	[0.00149]
∑ Capital {t-2 to t-1}	-0.147	-0.0207	-0.0691	-0.723	-0.106	-0.0231	0.0077	-0.0339	1.795	-0.0882
	[0.155]	[0.240]	[0.238]	[4.444]	[0.234]	[0.106]	[0.166]	[0.168]	[2.037]	[0.166]
Observations	144,261	144,261	144,261	5,390	138,871	144,261	144,261	144,261	5,390	138,871
R-squared	0.001	0.482	0.527	0.641	0.516	0.003	0.442	0.472	0.562	0.467
Year-Quarter FE	X	X	X	X	X	X	X	X	X	X
Bank FE	X					X				
Bank-Firm FE		X		X	X		X		X	X
Bank-Firm-Maturity FE			X					X		

Notes: In Columns 1-5, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms and loan maturities [i.e. loan with a maturity less than one year and loan with a maturity more than one year]. In Columns 6-10, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and loan maturities. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio. Robust Standard errors (clustered at the bank-firm level) are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A3. Quarterly Change in Domestic Bank Lending across Firms and Credit Ratings for banks with different Common Equity Tier1 Capital Ratios.

	Quarterly Change in the Log of Lending					Quarterly Change in the Log of the Number of Loans				
Included Maturities	All	All	All	≤ BB	> BB	All	All	All	≤ BB	> BB
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Panel A: Ultimate Risk Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.0789***	-0.0819**	-0.0873**	-0.0574	-0.154**	-0.103***	-0.102***	-0.105***	-0.118***	-0.0925
	[0.0236]	[0.0393]	[0.0391]	[0.0494]	[0.0782]	[0.0165]	[0.0281]	[0.0280]	[0.0375]	[0.0595]
∑ Foreign Covid Exposure * Capital	0.00505***	0.00462*	0.00469**	0.00414	0.00815*	0.00753***	0.00749***	0.00757***	0.00916***	0.00674**
{t-2 to t-1}	[0.00144]	[0.00238]	[0.00236]	[0.00315]	[0.00436]	[0.00104]	[0.00175]	[0.00173]	[0.00241]	[0.00336]
∑ Capital {t-2 to t-1}	-0.236	-0.246	-0.246	-0.305	-0.448	-0.0741	-0.113	-0.117	-0.162	0.00546
	[0.151]	[0.268]	[0.264]	[0.351]	[0.475]	[0.106]	[0.187]	[0.185]	[0.244]	[0.337]
Observations	143,596	143,596	143,596	103,033	40,563	143,596	143,596	143,596	103,033	40,563
R-squared	0.002	0.53	0.556	0.545	0.533	0.002	0.489	0.513	0.502	0.501
Panel B: Immediate Counterparty Weighted										
∑ Foreign Covid Exposure {t-2 to t-1}	-0.0635***	-0.0634*	-0.0684*	-0.0439	-0.118	-0.0954***	-0.0944***	-0.0971***	-0.112***	-0.0733
	[0.0220]	[0.0367]	[0.0365]	[0.0461]	[0.0746]	[0.0153]	[0.0260]	[0.0258]	[0.0331]	[0.0538]
∑ Foreign Covid Exposure * Capital	0.00456***	0.00396*	0.00398*	0.00383	0.00641	0.00751***	0.00747***	0.00752***	0.00931***	0.00602*
{t-2 to t-1}	[0.00140]	[0.00231]	[0.00228]	[0.00312]	[0.00409]	[0.00104]	[0.00172]	[0.00170]	[0.00235]	[0.00308]
∑ Capital {t-2 to t-1}	-0.206	-0.21	-0.206	-0.295	-0.35	-0.0515	-0.0904	-0.0914	-0.18	0.084
	[0.151]	[0.269]	[0.265]	[0.357]	[0.474]	[0.106]	[0.188]	[0.186]	[0.246]	[0.330]
Observations	143,596	143,596	143,596	103,033	40,563	143,596	143,596	143,596	103,033	40,563
R-squared	0.002	0.53	0.556	0.545	0.533	0.002	0.489	0.513	0.502	0.501
Year-Quarter FE	X	X	X	X	X	X	X	X	X	X
Bank FE	X					X				
Bank-Firm FE		X		X	X		X		X	X
Bank-Firm-Credit Rating FE			X					X		

Notes: In Columns 1-5, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms and credit ratings [i.e. AAA, AA, A, BBB, BB, B, CCC, CC, C, D, Not Rated]. In Columns 6-10, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and credit ratings. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio. Robust Standard errors (clustered at the bank-firm level) are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A4. Quarterly Change in Domestic Bank Lending across Firms, Credit Maturities and Credit Ratings, for banks with different Tier1 Capital Ratios - Controlling for the Share of Banks' Foreign Assets.

Measure of U.S.-based lending:	Quarterly Change in the Log of Lending		Quarterly Change in the Log of the Number of Loans	
Pooled across:	*Maturities*	*Credit Ratings*	*Maturities*	*Credit Ratings*
VARIABLES	[2]	[4]	[6]	[8]
Panel A: Ultimate Risk Weighted				
∑ Foreign Covid Exposure {t-2 to t-1}	-0.539**	-0.619**	-0.564***	-0.575***
	(0.256)	(0.298)	(0.191)	(0.222)
∑ Foreign Covid Exposure * Capital	0.0980*	0.114*	0.0780*	0.0853*
{t-2 to t-1}	(0.055)	(0.066)	(0.043)	(0.050)
∑ Foreign Assets Share * Foreign Covid Exposure {t-2 to t-1}	-2.052	-2.978	-25.22**	-22.46
	(15.450)	(17.580)	(11.900)	(13.770)
∑ Foreign Assets Share * Foreign Covid Exposure * Capital	-19.55	-22.69	-9.662	-11.89
{t-2 to t-1}	(14.080)	(16.740)	(11.220)	(13.050)
∑ Capital {t-2 to t-1}	-4.514	-5.841	-3.304	-4.141
	(3.430)	(4.071)	(2.727)	(3.173)
Observations	144,261	143,596	144,261	143,596
R-squared	0.528	0.557	0.474	0.514
Panel B: Immediate Risk Weighted				
∑ Foreign Covid Exposure {t-2 to t-1}	-0.334**	-0.361**	-0.553***	-0.513***
	(0.163)	(0.179)	(0.131)	(0.151)
∑ Foreign Covid Exposure * Capital	0.0501***	0.0526***	0.0720***	0.0675***
{t-2 to t-1}	(0.017)	(0.019)	(0.013)	(0.016)
∑ Foreign Assets Share * Foreign Covid Exposure {t-2 to t-1}	-106.6	-136.6	-80.34	-90.26
	(91.230)	(107.700)	(72.380)	(84.190)
∑ Foreign Assets Share * Foreign Covid Exposure * Capital	0.783	3.36	-3.56	-1.862
{t-2 to t-1}	(6.983)	(8.152)	(5.460)	(6.252)
∑ Capital {t-2 to t-1}	-2.047*	-2.620*	-3.375***	-3.441***
	(1.224)	(1.402)	(0.929)	(1.096)
Observations	144,261	143,596	144,261	143,596
R-squared	0.528	0.557	0.474	0.514
Year-Quarter FE	X	X	X	X
Bank-Firm-Maturity FE	X		X	
Bank-Firm-Credit Rating FE		X		X

Notes: : Foreign Assets Share is total foreign lending assets divided by total assets. In Columns 1-2, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms. In Columns 3-4, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and credit ratings. In Columns 1 and 3, the dependent variable is pooled across loan maturities [i.e. loan with a maturity less than one year and loan with a maturity more than one year], and in Columns 2 and 4 it is pooled across credit ratings [i.e. AAA, AA, A, BBB, BB, B, CCC, CC, C, D, Not Rated]. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio. All standard errors clustered at the bank-firm level. Robust Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A5. Quarterly Change in interest rates and rate spreads across Firms, Credit Maturities, and Credit Ratings, for banks with different Capital Ratios.

Dependent variable:	*Interest Rate*				*Spread*			
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Panel A: Ultimate Risk Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.000468	-0.000265	0.000607	0.000597	-0.00531***	0.000849	0.00544***	0.00191*
	[0.00105]	[0.000742]	[0.00108]	[0.000786]	[0.00174]	[0.000974]	[0.00202]	[0.00103]
∑ Foreign Covid Exposure * Capital {t-2 to t-1}	4.97E-05	0.000195***	1.77E-06	0.000148***	0.000265***	5.66E-05	-0.000467***	-0.000168**
	[5.79e-05]	[4.87e-05]	[5.88e-05]	[4.96e-05]	[0.000103]	[6.45e-05]	[0.000116]	[6.81e-05]
∑ Capital {t-2 to t-1}	0.00101	0.00311	0.00387	0.00732	-0.0296***	-0.00599	0.0392***	0.0252***
	[0.00803]	[0.00542]	[0.00785]	[0.00550]	[0.0104]	[0.00806]	[0.0113]	[0.00779]
Observations	105,066	105,066	113,061	113,061	62,288	62,288	71,786	71,786
R-squared	0.511	0.514	0.516	0.519	0.516	0.516	0.546	0.556
Panel B: Immediate Counterparty Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.00170*	-0.00108	-0.000872	-0.000356	-0.00637***	0.000168	0.00520***	0.00134
	[0.00102]	[0.000702]	[0.00104]	[0.000728]	[0.00169]	[0.000884]	[0.00193]	[0.000940]
∑ Foreign Covid Exposure * Capital {t-2 to t-1}	0.000109*	0.000247***	7.36E-05	0.000210***	0.000313***	0.000106*	-0.000493***	-0.000130**
	[5.70e-05]	[4.93e-05]	[5.67e-05]	[4.88e-05]	[0.000102]	[6.18e-05]	[0.000113]	[6.58e-05]
∑ Capital {t-2 to t-1}	-0.00277	0.0039	-0.00101	0.00767	-0.0327***	-0.00759	0.0260**	0.0235***
	[0.00793]	[0.00549]	[0.00778]	[0.00555]	[0.0101]	[0.00814]	[0.0109]	[0.00786]
Observations	105,066	105,066	113,061	113,061	62,288	62,288	71,786	71,786
R-squared	0.511	0.514	0.516	0.518	0.516	0.516	0.547	0.556
Capital Ratio	Tier1	CET1	Tier1	CET1	Tier1	CET1	Tier1	CET1
Year-Quarter FE	X	X	X	X	X	X	X	X
Bank-Firm-Maturity FE	X	X			X	X		
Bank-Firm-Credit Rating FE			X	X			X	X

Notes: The dependent variable is the quarterly change in average interest rate or spread, for loans pooled across loan maturities [i.e. loan with a maturity less than one year and loan with a maturity more than one year] in Columns 1, 2, 5 and 6, or for loans pooled across credit ratings [i.e. AAA, AA, A, BBB, BB, B, CCC, CC, C, D, Not Rated] in Columns 3,4, 7 and 8. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio.All standard errors clustered at the bank-firm level. Robust Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A6. Quarterly Change in Domestic Bank Lending across Firms, Credit Maturities and Credit Ratings - Controlling for Firms' Covid-19 Exposure.

Measure of U.S.-based lending:	Quarterly Change in Log of Lending Volume				Quarterly Change in Log of Number of Loans			
Pooled across:	*Maturities*	*Maturities*	*Credit Ratings*	*Credit Ratings*	*Maturities*	*Maturities*	*Credit Ratings*	*Credit Ratings*
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Panel A: Ultimate Risk Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.190***	-0.180***	-0.180***	-0.168***	-0.240***	-0.237***	-0.204***	-0.198***
	(0.04)	(0.04)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
∑ Foreign Covid Exposure * Capital	0.0100***	0.00942***	0.00967***	0.00893***	0.0133***	0.0131***	0.0116***	0.0113***
{t-2 to t-1}	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
∑ Firm Covid Exposure {t-2 to t-1}	0.000583	0.00221	-0.00329	-0.00231	-0.00408	-0.00332	-0.00534	-0.00461
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
∑ Firm Covid Exposure * Capital	-6.83E-05	-0.000192	0.000196	0.000126	0.0003	0.000245	0.000369	0.000315
{t-2 to t-1}	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
∑ Capital {t-2 to t-1}	-0.961***	-0.985***	-1.129***	-0.942**	-1.499***	-1.533***	-1.286***	-1.194***
	(0.35)	(0.35)	(0.39)	(0.38)	(0.28)	(0.28)	(0.30)	(0.30)
Observations	144,018	144,018	143,351	143,351	144,018	144,018	143,351	143,351
R-squared	0.482	0.527	0.53	0.556	0.443	0.473	0.49	0.513
Panel B: Immediate Risk Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.181***	-0.174***	-0.166***	-0.155***	-0.240***	-0.237***	-0.204***	-0.199***
	(0.04)	(0.04)	(0.05)	(0.05)	(0.03)	(0.03)	(0.04)	(0.04)
∑ Foreign Covid Exposure * Capital	0.00980***	0.00929***	0.00915***	0.00846***	0.0136***	0.0134***	0.0118***	0.0115***
{t-2 to t-1}	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
∑ Firm Covid Exposure {t-2 to t-1}	0.00116	0.00279	-0.00286	-0.00191	-0.00335	-0.00261	-0.00478	-0.00407
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
∑ Firm Covid Exposure * Capital	-0.000112	-0.000235	0.000163	9.51E-05	0.000246	0.000191	0.000326	0.000274
{t-2 to t-1}	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
∑ Capital {t-2 to t-1}	-0.859**	-0.900***	-1.020***	-0.839**	-1.430***	-1.469***	-1.228***	-1.137***
	(0.34)	(0.34)	(0.38)	(0.37)	(0.27)	(0.27)	(0.29)	(0.29)
Observations	144,018	144,018	143,351	143,351	144,018	144,018	143,351	143,351
R-squared	0.482	0.527	0.53	0.556	0.443	0.473	0.49	0.513
Year-Quarter FE	X	X	X	X	X	X	X	X
Bank-Firm FE	X		X		X		X	
Bank-Firm-Maturity FE		X				X		
Bank-Firm-Credit Rating FE				X				X

Notes: Firm Foreign Covid Exposure is defined as the Foreign Covid Exposure index of the U.S. state of the borrowing firm's headquarters. In Columns 1-4, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms. In Columns 5-8, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and credit ratings. In Columns 1, 2, 5 and 6, the dependent variable is pooled across loan maturities [i.e. loan with a maturity less than one year and loan with a maturity more than one year], and in Columns 3, 4, 7 and 8 it is pooled across credit ratings [i.e. AAA, AA, A, BBB, BB, B, CCC, CC, C, D, Not Rated]. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio. All standard errors clustered at the bank-firm level. Robust Standard errors in

Table A7. Quarterly Change in Domestic Bank Lending across Firms, Credit Maturities and Credit Ratings, for banks with different Tier1 Capital Ratios - For borrowing firms in Covid-19-sensitive and insensitive industries.

Measure of U.S.-based lending:	Quarterly Change in Log of Lending Volume				Quarterly Change in Log of Number of Loans			
Industry Covid Sensitivity:	*Sensitive*	*Insensitive*	*Sensitive*	*Insensitive*	*Sensitive*	*Insensitive*	*Sensitive*	*Insensitive*
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Panel A: Ultimate Risk Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.169***	-0.290***	-0.149**	-0.324***	-0.249***	-0.288***	-0.218***	-0.292***
	(0.06)	(0.09)	(0.06)	(0.11)	(0.05)	(0.08)	(0.05)	(0.10)
∑ Foreign Covid Exposure * Capital	0.00825***	0.0172***	0.00748**	0.0186***	0.0137***	0.0161***	0.0119***	0.0168***
{t-2 to t-1}	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)
∑ Capital {t-2 to t-1}	-0.853**	-2.107***	-0.694	-2.112***	-1.593***	-1.880***	-1.344***	-1.660**
	(0.42)	(0.72)	(0.49)	(0.79)	(0.34)	(0.69)	(0.40)	(0.75)
Observations	88,990	45,032	85,504	48,598	88,990	45,032	85,504	48,598
R-squared	0.53	0.524	0.554	0.56	0.47	0.482	0.508	0.527
Panel B: Immediate Risk Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.157***	-0.305***	-0.127**	-0.325***	-0.244***	-0.294***	-0.206***	-0.295***
	(0.05)	(0.09)	(0.06)	(0.10)	(0.04)	(0.08)	(0.05)	(0.09)
∑ Foreign Covid Exposure * Capital	0.00784***	0.0181***	0.00656*	0.0189***	0.0136***	0.0167***	0.0115***	0.0172***
{t-2 to t-1}	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)
∑ Capital {t-2 to t-1}	-0.758*	-2.111***	-0.558	-1.997**	-1.501***	-1.851***	-1.238***	-1.564**
	(0.40)	(0.70)	(0.47)	(0.78)	(0.32)	(0.68)	(0.38)	(0.72)
Observations	88,990	45,032	85,504	48,598	88,990	45,032	85,504	48,598
R-squared	0.53	0.524	0.554	0.56	0.47	0.482	0.508	0.528
Year-Quarter FE	X	X	X	X	X	X	X	X
Bank-Firm-Maturity FE	X	X			X	X		
Bank-Firm-Credit Rating FE			X	X			X	X

Notes: Odd columns are restricted to firms belonging to Covid-sensitive industries and even columns are restricted to firms belonging to Covid-insensitive industries. COVID-sensitive industries are defined based on Kaplan, Moll and Violante (2020), "The great lockdown and the big stimulus:Tracing the pandemic possibility frontier for the U.S.", NBER Working Paper No. 27794. In Columns 1-4, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms. In Columns 5-8, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and credit ratings. In Columns 1, 2, 5 and 6, the dependent variable is pooled across loan maturities [i.e. loan with a maturity less than one year and loan with a maturity more than one year], and in Columns 3, 4, 7 and 8 it is pooled across credit ratings [i.e. AAA, AA, A, BBB, BB, B, CCC, CC, C, D, Not Rated]. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio. All standard errors clustered at the bank-firm level. Robust Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A8. Quarterly Change in Domestic Bank Lending across Firms and Credit Maturities for banks with different Capital Ratios -- including industry*quarter fixed effects.

Measure of U.S.-based lending:	Quarterly Change in the Log of Lending				Quarterly Change in the Log of the Number of Loans			
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Panel A: Ultimate Risk Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.00342**	-0.00316*	0.00714	0.00796	-0.00379***	-0.00510***	0.00378	0.00378
	(0.002)	(0.002)	(0.011)	(0.012)	(0.001)	(0.001)	(0.008)	(0.008)
∑ Foreign Covid Exposure * Capital			-0.000503	-0.000784			-0.000574	-0.000574
{t-2 to t-1}			(0.001)	(0.001)			(0.001)	(0.001)
∑ Capital {t-2 to t-1}			-0.1	-0.0802			-0.00753	-0.00753
			(0.066)	(0.075)			(0.048)	(0.048)
Panel B: Immediate Counterparty Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.00396**	-0.00359*	0.00516	0.00796	-0.00380***	-0.00566***	0.00478	0.00378
	(0.002)	(0.002)	(0.013)	(0.012)	(0.001)	(0.001)	(0.009)	(0.008)
∑ Foreign Covid Exposure * Capital			-0.000371	-0.000784			-0.000484	-0.000574
{t-2 to t-1}			(0.001)	(0.001)			(0.001)	(0.001)
∑ Capital {t-2 to t-1}			-0.107	-0.0802			-0.00706	-0.00753
			(0.079)	(0.075)			(0.050)	(0.048)
Observations	45,000	41,944	41,944	41,944	45,000	41,944	41,944	41,944
R-squared								
Capital Ratio	None	None	Tier1	CET1	None	None	Tier1	CET1
Industry-Quarter FE	X	X	X	X	X	X	X	X
Bank Controls		X	X	X		X	X	X

Notes: In Columns 1-4, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms and in Columns 5-8, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms. Bank controls includes the following variables for quarters t-2 and t-1: *Ln[Total Assets], Return on Asset,* and *Leverage Ratio*. Robust Standard errors (clustered at the bank-firm level) are in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table A9. Quarterly Change in Domestic Bank Lending across Firms, Credit Maturities and Credit Ratings, for banks with different Tier1 Capital Ratios - For Small and Large borrowing firms.

Measure of U.S.-based lending:	Quarterly Change in Log of Lending Volume				Quarterly Change in Log of Number of Loans			
Firm Size:	*Small*	*Large*	*Small*	*Large*	*Small*	*Large*	*Small*	*Large*
VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Panel A: Ultimate Risk Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.431***	-0.122**	-0.303**	-0.125**	-0.437***	-0.203***	-0.433***	-0.160***
	(0.123)	(0.051)	(0.131)	(0.060)	(0.114)	(0.041)	(0.119)	(0.046)
∑ Foreign Covid Exposure * Capital	0.0222***	0.00633**	0.0152**	0.00653**	0.0229***	0.0114***	0.0226***	0.00935***
{t-2 to t-1}	(0.007)	(0.003)	(0.007)	(0.003)	(0.006)	(0.002)	(0.006)	(0.003)
∑ Capital {t-2 to t-1}	-2.934***	-0.585	-1.896**	-0.597	-3.249***	-1.245***	-3.051***	-0.884**
	(0.914)	(0.386)	(0.938)	(0.451)	(0.798)	(0.318)	(0.805)	(0.360)
Observations	47,973	96,288	50,039	93,557	47,973	96,288	50,039	93,557
R-squared	0.472	0.544	0.497	0.572	0.464	0.484	0.492	0.527
Panel B: Immediate Risk Weighted								
∑ Foreign Covid Exposure {t-2 to t-1}	-0.445***	-0.123***	-0.317**	-0.116**	-0.439***	-0.209***	-0.430***	-0.167***
	(0.124)	(0.047)	(0.127)	(0.056)	(0.112)	(0.038)	(0.114)	(0.043)
∑ Foreign Covid Exposure * Capital	0.0243***	0.00655**	0.0168**	0.00625**	0.0246***	0.0119***	0.0235***	0.00983***
{t-2 to t-1}	(0.007)	(0.003)	(0.007)	(0.003)	(0.006)	(0.002)	(0.006)	(0.002)
∑ Capital {t-2 to t-1}	-3.005***	-0.565	-1.979**	-0.523	-3.244***	-1.220***	-2.987***	-0.867**
	(0.930)	(0.375)	(0.911)	(0.439)	(0.804)	(0.305)	(0.791)	(0.347)
Observations	47,973	96,288	50,039	93,557	47,973	96,288	50,039	93,557
R-squared	0.472	0.544	0.497	0.572	0.464	0.484	0.492	0.527
Year-Quarter FE	X	X	X	X	X	X	X	X
Bank-Firm-Maturity FE	X	X			X	X		
Bank-Firm-Credit Rating FE			X	X			X	X

Notes: : Large firms are firms with total assets above the sample median firm asset size. Small firms are firms with total assets below the median. In Columns 1-4, the dependent variable is quarterly change in the natural logarithm of U.S. banks' domestic lending across firms. In Columns 5-8, the dependent variable is the quarterly change in the natural logarithm of the number of U.S. banks' domestic loans across firms and credit ratings. In Columns 1, 2, 5 and 6, the dependent variable is pooled across loan maturities [i.e. loan with a maturity less than one year and loan with a maturity more than one year], and in Columns 3, 4, 7 and 8 it is pooled across credit ratings [i.e. AAA, AA, A, BBB, BB, B, CCC, CC, C, D, Not Rated]. All specifications include the following controls at the bank and firm level for quarters t-2 and t-1: Ln[Total Assets], Return on Asset, and Leverage Ratio. All standard errors clustered at the bank-firm level. Robust Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.