From Tax Cuts to Tight Dollars

Elizabeth Bickmore[*] Christos Kamaras[†] Alexandre Pecora[‡]
Juliana Salomão[§] Alexia Ventula Veghazy[¶]

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Abstract

The global dollar intermediation system is built on a fragile funding base: foreign banks rely on short-term dollar liabilities supplied by offshore cash pools and U.S. money market funds. The 2017 Tax Cuts and Jobs Act (TCJA) provided a major stress test for this system by encouraging U.S. multinationals to repatriate their offshore earnings. Using syndicated loan data linked to U.S. Money Market Fund (MMF) holdings, we show that European banks experienced severe funding pressure and cut dollar lending by roughly 35 percent, while raising loan spreads by approximately 20 basis points, relative to U.S. banks. These effects are stronger for banks without previous relations to U.S. MMFs. Firms with pre-existing relationships with these banks cut dollar borrowing and reduced total assets and fixed capital. Our results demonstrate how instability in the offshore dollar funding system propagates financial stress to firms worldwide. They also show that a purely internal U.S. fiscal policy change had considerable unintended international spillovers.

[*]Virginia Tech
[†]U.S. Bank
[‡]Virginia Tech
[§]University of Minnesota, NBER & CEPR
[¶]European Central Bank

1 Introduction

How do disruptions in the global supply of U.S. dollar funding affect the supply of credit and real economic activity? This question is particularly important in the context of the offshore U.S. dollar system, where non-U.S. banks play a central role in intermediating dollar credit worldwide. The U.S. dollar is the dominant currency for international trade invoicing and cross-border lending, making dollar funding conditions a key driver of global economic activity. Over the last decades, foreign banks have accumulated more than $17 trillion in dollar-denominated assets, compared to roughly $24 trillion on the balance sheet of the U.S. banking system. Non-U.S. banks originate more than a half of the roughly $1 trillion in syndicated dollar loans issued annually.

Despite its scale, this system relies heavily on short-term wholesale funding, raising concerns about its vulnerability to funding shocks.[1] However, isolating the effects of such shocks is challenging, as episodes of financial stress typically coincide with changes in bank risk, borrower creditworthiness, and macroeconomic conditions. In this paper, we study a setting that provides a clean source of variation in funding conditions: a policy-induced contraction in the supply of U.S. dollar funding to foreign banks following the 2017 Tax Cuts and Jobs Act (TCJA).

We focus on the impact of the TCJA on European banks in the dollar-denominated syndicated loan market, where these institutions account for more than a third of the global dollar lending. The TCJA affected the supply of U.S. dollars by inducing U.S. multinational firms to repatriate offshore earnings, reducing their demand for offshore dollar assets and leading to a withdrawal of funding from global wholesale markets [Smolyansky et al., 2019]. This generated an exogenous contraction in the funding available to foreign banks.[2] A key feature of this shock is that it is orthogonal to the credit quality of banks and their borrowers: it reflects a change in funding supply rather than a deterioration in fundamentals or changes in global risk appetite (see Miranda-Agrippino and Rey [2020] and Bruno and Shin [2015]). In principle, banks could substitute toward alternative sources of dollar funding, allowing us to study how differences in funding structure shape the transmission of funding shocks to credit supply and borrowing firms.

We show that the international dollar shortage induced by the TCJA significantly affected European banks' loan provision. They reduce their dollar lending by more than 40 percent and increase loan spreads by about 35 basis points, compared to U.S. banks that did not have any funding stress during the period. This effect is economically meaningful since a sizeable share - of around one third or roughly $320 billion per year - of all dollar loans issued in the syndicated market is done by European banks. These adjustments translate into meaningful real effects: firms borrowing from these banks experience a decline in credit, accompanied by reductions in leverage, investment, and total assets. Our contribution is twofold. First, our results provide evidence that disruptions in the supply of dollar funding propagate through global banking networks and have significant

[1] See *Financial Times*, "European banks exposed to risk of US dollar shortfall, says EU watchdog" (https://www.ft.com/content/882e200c-8055-41ce-a52f-2620e6cbdab0, and *Reuters*, "European banks increase reliance on US dollar funding, EU regulator finds" (https://www.reuters.com/sustainability/boards-policy-regulation/european-banks-increase-reliance-us-dollar-funding-eu-regulator-finds-2025-11-03/).

[2] U.S. multinationals historically held large amounts of corporate cash overseas driven by tax factors (see Faulkender et al. [2019] and Foley et al. [2007]). The TCJA changed that incentive by shifting the U.S. tax code from a worldwide to a territorial system, eliminating the incremental tax that firms used to pay on repatriated foreign earnings.

consequences for credit allocation and real economic activity worldwide. Second, it shows that a purely internal U.S. fiscal policy change had considerable unintended collateral effects on the global economy through the offshore dollar system.

The tax code change eliminated the incentives that led U.S. multinationals to store their offshore earnings in dollar-denominated securities. Darmouni and Mota [2024] show that the financial asset holdings of U.S. multinationals declined by approximately $400 billion in the two years following the reform. Because European banks rely heavily on these wholesale dollar funding markets [Klaus and Mingarelli, 2024], this withdrawal of funds represented a significant contraction in the supply of short-term dollar financing by non-financial institutions. In response, affected banks must turn to other lenders or alternative funding sources, such as FX swap markets, which are typically more expensive and become particularly costly during periods of stress (see Ivashina et al. [2015] and Khetan [2024]).[3]

Figure 1 provides suggestive evidence consistent with this mechanism. Following the TCJA, European banks wholesale dollar funding from non-financial corporations declined sharply by around $70 billion, while their outstanding stock of USD debt securities issued increased by a very similar amount, indicating a reallocation of offshore dollar funding. Moreover, European banks without direct access to U.S. money market funds swiftly increased their net dollar positions via FX swaps from roughly zero to $60 billion in the last quarter of 2017, when the TCJA was approved (see Figure 2). This pattern is consistent with a contraction in traditional deposit-based funding and a shift toward alternative instruments. At the same time, dollar loan spreads charged by European banks rise markedly between 2017 and 2019, as shown in Figure 3. The share of dollar-denominated lending also diverges between the two groups of European banks after the TCJA, with banks lacking MMF access falling behind those with such access, as shown in Figure 4. Taken together, these patterns suggest that while banks may have done some substitution across sources of dollar funding, this substitution occurred at a higher cost and was passed through to borrowers.

Motivated by these initial findings, we test the hypothesis that this funding shock spilled over to the lending behavior of European banks as well as on the real outcomes of their borrowers. Our dataset integrates information on dollar deposits, bond issuance, FX swap transactions, and ECB swap line usage from multiple confidential European Central Bank (ECB) datasets, including CSDB, bank supervisory statistics, and MMSR. We further merge these data with information on U.S. MMF holdings from Crane Data, syndicated loan originations from DealScan, and firm fundamentals from Compustat. To our knowledge, our paper is the first to combine all these data sources, allowing us to trace the transmission of the shock from funding conditions to lending and ultimately to firms. Using this combined dataset, we estimate difference-in-differences specifications to quantify the impact of the funding shock on bank lending and borrowing firms' outcomes.

We focus on banks that are active in the syndicated loan market, defined as institutions that issued at least one dollar-denominated loan in the two years preceding the tax change, yielding a sample of 78 European banks and 353 U.S. banks. Central to our analysis is the role of banks' funding structure. We exploit cross-sectional variation in pre-shock access of European banks to U.S. MMFs, a key and stable source of short-term dollar funding for banks active in dollar lending. European banks with established access to U.S. MMFs can rely on this channel when dollar liquidity tightens, and are therefore

[3]For a discussion of the role of wholesale dollar funding for European banks and the euro-dollar and pound-dollar swap markets, see *ECB Financial Stability Review* – June 2011 and November 2024.

less exposed to the TCJA-induced funding shock. Of the 78 banks in our sample, 26 maintain at least one certificate of deposit or commercial paper position with a U.S. MMF institution, while the remaining 52 have no pre-existing MMF relationship.

We estimate the effects of the TCJA using a difference-in-differences framework, controlling for common shocks over time and time-invariant differences across institutions. We focus on banks' participation and pricing in the syndicated loan market, capturing both the quantity of lending and the spreads charged on dollar-denominated loans. Under the assumption of parallel trends, the specification identifies the causal impact of the funding shock on bank lending and funding decisions. We test several specifications. First, we broadly compare the lending activity of the 78 European banks - the treated group - with the 353 U.S. banks - the control group. We already find a strong effect of the TCJA shock on the lending activity of European banks. Compared to the control group of American banks, they decrease their dollar lending by roughly 30%, and increase the loan margin above the benchmark rate (LIBOR or SOFR, depending on the period) by almost 20bps. We also observe strong parallel trends between the two groups before the shock.

Second, we exploit the heterogeneity in the exposure of the European banks to the TCJA shock, by splitting the treated sample between banks with and without pre-existing access to U.S. MMF funding before the reform. Consistent with our hypothesis, we find that banks without pre-existing MMF access reduce their dollar lending by roughly 40% and raise loan spreads by 35 basis points, while banks with MMF access show weaker, yet significant, results of around 20% and 15bps respectively. Finally, we also divide the sample of European banks by the median loan maturity before the TCJA, and compare short-term focused banks and long-term focused banks. We find that the adverse lending effects are concentrated on banks that are short-term oriented. This pattern aligns with the funding-side evidence, indicating that the transmission operates through disruptions in short-term dollar funding markets. This last result is also consistent with Paligorova and Santos [2017], who document that short-term uninsured wholesale funding is associated with shorter corporate loan maturity.

Lastly, we shift our attention from lenders to borrowers and examine how the funding shock induced by the TCJA affected firms at the end of the credit chain. We map firms with pre-existing lending relationships to treated banks and examine the real effects of the funding shock on their balance sheets and investment. We identify 1,207 treated firms and match them one-to-one to comparable firms without a relationship with the treated European banks using propensity score matching based on pre-shock characteristics. We focus on four outcomes: dollar loan volume, total debt, total assets, and fixed capital (PPE).

Firms with pre-shock relationships with treated banks reduce their dollar borrowing relative to matched control firms, with total dollar borrowing from all lenders declining by roughly 25%. This measure captures borrowing from any bank, not just treated institutions, as treatment is defined solely by a pre-shock relationship with an affected bank. The decline in dollar borrowing therefore indicates that such relationships are difficult to substitute following the funding shock. The contraction in credit translates into meaningful real effects: treated firms reduce total assets by 7% and fixed capital (PPE) by 15%.

Overall, our results reveal a fundamental fragility in the offshore U.S. dollar funding system. Disruptions to the global supply of dollar funding propagate through non-U.S. banks that play a central role in dollar intermediation, generating contractions in credit

supply and sizable real effects on firms' investment and balance sheet decisions. These findings highlight how reliance on short-term dollar funding amplifies the transmission of financial shocks across borders.

Literature. This paper relates to several strands of literature. First, it relates to a vast literature on how different shocks transmit through global banks' cross border flows. The bulk of this literature studies the international transmission of U.S. monetary policy[4] [Cetorelli and Goldberg, 2012a, Dedola et al., 2017, Temesvary et al., 2018, Morais et al., 2019, Bräuning and Ivashina, 2020, Takáts and Temesvary, 2020, Correa et al., 2022, Miranda-Agrippino and Nenova, 2022, Elliott et al., 2024, Loualiche et al., 2026], and the global financial crisis [Ivashina and Scharfstein, 2010, Puri et al., 2011, Cetorelli and Goldberg, 2012b, Popov and Udell, 2012, De Haas and Van Horen, 2013, Dagher and Kazimov, 2015, Abbassi et al., 2022]. Other shocks considered are the eurozone sovereign debt crisis [Brutti and Sauré, 2015, Acharya et al., 2018, Altavilla et al., 2017, Fillat et al., 2023] and regulatory or macroprudential policies [Ongena et al., 2013, Aiyar et al., 2014, Cacciatore et al., 2015, Danisewicz et al., 2017, Tripathy, 2020, Fabiani and Neanidis, 2025]. Our paper stands out from this literature by using a clean funding shock that is orthogonal to the credit quality of banks and borrowers. It must be stated that other papers considered idiosyncratic shocks (see [Cortés and Strahan, 2017, Buono and Formai, 2018]); however, the international scope of this paper involves a much larger set of banks and borrowers.

Specifically on the dependence of foreign banks on wholesale dollar funding, Ivashina, Scharfstein, and Stein [2015] show that when European banks experienced difficulty accessing wholesale dollar funding during the Eurozone sovereign crisis of 2012, they had to curtail their syndicated dollar lending activities. Correa, Sapriza, and Zlate [2021] find a similar result using a different dataset. Acharya, Afonso, and Kovner [2017] show that following the asset-backed commercial paper (ABCP) market freeze of August 2007, foreign banks with exposure to ABCP charged higher interest rates to borrowers for dollar-denominated syndicated loans. Related to the wholesale funding shortage caused by the U.S. Money Market Fund reform of 2016, Rime, Schrimpf, and Syrstad [2022] and Anderson, Du, and Schlusche [2025] show that foreign banks reduced their arbitrage positions funded by their unsecured wholesale borrowing. We use this connection between the ability of foreign banks to access wholesale dollar funding and their ability to intermediate dollar credit, that the literature has established, to uncover the effects of a dollar funding shock on the syndicated loan market and ultimately on borrowing firms.

Secondly, this paper relates to a strand of literature demonstrating that banks try to match the currency denomination of their assets and liabilities. Gutierrez, Ivashina, and Salomao [2023] use Peruvian bank data to show that local depositors' preference for dollar savings results in a preference for banks to lend in dollars, so that their balance sheet is currency matched. Ivashina, Scharfstein, and Stein [2015] present a model to explain that the problem of an unmatched currency denominated balance sheet for a bank cannot simply be solved by tapping the FX swap market, due to limited capital on the other side of the swap trade. We show the impact of the 2018 U.S. tax code on the dollar liability side of European banks' balance sheets, translated to a commensurate impact on their dollar assets (pullback in their dollar lending activities).

Thirdly, the paper relates to literature on the rise of corporate savings. Chen,

[4]Regarding the transmission of the ECB monetary policy to lending rates to households and firms, see Altavilla et al. [2020]

Karabarbounis, and Neiman [2017] document a large shift in the composition of global saving in the last three decades, with corporate saving having risen from insignificance in the 1980s, to funding nearly two-thirds of global investment nowadays. Darmouni and Mota [2024] focus on large U.S. multinational firms and document a huge $1 trillion increase in their aggregated financial asset holdings from 2007 to 2017, driven by incentives to shield offshore earnings from taxation. The increase was specifically concentrated in corporate bond holdings, which tripled up to $400 billion from 2012 to 2017. The tax incentives that drove these accumulations were eliminated after the U.S. tax code change (effective January 1, 2018), causing these financial asset holdings to drop by $300 billion in the next two years (drop concentrated in corporate bond holdings). We provide indirect evidence that the amount of European bank dollar debt that these U.S. multinationals invested in through their corporate bond purchases is substantial, and that European banks grew dependent on it for their dollar lending activities. When the U.S. multinationals decreased their corporate bond purchases after the U.S. tax code change, we find stress in the dollar lending activities of European banks.

Finally, this paper relates to recent work [Cohen and Viswanathan [2019]; Mertens [2020]; Beyer, Downes, Mathis, and Rapley [2021]; Clausing [2020]] examining positive and negative effects of the latest U.S. tax code change initiated by the passage of the Tax Cuts and Jobs Act, effective January 1, 2018. In addition to these studies, we document a novel and unexpected international spillover that emerged, which is the stress in the ability of European banks to intermediate dollar credit.

Section 2 provides institutional background on the TCJA and its effects on U.S. multinationals' offshore cash holdings. Section 3 describes the multiple data sources used in our analyses. Section 4 depicts the funding structure of European banks and how the TCJA disrupted it. Section 5 presents the consequential effects on European banks' lending in the syndicated loan market. Section 6 presents firm-level evidence on the real consequences for borrowers. Finally, Section 7 concludes.

2 Institutional Background

The global dollar system extends well beyond U.S. borders. Non-U.S. banks—primarily European institutions—have built large dollar balance sheets by borrowing in short-term dollar wholesale markets and deploying those funds into dollar-denominated loans to corporate and sovereign borrowers worldwide (see Aldasoro et al. [2022]). The dollar is the dominant currency for international trade invoicing, commodity pricing, and cross-border lending, so the demand for dollar intermediation by non-U.S. entities is structural and large (Bertaut et al. [2025]; Committee on the Global Financial System [2020]).

A key channel through which European banks obtain short-term dollar funding is U.S. Money Market Funds (MMFs). MMFs are investment funds that hold short-dated, high-quality instruments—primarily certificates of deposit (CDs) and commercial paper (CP) issued by financial institutions. Large European banks regularly issue such instruments and sell them to U.S. MMFs, creating a direct funding link between the short-term dollar liabilities of European banks and the cash management activities of U.S. financial intermediaries (see McGuire and Von Peter [2012]).

An important feature of this ecosystem is the role of U.S. multinational corporations (MNCs). Before the TCJA, the U.S. tax code generally allowed MNCs to defer U.S. taxation on foreign earnings until those earnings were repatriated. As a result, U.S.

MNCs accumulated more than $2.6 trillion in unrepatriated foreign earnings prior to the TCJA [Urban-Brookings Tax Policy Center, 2024]. By the end of 2017, approximately $1 trillion was held abroad in cash and other liquid assets, much of it invested in U.S. fixed-income securities [Smolyansky et al., 2019]. Although public disclosures do not identify the individual securities held in these portfolios, corporate bonds represented an important asset class for some of the largest offshore cash holders. For example, Apple held more than $150 billion in corporate securities immediately before the TCJA and generally restricted its investment portfolio to investment-grade securities [Apple Inc., 2017].

At the same time, non-U.S. banks were large issuers of dollar-denominated debt. At the end of 2017, U.S. residents held approximately $650 billion of dollar-denominated debt securities issued by non-U.S. banks [Aldasoro and Ehlers, 2018]. These two sides of the market naturally complemented one another: foreign banks relied on dollar wholesale funding to finance their global dollar intermediation activities, while cash-rich U.S. MNCs sought safe, liquid, investment-grade assets offering yields above those on government securities. Dollar-denominated bonds issued by foreign banks therefore provided a natural investment vehicle for U.S. MNCs' offshore liquidity.

The Tax Cuts and Jobs Act (TCJA) was signed into law on December 22, 2017, with many of its major international provisions taking effect beginning in 2018. According to the Joint Committee on Taxation, the Act fundamentally changed the taxation of foreign-source income earned by U.S. corporations, moving the United States toward a modified territorial tax system [Joint Committee on Taxation, 2018]. U.S. corporations remained subject to U.S. taxes on profits earned domestically, but the TCJA generally provided a 100% deduction for the foreign-source portion of dividends received from foreign corporations in which the U.S. corporate shareholder owns at least a 10% stake. [5]

In practice, this meant that, beginning in 2018, foreign earnings of U.S. multinationals were generally no longer subject to additional U.S. tax when repatriated. To address the large stock of unrepatriated foreign earnings accumulated under the previous system, the TCJA imposed a one-time transition tax, regardless of whether firms actually repatriated those earnings. The tax rate was 15.5% on accumulated earnings held in cash and cash equivalents and 8% on the remainder.

In effect, these changes eliminated the repatriation tax incentive for U.S. multinationals to keep accumulated foreign earnings abroad. Darmouni and Mota [2024] show that U.S. multinationals responded to this new landscape by reducing their financial asset holdings by approximately $300 billion over the two years following the tax reform. The decline in corporate bond holdings was particularly large, accounting for roughly two-thirds of the total reduction. This sharp contraction in deposits and corporate bond holdings by U.S. multinationals provides a useful laboratory for studying the extent to which European banks exposed to these sources of dollar funding were affected.

The syndicated loan market is a natural place to study the effects of the TCJA-induced funding shock, since it is the primary venue through which large corporate borrowers

[5] The TCJA also introduced several provisions designed to limit incentives for firms to shift real investment and reported income to low-tax jurisdictions. The main provision is the tax on global intangible low-taxed income (GILTI), which, as originally enacted, imposed an effective U.S. tax rate of 10.5% on certain foreign earnings exceeding a 10% return on qualified tangible assets. U.S. corporations could generally claim foreign tax credits for up to 80% of foreign taxes attributable to GILTI. See Joint Committee on Taxation [2018] for a detailed description of the TCJA's international tax provisions.

access dollar-denominated credit from non-U.S. banks. In a syndicated transaction, a lead arranger structures a loan facility and distributes participations to a group of lenders, allowing banks to originate large exposures while managing balance sheet constraints. The total loan amount issued per year, in all currencies, is around $1.5 trillion.

European banks are major participants, particularly for loans to investment-grade corporate borrowers. Since 2010, these banks accounted for close to 40% of the total syndicated loan amount, while U.S. banks accounted for 30%. Most of these loans are denominated in U.S. dollars, more than $1 trillion per year. European banks' share in the dollar-denominated syndicated loan market is still large, at around 30%, not far from U.S. banks that account for 45% of the total. Importantly, a fraction of the dollar-denominated syndicated loans from European lenders is issued by banks without a strong presence in the U.S. Around 20% of the dollar-denominated syndicated loans issued by European banks are originated by banks without access to U.S. MMFs. We expect that these banks are more exposed to the TCJA-induced funding shock, as they cannot rely on MMFs to replace the dollar funding withdrawn by U.S. multinationals. The dollar denomination of many of these facilities creates a direct link between the dollar funding costs of European banks and the credit terms available to borrowers worldwide. When the short-term dollar funding available to European banks tightens, we expect them to reduce their dollar loan supply and raise loan spreads.

A natural follow-up question is who borrows in the syndicated loan market and how they were affected by the worse loan conditions. The syndicated loan market is primarily used by large corporate borrowers, including both U.S. and non-U.S. firms. These borrowers often have complex financing needs that require access to large amounts of capital, which can be efficiently provided through a syndicate of banks. A feature of this market relevant to our analysis is that borrowers often maintain a long-term relationship with their lenders. For example, Table 5 shows that each borrowing firm had close to 3 loans on average over the six-year window around the TCJA enactment (2015 to 2020). More importantly, the average number of loans with the same lender is very close to that number, indicating a strong reliance of firms on their preferred bank. This strong relationship also means that borrowers are likely to be affected by the funding shock experienced by their lenders, as they may have limited alternatives for obtaining dollar-denominated credit.

3 Data

3.1 Dealscan

Our primary data source is the DealScan database (LSEG), which provides detailed information on loan contracts in the global syndicated loan market. The initial sample covers syndicated loans originated between 1981 and 2024. Standard cleaning procedures are applied, including the removal of duplicate lender–facility (tranche-level) observations, multi-currency or multi-borrower tranches, and observations with missing or implausible key loan characteristics. We include all lender roles and allocate facility amounts across lenders using reported lender shares. When allocation shares are unavailable for any lender in any tranche, we distribute amounts equally across all lenders within the syndicate.

The lender-facility data are aggregated to construct two panels. First, we aggregate to the lender parent-quarter level, where lenders are consolidated using DealScan lender

parent identifiers, and we restrict the sample to U.S. and European parent institutions. This panel includes measures of total and dollar-denominated loan volume, as well as weighted-average loan spreads, using the tranche currency to construct currency-specific lending measures. Second, we collapse the data to the borrower-quarter level by summing across all facilities for a given firm and quarter. Quarters are defined using the tranche active date.

3.2 Compustat

We complement the firm panel by merging with quarterly financial statements from Compustat North America and Compustat Global, using the linking file in Chava and Roberts [2008]. A few firms are missing from this file; for those, we use our own fuzzy string matching algorithm. When a firm appears in both Compustat North and Global databases, we retain the Global observations. We apply standard sample restrictions, excluding financial and utility firms from the sample.

3.3 Crane Data

We use data on U.S. money market fund (MMF) holdings from Crane Data, which provides detailed portfolio information for a large share of the MMF industry. The dataset covers approximately 85% of the U.S. MMF universe, with smaller funds excluded. For each fund, we observe portfolio holdings at the end of each month, including the identity of the security issuer, security values, coupon rates, and maturity dates. We use this data to identify connections between U.S. MMFs and European lender parents based on MMF holdings of securities issued by lender parent institutions. Lenders are classified as exposed to MMF funding if they appear in the Crane Data holdings in the pre-period and unexposed otherwise. Nevertheless, we observe that all lenders without ties to the MMFs before the TCJA continue without ties after, which indicates that the MMF exposure is a stable characteristic of lenders, and not a temporary relationship.

3.4 European Central Bank (ECB)

We use confidential ECB data to construct measures of European banks' dollar funding structure. We combine data from the supervisory statistics, which provides information about deposits and wholesale funding, with the ECB's Centralised Securities Database (CSDB), which provides security-level information on debt securities issued by European banks. We also use the Money Market Statistical Reporting (MMSR) dataset, which contains detailed information on FX swap transactions. Finally, we use data on the usage of ECB dollar liquidity swap lines to capture banks' access to central bank liquidity during periods of stress.

4 Effect of TCJA on Euro Area Banks' Dollar Funding Structure

Euro area banks face a structural dollar funding gap: they hold substantial dollar-denominated assets - like loans and securities - but lack a natural dollar retail deposit base, as their deposit funding is mainly euro-denominated. To bridge this gap, banks

rely on a range of wholesale dollar funding channels: unsecured deposits from financial and non-financial corporations, market-based unsecured funding through USD commercial paper (CP) and certificates of deposit (CDs) — placed predominantly with U.S. money market funds (MMFs) — and secured funding via repo markets, supplemented by synthetic dollar funding obtained through FX swaps and cross-currency basis swaps.

We examine how the introduction of the U.S. Tax Cuts and Jobs Act (TCJA) altered the composition of dollar funding across euro area banks. Following the pre-announcement of the TCJA in Q4 2017[6], unsecured wholesale funding from non-financial corporations (NFCs) declined sharply — 28%, or approximately half a percentage point of total assets - across supervised banks on aggregate, as presented in Figure 1. This decline is consistent with the repatriation of offshore cash holdings by U.S. multinationals following the shift to a territorial tax system, which reduced firms' incentive to hold balances with foreign banks.

Zooming into market-based unsecured USD funding, Figure 1 also shows that debt securities issuance by banks in our sample[7] was following a similar trajectory as wholesale unsecured funding until the TCJA shock, when it increased sharply, by a similar magnitude of around $60 billion. Taken together, these two movements indicate that European banks have substituted across sources of dollar funding after the TCJA.

The aggregate debt securities issuance masks heterogeneity across banks, however. Turning to a more granular examination, as shown in Figure A1, the latter increase in issuance is more clearly observed among banks without pre-existing relationships with U.S. MMFs. This is consistent with a higher effort for these banks to compensate for the post-TCJA dollar shortage. Moreover, the bottom chart on Figure A1 also shows that banks without pre-existing MMF relationships, in general, face a higher spread on their debt securities than the banks with access.

Furthermore, these banks also appear to have partly compensated for the dollar shortfall through greater recourse to the FX swap market, as seen in Figure 2. Net dollar borrowing via FX swaps rose by more than $60 billion among banks without pre-existing MMF relationships. This substitution likely came at a higher average funding cost, consistent with the well-documented CIP deviations associated with FX-swap-implied dollar funding. Finally, at the aggregate level, the drain in the dollar wholesale funding following the TCJA shock is also reflected in greater recourse to ECB dollar liquidity swap lines starting in January 2018 — more than $10 billion, the second-highest level of usage since 2015 - as presented in the appendix Figure A2.

Overall, all analyses in this section indicate that the TCJA dollar funding shortage pushed European banks toward more costly alternative sources of funding, with the effect being particularly pronounced among European banks without U.S. MMF ties.

5 Effect of TCJA on the Syndicated Loans Market

In this section we study how the TCJA-induced dollar funding shock transmitted into the syndicated loan market. Our main specification compares the lending activity of

[6] A unified tax-reform framework was released on September 27, 2017, and the detailed House bill was introduced on November 2. The House passed its version on November 16, the Senate passed its version on December 2, and the legislation was enacted on December 22. Financial markets incorporated the evolving probability and content of the reform during this period (see Wagner et al. [2018]).

[7] Aggregated across the subset of banks in our sample which is smaller than the full set of supervised banks used in the deposit/funding analysis above.

European banks to that of U.S. banks, exploiting the fact that only European banks were exposed to the loss of dollar funding intermediated through U.S. money market funds (MMFs). We then use cross-sectional variation among European banks – pre-shock MMF access and loan maturity orientation – to trace the funding channel more precisely. We first describe the empirical strategy and sample construction, then present the main European-vs-U.S. difference-in-differences estimates, and finally examine heterogeneity by MMF access and by loan maturity orientation.

5.1 Methodology and Sample Construction

We estimate the effect of the TCJA on the dollar-denominated syndicated lending activity of European banks using a difference-in-differences design that compares European banks (treated) to U.S. banks (control). Our identification exploits the fact that the TCJA-induced repatriation of U.S. multinationals' offshore cash drained a source of dollar funding available specifically to non-U.S. banks while leaving U.S. banks' funding largely unaffected. This asymmetric exposure lets us compare the lending behavior of European and U.S. banks before and after the shock, controlling for bank and time fixed effects. Within the European treated group, we further exploit cross-sectional variation in pre-shock access to U.S. MMFs and in pre-shock loan maturity orientation to trace the funding channel more precisely; we return to these two dimensions of heterogeneity in Sections 5.3 and 5.4.

We restrict the sample to European and U.S. banks that appear in the DealScan LPC syndicated loan database and had a reported loan margin on at least one dollar-denominated loan in the two years preceding the TCJA shock, 2016 and 2017. This eligibility criterion ensures that treated and control banks are comparable in their pre-shock dollar lending activity. The resulting sample consists of 78 European banks (treated) and 353 U.S. banks (control). Within the European group, we further classify banks by their pre-shock MMF exposure using Crane Data MMF Holdings: 26 banks maintain at least one certificate of deposit or commercial paper position with a U.S. MMF institution (MMF access), while the remaining 52 have no pre-existing MMF relationship (no MMF access).

The main estimating equation is a bank-level panel regression with bank and quarter fixed effects, estimated over the ±12-quarter window around the shock:

$$y_{b,t} = \alpha_b + \gamma_t + \sum_{e=-12}^{12} \beta_e \cdot \mathbf{1}[t - t^* = e] \times \text{Treated}_b + \varepsilon_{b,t} \tag{1}$$

where $y_{b,t}$ is the outcome for bank b in quarter t, α_b and γ_t are bank and time fixed effects, $Treated_b$ equals one for European banks in our main specification (and is redefined within the European subsample for the heterogeneity analyses below), and the β_e coefficients trace the dynamic treatment effect relative to the quarter immediately before the shock. Standard errors are clustered at the bank level. The results are also robust to bank- and time-clustered standard errors. We report 90% confidence intervals throughout.

Table 1 reports summary statistics for European and U.S. banks over the estimation window (2015Q1–2020Q4). The two groups are broadly comparable in their pre-shock lending characteristics: both issued syndicated loans across a range of maturities, with dollar-denominated loans representing a substantial share of total lending, confirming that treated and control banks were active participants in the dollar syndicated loan market

prior to the TCJA. For the within-Europe heterogeneity analyses, Table 2 reports the corresponding summary statistics for European banks with vs. without MMF access, and Appendix Table A1 reports annualized bank relationship statistics for the same split.

5.2 Main DiD: European vs. U.S. Banks Loan Provision

Figure 5 presents the event-study coefficients comparing all 78 European banks to the 353 U.S. control banks, for two outcomes: the log dollar loan amount and the loan-amount-weighted average spread on dollar loans. The pre-shock coefficients are small and statistically indistinguishable from zero for both outcomes, supporting the parallel trends assumption. The full set of dynamic coefficients, including the USD share of total lending and weighted-average loan maturity, is reported in Appendix Table A3.

Following the TCJA, European banks reduce their dollar lending relative to U.S. banks and raise spreads on their dollar loans, with the effect building gradually over the post-shock quarters. Table 3, Panel A, reports the corresponding static difference-in-differences estimates, pooling the post-shock coefficients into a single average treatment effect: European banks reduce their dollar loan amount by roughly 34% and their USD share of lending by close to 4 percentage points, while raising weighted-average dollar loan spreads by approximately 17 basis points and lengthening weighted-average loan maturity by roughly a quarter of a year, all statistically significant. These results confirm that the TCJA-induced funding shock had an economically meaningful effect on European banks' dollar lending activity relative to their U.S. peers. As we show in the next two subsections, this average effect masks substantial heterogeneity by pre-shock MMF access and loan maturity orientation.

5.3 Heterogeneity by MMF Access

We next examine whether European banks' pre-shock access to U.S. MMFs shaped their exposure to the funding shock, using two complementary specifications.

First, we split the European treated group by pre-shock MMF access and compare each subgroup separately to the same set of U.S. control banks. Figure 6 plots the resulting event-study coefficients for European banks without MMF access (blue) and European banks with MMF access (black), each estimated relative to U.S. banks; the full dynamic coefficients underlying these two specifications are reported in Appendix Tables A4 and A5, respectively. The corresponding static estimates are reported in Table 3, Panels B.1 and B.2. European banks without pre-existing MMF access reduce their dollar loan amount by roughly 43% and raise spreads by approximately 36 basis points relative to U.S. banks, both highly significant. European banks with MMF access also contract relative to U.S. banks, but by a smaller margin that is only marginally significant, roughly 23% in loan amount and 15 basis points in spreads. Banks without a pre-existing MMF relationship are therefore substantially more exposed to the TCJA-induced funding shock than banks with such a relationship, consistent with U.S. MMFs providing a stable substitute source of dollar funding when other channels tightened.

Second, we estimate a direct within-Europe comparison, restricting the sample to European banks and comparing those without pre-existing MMF access to those with MMF access, without any U.S. banks in the specification. Table 4, Panel A, reports these estimates: European banks without MMF access reduce their dollar loan amount by roughly 26% and their USD share of lending by 3.5 percentage points, and lengthen

weighted-average loan maturity by roughly a third of a year, all statistically significant; the effect on spreads is directionally consistent but only marginally significant. The within-Europe sample is far smaller than the EU-vs-US comparisons above (78 banks rather than 431), so these estimates are noisier, but they point in the same direction. Table 2 and Appendix Table A1 report the underlying summary statistics for this within-Europe comparison. Taken together, the two specifications tell a consistent story: the EU-vs-US comparison, which benefits from a much larger and more stable control group, identifies the funding-shock effect sharply, while the direct within-Europe comparison corroborates it despite its smaller sample.

5.4 Heterogeneity by Loan Maturity

The TCJA affected the short end of the dollar funding market: U.S. MMFs predominantly hold short-dated instruments, and the repatriation of corporate cash drained precisely the short-term dollar liquidity that European banks without MMF access relied on most. In fact, we also observe in the debt securities data from the ECB's Centralised Securities Database (CSDB) that European banks without MMF access issued much more short-maturity debt (less than one year) than European banks with MMF access.

We therefore expect the lending response documented in Section 5.3 to be concentrated among banks whose dollar loan portfolios were weighted toward shorter maturities. We test this by splitting the European sample at the pre-shock median weighted-average loan maturity (5 years) and re-estimating the within-Europe MMF-access comparison separately for short-maturity-focused and long-maturity-focused banks; summary statistics for the two maturity groups are reported in Appendix Table A2.

Figure 7 plots the resulting event-study coefficients for short-maturity-focused banks (blue) and long-maturity-focused banks (black); the full dynamic coefficients are reported in Appendix Tables A6 and A7, respectively. Among short-maturity-focused banks, the coefficients are sharp and precisely estimated, with a clean pre-trend and a clear break at the shock quarter. The static estimates in Table 4, Panel B.2, confirm the pattern: banks without MMF access that are short-maturity-focused reduce their dollar loan amount by roughly 43% and raise spreads by approximately 49 basis points relative to banks with MMF access, both highly significant. The combination of lower dollar loan supply and higher pricing is exactly what one would expect from a bank that suddenly faces a more expensive and less available source of short-term dollar funding.

Among long-maturity-focused banks, by contrast, none of the coefficients are statistically significant in the post-shock period (Table 4, Panel B.1). Long-maturity-focused banks were largely unaffected in their lending behavior, consistent with the fact that their dollar funding needs were not concentrated in the short-term market segment disrupted by the TCJA.

The contrast between the two groups sharpens the funding channel identified in Section 5.3: the disruption to MMF-supplied short-term dollar liquidity translated directly into less dollar lending and higher dollar loan spreads, but only for the banks whose business model linked them to that funding source.

6 Firm Outcomes

In this section we trace the lending shock to its ultimate real effects. Having documented that European banks without U.S. money market fund (MMF) access curtailed

dollar lending after the TCJA, we now ask whether borrowing firms connected to those banks experienced contractions in their balance sheets and investment. We exploit the same cross-sectional variation in bank exposure, mapped to firms through their pre-shock lending relationships, to implement a difference-in-differences design at the firm level.

6.1 Sample Construction and Methodology

We identify treated firms as those that had a syndicated loan relationship with at least one treated bank (a European bank without pre-existing MMF access) prior to 2018. Control firms are matched firms without a relationship with the treated banks. To ensure comparability, we implement one-to-one nearest-neighbor propensity score matching at the firm level using 2017 average characteristics. Each treated firm is matched to the closest firm based on log total assets, log quarterly revenue, and the tangibility ratio (PPE-to-assets), with a caliper of 0.05 and common support imposed.

The estimation equation mirrors the bank-level analysis:

$$y_{f,t} = \alpha_f + \gamma_{s,t} + \gamma_{c,t} + \beta \cdot \text{Treated}_f \times \text{Post}_t + \varepsilon_{f,t} \tag{2}$$

where $y_{f,t}$ is a firm-level outcome for firm f in quarter t, α_f are firm fixed effects, $\gamma_{s,t}$ are industry×quarter fixed effects, and $\gamma_{c,t}$ are country×quarter fixed effects. *Post* equals one from 2018Q1 onward. Standard errors are clustered at the firm level. The estimation window is ±12 quarters around 2017Q4.

The matched sample consists of 1,083 treated firms and 1,083 control firms. Prior to the shock, the two groups are closely matched by construction: treated firms had average assets of $3.51 billion, quarterly revenue of $0.67 billion, a tangibility ratio of 30%, and debt-to-assets of 36%; control firms had average assets of $6.96 billion, quarterly revenue of $1.00 billion, tangibility of 31%, and debt-to-assets of 29%. Detailed summary statistics are reported in Table 5.

6.2 Main Results

Figure 8 shows the event-study coefficients for four firm-level outcomes: log USD loan amount, log total debt, log total assets, and log PPE. The pre-shock coefficients are close to zero and statistically insignificant, supporting parallel trends. After the TCJA, treated firms diverge from the control group across all four outcomes. Table 6 reports the corresponding static DiD estimates, which pool the post-shock coefficients into a single average treatment effect. The coefficient on Treated × Post is negative and statistically significant across all columns.

Treated firms significantly reduced their dollar-denominated borrowing after the shock, with total dollar loan volume falling by approximately 25%. The decline in total debt indicates that firms were unable to fully substitute the lost dollar credit with other sources of financing, consistent with relationship-specific frictions in the syndicated loan market. The reduction in total assets (approximately 9%) and fixed capital (approximately 15%) further suggests that the credit supply contraction translated into lower real investment by affected firms.

These results are consistent with a credit supply channel: when treated banks curtailed dollar lending, their client firms faced tighter financing conditions and responded by scaling back leverage and capital expenditure. The fact that the effects are visible in both debt and real outcomes—and not merely a reallocation of loan sources—supports the

interpretation that the TCJA-induced funding shock generated genuine real consequences for firms worldwide.

7 Conclusion

The TCJA generated a negative dollar funding shock that propagated through the European banking system into the global syndicated loan market. European banks reduced their dollar lending by roughly 34% and their USD share of lending by close to 4 percentage points, while raising weighted-average dollar loan spreads by approximately 17 basis points, compared to U.S. banks that were not affected by the dollar shortage. European banks without prior access to U.S. Money Market Funds were most affected, reducing their dollar lending by more than 40% and raising spreads by approximately 36 basis points relative to U.S. banks, both highly significant. The effect was also concentrated among short-maturity-focused banks, consistent with the TCJA draining the short end of the dollar funding market: these banks reduced dollar lending by roughly 43% and raised spreads by 50 basis points, while long-maturity-focused banks showed no significant response.

Firms connected to treated banks could not fully substitute the lost credit. Their total dollar borrowing from any lender fell by approximately 25%, and the credit contraction had real consequences: treated firms reduced total assets by 7% and fixed capital by 15% relative to matched control firms.

These results document a fragility in the offshore dollar ecosystem. The dollar funding of non-U.S. banks depends on a chain of intermediaries—U.S. corporate treasuries, money market funds, and short-term debt markets—that can be disrupted by external policy changes entirely unrelated to bank or borrower credit quality. When this chain breaks, the effects propagate through the global banking system to borrowing firms worldwide. Understanding the structure of this ecosystem, and the heterogeneity in banks' exposure to it, is essential for assessing the global transmission of U.S. financial and fiscal shocks.

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Variable	Mean	SD	Median	Min	Max
European Banks					
Number of Lenders	78.00	0.00	78.00	78.00	78.00
Number of Lenders_per_quarter	55.55	3.43	56.00	47.00	63.00
Number of Loans per Quarter	63.00	65.79	40.00	1.00	357.00
Loan Amount per Quarter (million)_USD	1,368.46	2,479.13	289.41	0.00	18,085.03
Share of Dollar Loans	0.37	0.28	0.34	0.00	1.00
Margin over libor/sofr (bps)_USD	211.14	107.81	194.76	35.63	825.00
Maturity (years)	5.32	2.33	5.03	0.67	18.09
U.S. Banks					
Number of Lenders	353.00	0.00	353.00	353.00	353.00
Number of Lenders_per_quarter	125.17	17.62	120.00	87.00	154.00
Number of Loans per Quarter	19.43	38.36	5.00	1.00	293.00
Loan Amount per Quarter (million)_USD	915.10	2,655.45	84.19	0.00	28,508.99
Share of Dollar Loans	0.96	0.14	1.00	0.00	1.00
Margin over libor/sofr (bps)_USD	363.37	185.73	312.37	30.00	1,400.00
Maturity (years)	4.93	1.52	5.00	0.08	25.00

Table 1. Summary Statistics — European vs. U.S. Banks. Descriptive statistics for the estimation sample, split by treatment status, covering the ±3-year window around the TCJA shock (2015Q1–2020Q4). Treated banks are the 78 European banks in the estimation sample; control banks are U.S. banks. A bank is included in the sample if it had a reported loan margin on at least one USD-denominated syndicated loan in 2016 or 2017, the two years preceding the TCJA shock. All monetary amounts in millions of dollars. Data sources: DealScan LPC; Crane Data MMF Holdings.

Variable	Mean	SD	Median	Min	Max
European Banks without U.S. MMF Access					
Number of Lenders	52.00	0.00	52.00	52.00	52.00
Number of Lenders_per_quarter	29.82	3.25	30.00	22.00	37.00
Number of Loans per Quarter	38.47	37.95	27.00	1.00	178.00
Loan Amount per Quarter (million)_USD	371.86	762.36	102.15	0.00	7,874.40
Share of Dollar Loans	0.31	0.29	0.23	0.00	1.00
Margin over libor/sofr (bps)_USD	194.80	113.46	171.37	40.00	700.00
Maturity (years)	5.31	2.69	5.10	0.67	18.00
European Banks with U.S. MMF Access					
Number of Lenders	26.00	0.00	26.00	26.00	26.00
Number of Lenders_per_quarter	25.88	0.33	26.00	25.00	26.00
Number of Loans per Quarter	90.91	78.46	58.00	1.00	357.00
Loan Amount per Quarter (million)_USD	2,503.08	3,173.46	1,166.10	0.00	18,085.03
Share of Dollar Loans	0.44	0.25	0.46	0.00	1.00
Margin over libor/sofr (bps)_USD	226.40	99.97	216.42	35.63	825.00
Maturity (years)	5.34	1.84	5.00	1.12	18.09

Table 2. Summary Statistics — European Banks with vs. without U.S. MMF Access. Descriptive statistics for the estimation sample, split by treatment status, covering the ±3-year window around the TCJA shock (2015Q1–2020Q4). Treated banks are European banks with no pre-existing relationship with U.S. Money Market Funds prior to 2018; control banks are European banks with such a relationship. A bank is included in the sample if it had a reported loan margin on at least one USD-denominated syndicated loan in 2016 or 2017, the two years preceding the TCJA shock. All monetary amounts in millions of dollars. Data sources: DealScan LPC; Crane Data MMF Holdings.

	USD share (amt)	Log USD amount	Wtd USD margin (bps)	Wtd maturity (years)
Panel A: Overall (78 European Banks vs US)				
Treated × Post	-0.038***	-0.414***	17.4**	0.27**
	(0.011)	(0.092)	(8.1)	(0.12)
Control for Lag(y)	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Observations	4,185	4,185	3,205	3,960
Adjusted R^2	0.833	0.783	0.755	0.569
Panel B.1: European Banks with MMF Access vs US				
Treated × Post	-0.029***	-0.259***	14.9*	0.22*
	(0.011)	(0.094)	(8.5)	(0.12)
Control for Lag(y)	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Observations	3,473	3,473	2,824	3,380
Adjusted R^2	0.825	0.806	0.756	0.584
Panel B.2: European Banks without MMF Access vs US				
Treated × Post	-0.062***	-0.562***	36.2***	0.60***
	(0.016)	(0.136)	(10.8)	(0.14)
Control for Lag(y)	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Observations	3,550	3,550	2,717	3,356
Adjusted R^2	0.846	0.766	0.788	0.607

Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 3. Differences in Differences: USD Lending, Pricing, and Maturity, Overall and by MMF Access (Europe vs US, Weighted). This table reports static difference-in-differences estimates using lender-quarter data within a ±3 year window around the TCJA. Panel A reports estimates for the full sample of 78 European lenders vs. US lenders. Panels B.1 and B.2 split the European treated banks by pre-existing access to prime money market funds (MMFs): Panel B.1 restricts the treated group to European banks with MMF access, and Panel B.2 restricts it to European banks without MMF access; both panels compare against the same full set of US control banks. The dependent variables are the share of total loan amount denominated in USD, the log of total USD loan amount, the loan-amount-weighted average spread on USD loans in basis points, and the loan-amount-weighted average loan maturity in years. *Treated* × *Post* equals one for European lenders in the post-TCJA period; US lenders (Control) equal zero. All specifications include lender and quarter fixed effects and control for the lagged dependent variable. The USD share regression is weighted by total Loan Amount, the margin and maturity regressions by USD Loan Amount, and the log USD amount regression is unweighted. Standard errors are clustered at the lender level.

	USD share (amt)	Log USD amount	Wtd USD margin (bps)	Wtd maturity (years)
Panel A: Overall				
Treated × Post	-0.035**	-0.306**	21.8*	0.37***
	(0.017)	(0.153)	(10.9)	(0.13)
Control for Lag(y)	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Observations	1,347	1,347	869	1,184
Adjusted R^2	0.735	0.774	0.682	0.479
Panel B.1: Pre-shock maturity > 5y				
Treated × Post	-0.001	-0.155	-2.8	0.14
	(0.021)	(0.196)	(13.1)	(0.16)
Control for Lag(y)	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Observations	793	793	460	667
Adjusted R^2	0.601	0.732	0.614	0.512
Panel B.2: Pre-shock maturity ≤ 5y				
Treated × Post	-0.066**	-0.557**	49.0***	0.53***
	(0.030)	(0.273)	(9.6)	(0.12)
Control for Lag(y)	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Observations	554	554	409	517
Adjusted R^2	0.725	0.796	0.698	0.375

Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 4. Differences in Differences: USD Lending, Pricing, and Maturity, Overall and by Pre-Shock Bank Maturity Bucket (Weighted). This table reports static difference-in-differences estimates using lender-quarter data within a ±3 year window around the TCJA. The sample is restricted to European lenders; no U.S. banks are included. Panel A reports estimates for the full sample of 78 European lenders. Panels B.1 and B.2 split the sample based on lenders' pre-shock weighted-average loan maturity: Panel B.1 includes lenders with average maturity greater than 5 years, and Panel B.2 includes lenders with average maturity less than or equal to 5 years. The dependent variables are the share of total loan amount denominated in USD, the log of total USD loan amount, the loan-amount-weighted average spread on USD loans in basis points, and the loan-amount-weighted average loan maturity in years. *Treated* × *Post* equals one for lenders without MMF access prior to the TCJA in the post-TCJA period. All specifications include lender and quarter fixed effects and control for the lagged dependent variable. The USD share regression is weighted by total Loan Amount, the margin and maturity regressions by USD Loan Amount, and the log USD amount regression is unweighted. Standard errors are clustered at the lender level.

Panel A: Treated Firms	Mean	SD	Median	Min	Max
Number of tranches over the sample period	2.72	1.83	2.00	1.00	13.00
Max number of tranches with the same lender	2.61	1.68	2.00	1.00	13.00
Average loan size (USD mn)	1073.43	2289.76	499.99	10.00	22333.33
Total Assets (USD bn)	3.51	9.39	1.23	0.00	147.81
Total Revenue (USD bn)	0.67	2.02	0.22	0.00	33.15
Tangibility (PPE / Assets)	0.30	0.27	0.20	0.00	0.99
Leverage (Debt / Assets)	0.36	0.32	0.31	0.00	5.27
Country Shares					
	%				
United States	85.96				
Europe	3.97				
Canada	2.68				
Other Countries	7.39				
Firms	1083				
Panel B: Control Firms (matched)					
Total Assets (USD bn)	6.96	31.29	1.42	0.00	675.92
Total Revenue (USD bn)	1.00	3.63	0.25	0.00	60.52
Tangibility (PPE / Assets)	0.31	0.27	0.24	0.00	0.98
Leverage (Debt / Assets)	0.29	0.31	0.25	0.00	4.87
Country Shares					
	%				
United States	58.08				
Europe	9.42				
Canada	2.31				
Other Countries	30.19				
Firms	1083				

Table 5. Summary Statistics — Treated vs. Matched Control Firms. This table reports descriptive statistics for the firm-level estimation sample, split by treatment status. Panel A covers treated firms — those with a pre-shock borrowing relationship with a European bank that had no access to U.S. Money Market Funds prior to the TCJA (2018). Panel B covers control firms matched to treated firms via nearest-neighbor propensity score matching on 2017 average log assets, log revenue, and asset tangibility, with a caliper of 0.05 and common support imposed. *Loans per year* and *Avg loan size* are computed over the estimation window (2015Q1–2020Q4, ±12 quarters around 2018Q1); all other variables are 2017 pre-shock averages. Loan size is in millions of U.S. dollars; assets and revenue are in billions of U.S. dollars; PPE/Assets and Debt/Assets are ratios. Data sources: DealScan LPC; Compustat; Crane Data MMF Holdings.

	USD Loan Amount	Debt	Assets	PPE
	(1)	(2)	(3)	(4)
Treated × Post	-0.281***	-2.525***	-0.097***	-0.158***
	(0.047)	(0.239)	(0.025)	(0.051)
Firm FE	Yes	Yes	Yes	Yes
Industry × Quarter FE	Yes	Yes	Yes	Yes
Country × Quarter FE	Yes	Yes	Yes	Yes
Observations	53,764	53,539	52,315	52,235
Adjusted R^2	0.012	0.642	0.973	0.934

Table 6. Difference-in-Differences: Firm Outcomes. This table reports static DiD estimates of the effect of the 2018 TCJA on firm-level outcomes. The sample consists of firms with a pre-shock borrowing relationship with a European bank in the estimation sample. The treatment indicator equals one for firms whose primary lender is a treated bank (no MMF access prior to 2018). *Post* equals one from 2018Q1 onward. Dependent variables are in logs: USD loan amount (col. 1), total debt (col. 2), total assets (col. 3), and property, plant & equipment (col. 4). All specifications include firm, industry×quarter, and country×quarter fixed effects. Standard errors clustered at the firm level are reported in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Data sources: DealScan LPC; Compustat; Crane Data MMF Holdings.

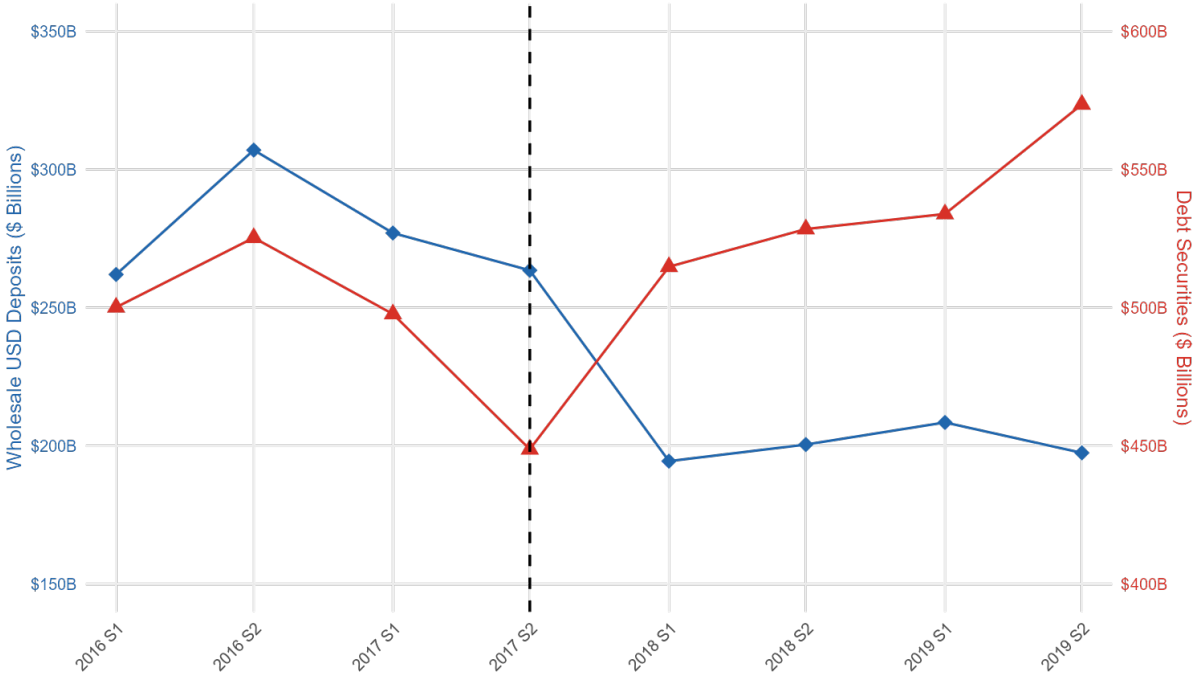


Figure 1. Dollar Wholesale Funding from Non-Financial Corporations vs Outstanding Dollar Debt Securities in European Banks. This figure plots the semi-annual amount of dollar unsecured wholesale funding from non-financial corporations against the outstanding stock of dollar-denominated debt securities issued by European banks, in a 4-year window around the TCJA reform. Wholesale unsecured funding is an aggregate series from the ECB supervisory data, which includes deposits and loans from non-financial companies. The outstanding dollar debt securities come from the ECB Centralised Securities Database (CSDB), which provides security-level information on debt securities issued by European banks. This series is presented for the subset of banks in our sample (see section 3). The dashed vertical line marks 2017S2 (enactment of the TCJA policy in December, 2017).

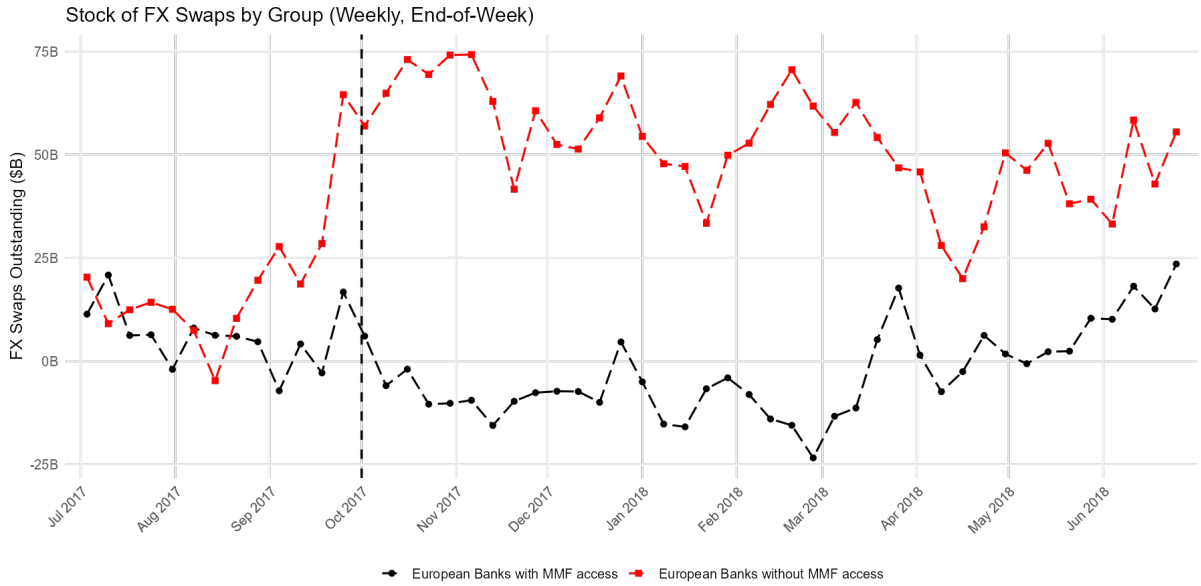


Figure 2. Stock of FX Swaps by Group. This figure plots the weekly outstanding stock of USD raised via FX swaps by European banks, split by pre-shock access to U.S. Money Market Funds (MMFs): banks with MMF access (black) and banks without MMF access (red), both on a single shared axis, over the one-year window from July 2017 through June 2018. Each weekly observation is the last available outstanding balance within that week (Monday–Sunday), not a sum of daily values. The dashed vertical line marks the start of 2017Q4 (October 2017). Data source: European Central Bank (ECB).



Figure 3. Average Loan Spreads for Dollar-Denominated Syndicated Loans by European Banks. This figure presents a panel of semi-annual median all-in-drawn spreads (in basis points) for syndicated loans issued by European banks, separately for all-currency loans (black) and dollar-denominated loans only (red). Vertical line as in Figure 1. Data source: DealScan LPC.

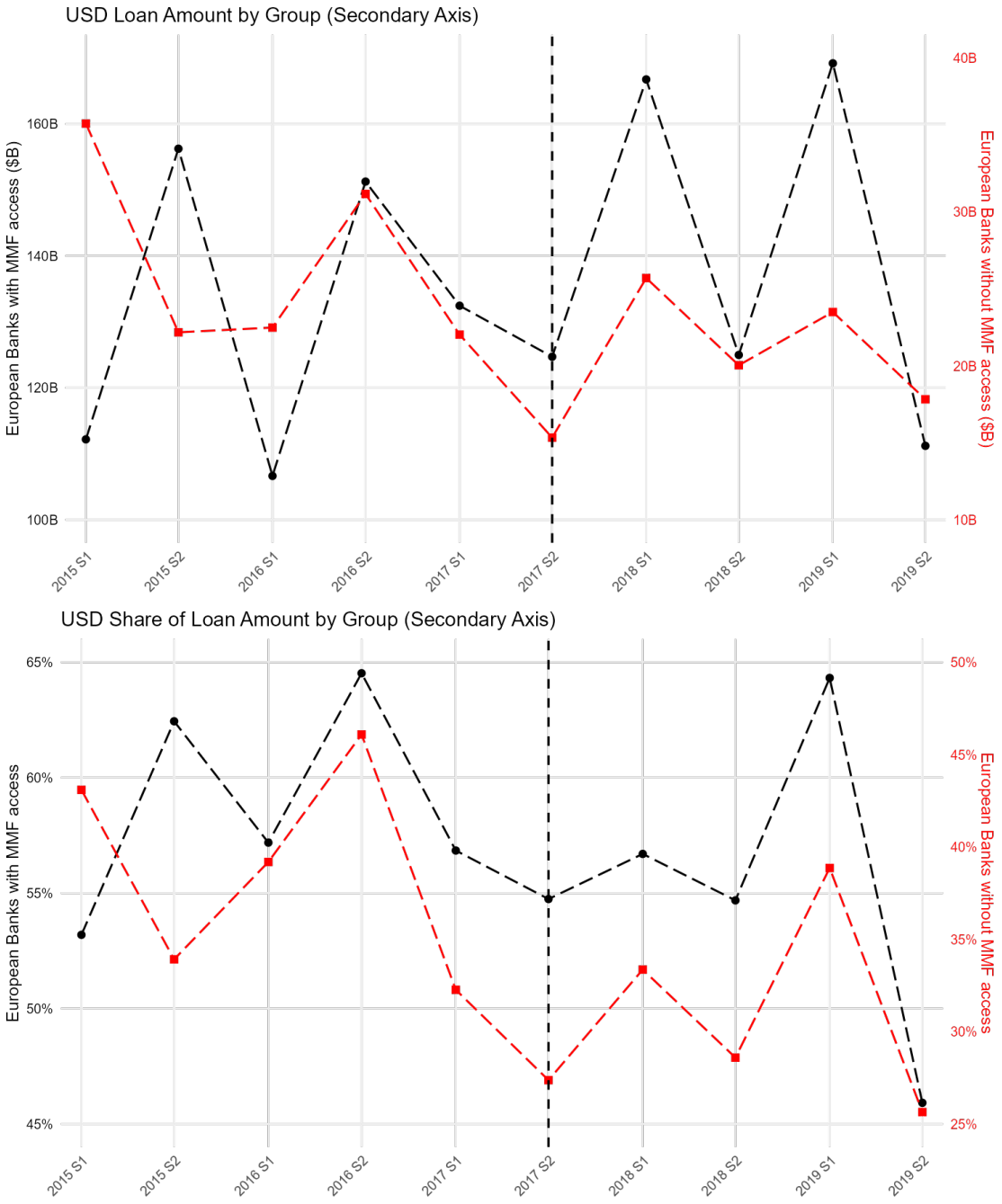


Figure 4. USD Loan Amount and USD Share of Total Lending by Group. This figure plots semi-annual dollar-denominated lending by European banks, split by pre-shock access to U.S. Money Market Funds (MMFs). The top panel shows the level of USD loan amount by group; the bottom panel shows the ratio of dollar-denominated loan volume to total loan volume (in any currency) for the same two groups. In both panels, because banks without MMF access lend at a much smaller scale (and a lower USD share) than banks with MMF access, their series (red) is plotted against the secondary (right) axis, while banks with MMF access (black) are plotted against the primary (left) axis. In both panels, the black series shows European banks with MMF access and the red series shows European banks without MMF access. Vertical line as in Figure 1. Data sources: DealScan LPC; Crane Data MMF Holdings.

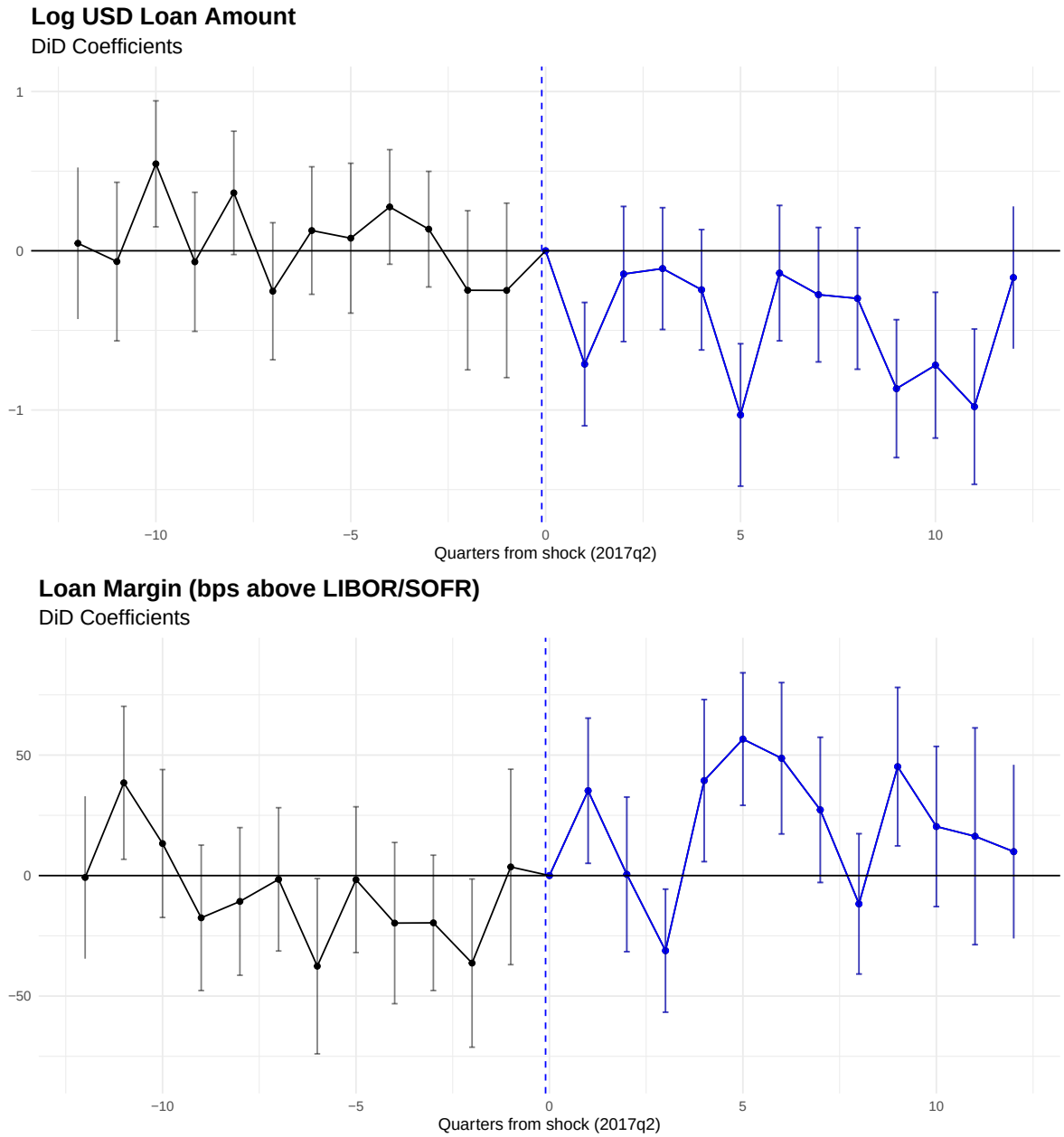


Figure 5. Difference-in-Differences Estimates: European Banks vs. U.S. Banks. This figure reports dynamic difference-in-differences (event-study) coefficients for the effect of the 2017 Tax Cuts and Jobs Act on the syndicated lending activity of European banks. The top panel shows coefficients for the log USD loan amount; the bottom panel shows coefficients for the loan-amount-weighted average spread on dollar loans (in basis points above LIBOR/SOFR). Treated banks (all 78 European banks in the estimation sample) are compared to control banks (U.S. banks) in a two-way fixed effects framework with bank and quarter fixed effects. Coefficients are shown with 90% confidence intervals. The dashed vertical line marks the shock quarter (2017Q4). Data sources: DealScan LPC; Crane Data MMF Holdings.

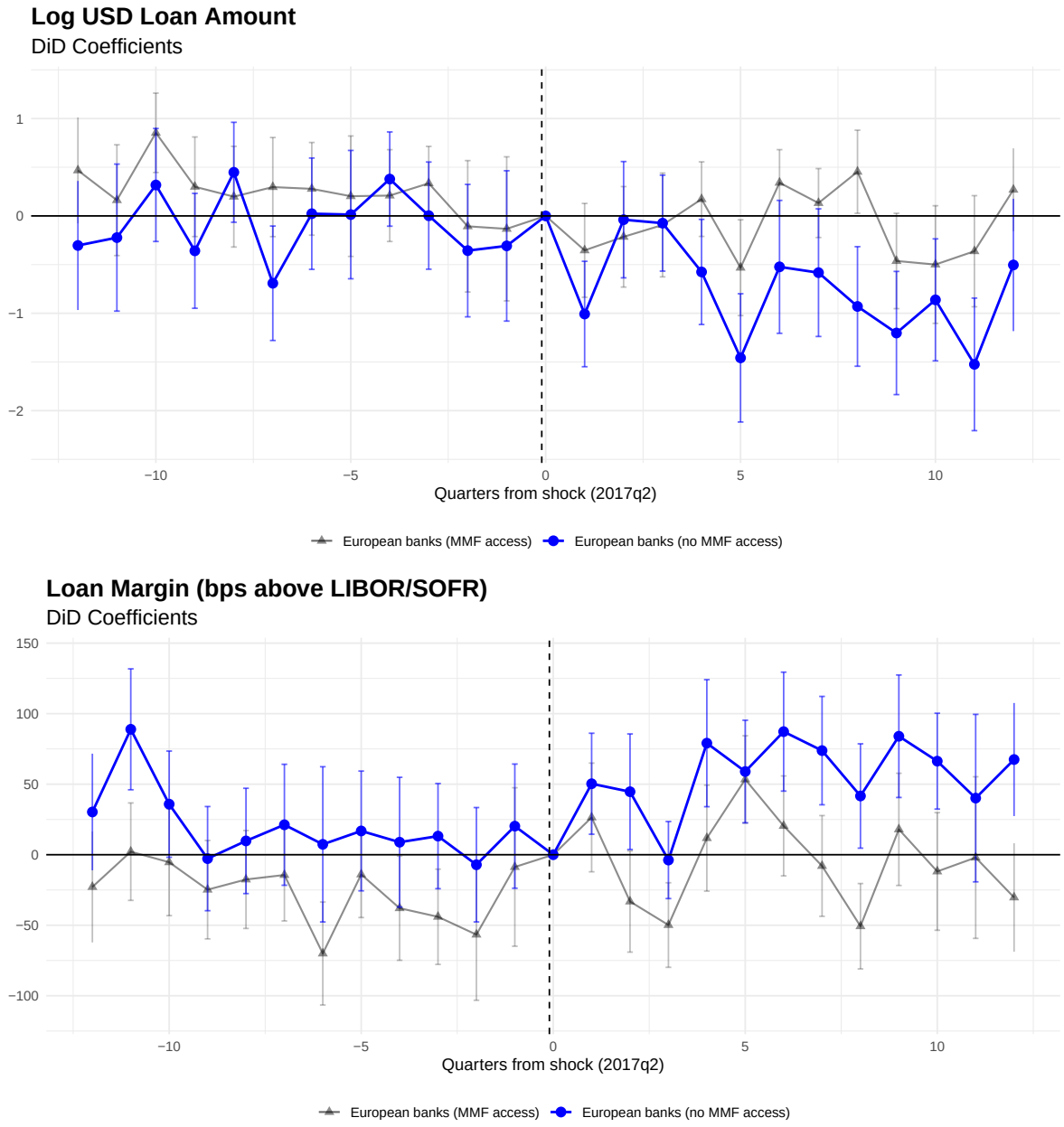


Figure 6. Difference-in-Differences Estimates: European Banks vs. U.S. Banks, by MMF Access. This figure reports dynamic difference-in-differences (event-study) coefficients for the effect of the 2017 Tax Cuts and Jobs Act on European banks without pre-existing access to U.S. Money Market Funds (MMFs, blue) and European banks with pre-existing MMF access (black), each compared separately to the same set of U.S. control banks. The top panel shows coefficients for the log USD loan amount; the bottom panel shows coefficients for the loan-amount-weighted average spread on dollar loans (in basis points above LIBOR/SOFR). Both series are estimated in a two-way fixed effects framework with bank and quarter fixed effects. Coefficients are shown with 90% confidence intervals. The dashed vertical line marks the shock quarter (2017Q4). Data sources: DealScan LPC; Crane Data MMF Holdings.

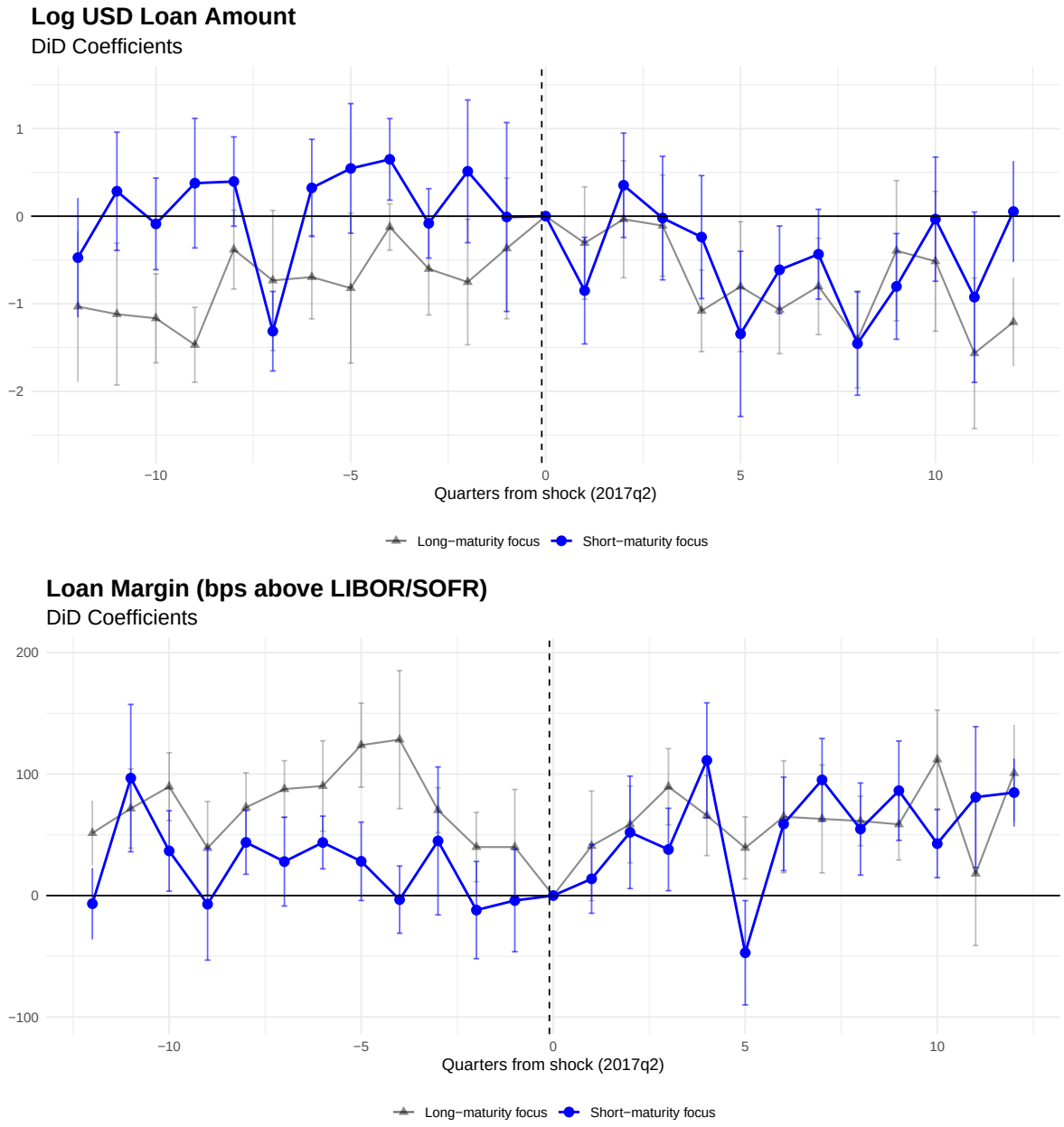


Figure 7. DiD Estimates: MMF vs. Non-MMF Banks, by Pre-Shock Maturity Focus. This figure reports dynamic difference-in-differences (event-study) coefficients for the effect of the 2017 Tax Cuts and Jobs Act on European banks without pre-existing access to U.S. Money Market Funds (MMFs), relative to European banks with MMF access, estimated separately for short-maturity-focused banks (blue; pre-shock weighted-average loan maturity below the sample median) and long-maturity-focused banks (black; at or above the median). The top panel shows coefficients for the log USD loan amount; the bottom panel shows coefficients for the loan-amount-weighted average spread on dollar loans (in basis points above LIBOR/SOFR). Both series are estimated in a two-way fixed effects framework with bank and quarter fixed effects. Coefficients are shown with 90% confidence intervals. The dashed vertical line marks the shock quarter (2017Q4). Data sources: DealScan LPC; Crane Data MMF Holdings.

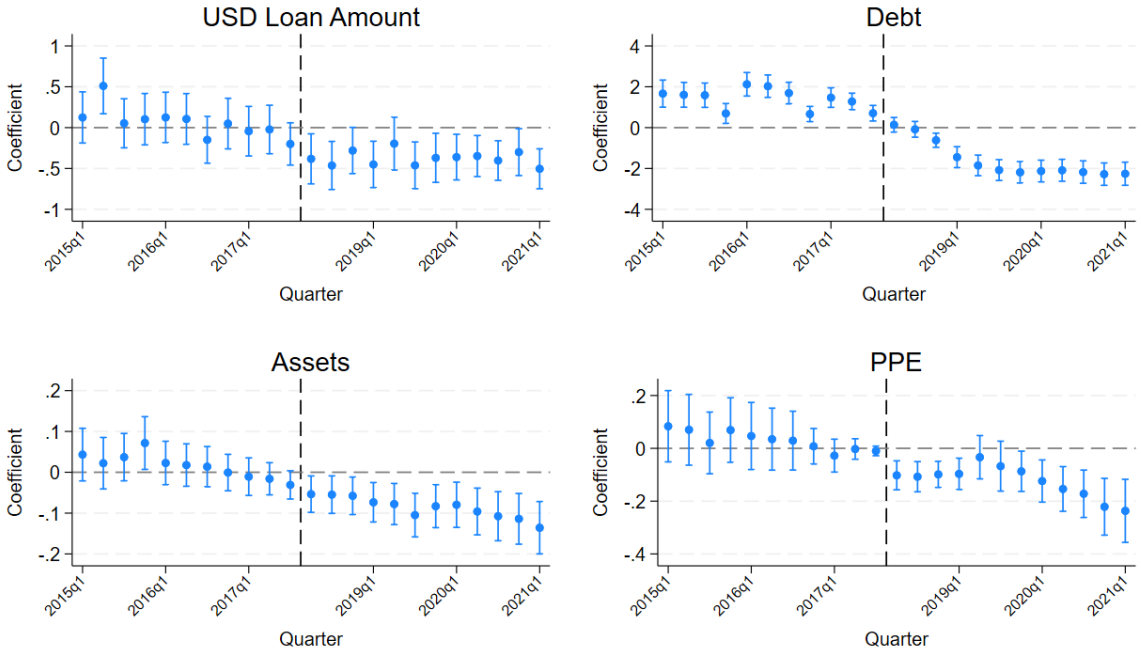


Figure 8. Dynamic DiD Estimates: Firm-Level Outcomes. Event-study coefficients from equation 2 estimated on the PSM-matched firm sample over the ±12-quarter window around the TCJA (2017Q4). Treated firms are those with a pre-shock borrowing relationship with a European bank lacking MMF access; control firms are matched via propensity score on 2017 log assets, log revenue, and tangibility. The four panels show: log USD loan amount (top left), log total debt (top right), log total assets (bottom left), and log PPE in USD (bottom right). Coefficients are shown with 90% confidence intervals. The dashed vertical line marks the shock quarter (2017Q4). Data sources: DealScan LPC; Compustat; Crane Data MMF Holdings.

Appendix Tables and Figures

Statistic	control	treated
Banks (N)	26.00	52.00
Loans per bank (annual mean; then mean)	361.91	90.29
Loans per bank (annual mean; then median)	219.33	29.42
USD loans per bank (annual mean; then mean)	146.89	21.24
USD loans per bank (annual mean; then median)	100.50	4.33
Borrowers per bank (annual mean; then mean)	139.31	33.84
Borrowers per bank (annual mean; then median)	77.42	11.50
USD borrowers per bank (annual mean; then mean)	69.41	11.00
USD borrowers per bank (annual mean; then median)	47.42	2.83

Table A1. Bank Relationship Statistics — Annualized (Treated vs. Control). This table reports lending activity statistics for European banks in the estimation sample, annualized within each bank over the ±3-year event window around the 2018Q1 TCJA shock. For each bank, annual averages are computed across years, then summarized (mean and median) across banks within the treated and control groups. Statistics cover total loans, USD loans, unique borrowers, and USD-only borrowers. Treated banks had no pre-existing relationship with U.S. Money Market Funds prior to 2018; control banks did. Data sources: DealScan LPC; Crane Data MMF Holdings.

Variable	Mean	SD	Median	Min	Max
Panel A: Short-Term Focused Banks (pre-shock maturity ≤ 5y)					
Treated Group					
Number of Lenders	24.00	0.00	24.00	24.00	24.00
Number of Lenders_per_quarter	11.30	1.78	11.00	7.00	15.00
Number of Loans per Quarter	43.19	46.43	25.50	1.00	178.00
Loan Amount per Quarter (million)_USD	537.95	887.86	151.04	0.00	7,638.65
Share of Dollar Loans	0.39	0.31	0.31	0.00	1.00
Margin over libor/sofr (bps)_USD	161.84	89.41	143.25	40.00	504.68
Maturity (years)	3.71	1.93	3.99	0.67	16.07
Control Group					
Number of Lenders	15.00	0.00	15.00	15.00	15.00
Number of Lenders_per_quarter	14.88	0.32	15.00	14.00	15.00
Number of Loans per Quarter	99.50	84.07	72.00	1.00	357.00
Loan Amount per Quarter (million)_USD	3,361.18	3,755.05	1,839.00	0.00	18,085.03
Share of Dollar Loans	0.49	0.27	0.53	0.00	1.00
Margin over libor/sofr (bps)_USD	241.97	103.33	233.52	35.63	825.00
Maturity (years)	4.90	1.16	4.79	1.12	10.22

Variable	Mean	SD	Median	Min	Max
Panel B: Long-Term Focused Banks (pre-shock maturity > 5y)					
Treated Group					
Number of Lenders	31.00	0.00	31.00	31.00	31.00
Number of Lenders_per_quarter	20.69	2.07	21.00	17.00	27.00
Number of Loans per Quarter	40.32	37.78	30.00	1.00	178.00
Loan Amount per Quarter (million)_USD	319.96	690.78	102.78	0.00	7,874.40
Share of Dollar Loans	0.26	0.26	0.18	0.00	1.00
Margin over libor/sofr (bps)_USD	212.80	119.74	185.07	40.00	700.00
Maturity (years)	6.15	2.59	5.75	1.00	18.00
Control Group					
Number of Lenders	12.00	0.00	12.00	12.00	12.00
Number of Lenders_per_quarter	12.00	0.00	12.00	12.00	12.00
Number of Loans per Quarter	76.73	66.39	46.00	8.00	306.00
Loan Amount per Quarter (million)_USD	1,248.82	1,487.30	534.39	0.00	6,641.79
Share of Dollar Loans	0.35	0.21	0.35	0.00	1.00
Margin over libor/sofr (bps)_USD	198.97	91.31	180.33	38.96	593.69
Maturity (years)	5.96	2.28	5.45	1.82	18.09

Table A2. Summary Statistics by Pre-Shock Maturity Focus. Descriptive statistics for the estimation sample split by banks' pre-shock weighted-average loan maturity, covering the ±3-year window around the TCJA shock (2015Q1–2020Q4). Panel A restricts to short-term focused banks (pre-shock maturity ≤ 5 years); Panel B restricts to long-term focused banks (pre-shock maturity > 5 years). Treated banks had no pre-existing relationship with U.S. Money Market Funds prior to 2018; control banks did. All monetary amounts in millions of dollars. Data sources: DealScan LPC; Crane Data MMF Holdings.

Quarter	Log USD Amount	USD Share	Margin (bps)	Maturity (yrs)
-10	0.546**	0.183***	13.295	-0.266
	(0.241)	(0.046)	(18.654)	(0.255)
-9	-0.069	0.036	-17.523	-0.531*
	(0.265)	(0.039)	(18.344)	(0.276)
-8	0.364	0.110***	-10.731	-0.521*
	(0.236)	(0.032)	(18.628)	(0.305)
-7	-0.254	0.020	-1.566	-0.236
	(0.262)	(0.042)	(18.072)	(0.305)
-6	0.127	0.089***	-37.596*	-0.274
	(0.243)	(0.035)	(22.111)	(0.261)
-5	0.079	0.071	-1.699	0.316
	(0.286)	(0.045)	(18.383)	(0.311)
-4	0.275	0.043	-19.715	-0.270
	(0.219)	(0.032)	(20.336)	(0.233)
-3	0.136	0.044	-19.613	-0.420
	(0.221)	(0.035)	(17.072)	(0.303)
-2	-0.248	0.090**	-36.313*	-0.537**
	(0.304)	(0.040)	(21.217)	(0.236)
-1	-0.249	0.076*	3.586	-0.381
	(0.333)	(0.044)	(24.649)	(0.275)
1	-0.712***	0.009	35.199*	-0.097
	(0.236)	(0.038)	(18.316)	(0.262)
2	-0.146	0.017	0.504	0.242
	(0.258)	(0.036)	(19.500)	(0.253)
3	-0.112	0.064*	-31.159**	-0.139
	(0.233)	(0.037)	(15.523)	(0.283)
4	-0.245	-0.004	39.413*	-0.431*
	(0.230)	(0.033)	(20.445)	(0.250)
5	-1.031***	-0.030	56.637***	0.146
	(0.272)	(0.035)	(16.718)	(0.273)
6	-0.140	0.044	48.675**	0.059
	(0.258)	(0.038)	(19.088)	(0.282)
7	-0.276	0.088**	27.264	-0.222
	(0.257)	(0.040)	(18.319)	(0.281)
8	-0.299	0.046	-11.738	-0.256
	(0.270)	(0.046)	(17.694)	(0.251)
9	-0.866***	-0.071*	45.198**	0.639**
	(0.263)	(0.037)	(19.987)	(0.304)
10	-0.718***	-0.062*	20.358	0.295
	(0.278)	(0.034)	(20.209)	(0.334)

Table A3. Dynamic DiD Coefficients: European Banks vs. U.S. Banks. This table reports the event-study coefficients and clustered standard errors (in parentheses) underlying Figure 5, for the ten quarters before and ten quarters after the TCJA shock (2017Q4), relative to the omitted reference quarter. Columns report four outcomes, separated by vertical rules: the log USD loan amount, the USD share of total loan amount, the loan-amount-weighted average spread on USD loans (in basis points above LIBOR/SOFR), and the loan-amount-weighted average loan maturity (in years). Standard errors are clustered at the lender level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Data sources: DealScan LPC; Crane Data MMF Holdings.

Quarter	Log USD Amount	USD Share	Margin (bps)	Maturity (yrs)
-10	0.318	0.117*	35.847	-0.193
	(0.353)	(0.065)	(22.883)	(0.393)
-9	-0.359	0.014	-2.767	-0.646
	(0.359)	(0.057)	(22.443)	(0.425)
-8	0.448	0.098**	9.779	-0.384
	(0.312)	(0.046)	(22.695)	(0.439)
-7	-0.692*	-0.084	21.231	-0.402
	(0.357)	(0.059)	(26.065)	(0.452)
-6	0.023	0.096*	7.350	-0.105
	(0.348)	(0.052)	(33.441)	(0.375)
-5	0.013	0.015	16.840	0.415
	(0.401)	(0.066)	(25.810)	(0.481)
-4	0.378	0.045	8.876	-0.372
	(0.294)	(0.047)	(27.954)	(0.327)
-3	0.003	0.010	13.187	-0.157
	(0.335)	(0.053)	(22.664)	(0.491)
-2	-0.356	0.048	-7.099	-0.674*
	(0.413)	(0.062)	(24.645)	(0.347)
-1	-0.308	0.053	20.255	-0.471
	(0.469)	(0.066)	(26.760)	(0.411)
1	-1.007***	-0.035	50.322**	-0.480
	(0.329)	(0.049)	(21.768)	(0.394)
2	-0.039	0.001	44.660*	0.150
	(0.363)	(0.057)	(24.899)	(0.360)
3	-0.074	0.083	-3.786	-0.098
	(0.300)	(0.062)	(16.603)	(0.457)
4	-0.575*	-0.058	79.076***	-0.330
	(0.328)	(0.049)	(27.373)	(0.386)
5	-1.458***	-0.057	58.967***	0.200
	(0.400)	(0.054)	(22.102)	(0.445)
6	-0.523	-0.020	87.259***	0.102
	(0.415)	(0.061)	(25.628)	(0.431)
7	-0.583	0.054	73.813***	0.117
	(0.399)	(0.054)	(23.354)	(0.384)
8	-0.930**	-0.048	41.641*	0.121
	(0.373)	(0.065)	(22.487)	(0.368)
9	-1.203***	-0.136**	83.992***	0.893**
	(0.384)	(0.053)	(26.396)	(0.413)
10	-0.862**	-0.069	66.327***	0.019
	(0.381)	(0.054)	(20.654)	(0.488)

Table A4. Dynamic DiD Coefficients: European Banks without MMF Access vs. U.S. Banks. This table reports the event-study coefficients and clustered standard errors (in parentheses) underlying Figure 6, for the ten quarters before and ten quarters after the TCJA shock (2017Q4), relative to the omitted reference quarter. The treated group is restricted to European banks without pre-existing MMF access; the control group is U.S. banks. Columns report four outcomes, separated by vertical rules: the log USD loan amount, the USD share of total loan amount, the loan-amount-weighted average spread on USD loans (in basis points above LIBOR/SOFR), and the loan-amount-weighted average loan maturity (in years). Standard errors are clustered at the lender level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Data sources: DealScan LPC; Crane Data MMF Holdings.

Quarter	Log USD Amount	USD Share	Margin (bps)	Maturity (yrs)
-10	0.854***	0.265***	-5.336	-0.296
	(0.248)	(0.054)	(22.998)	(0.226)
-9	0.299	0.065	-24.785	-0.393
	(0.311)	(0.043)	(21.207)	(0.249)
-8	0.198	0.126***	-17.553	-0.655**
	(0.314)	(0.041)	(21.109)	(0.283)
-7	0.296	0.151***	-14.361	0.044
	(0.309)	(0.049)	(19.811)	(0.271)
-6	0.278	0.088**	-70.045***	-0.434
	(0.289)	(0.037)	(22.201)	(0.274)
-5	0.202	0.145**	-13.967	0.169
	(0.376)	(0.057)	(18.586)	(0.293)
-4	0.209	0.051	-37.914*	-0.144
	(0.287)	(0.035)	(22.427)	(0.268)
-3	0.335	0.089**	-44.004**	-0.670***
	(0.231)	(0.041)	(20.541)	(0.257)
-2	-0.107	0.142***	-56.649**	-0.381
	(0.410)	(0.048)	(28.286)	(0.261)
-1	-0.133	0.113**	-8.707	-0.225
	(0.450)	(0.052)	(34.159)	(0.289)
1	-0.354	0.069	26.428	0.366
	(0.293)	(0.056)	(23.422)	(0.243)
2	-0.215	0.045	-33.183	0.363
	(0.314)	(0.036)	(21.799)	(0.286)
3	-0.093	0.060*	-49.851***	-0.156
	(0.324)	(0.035)	(18.221)	(0.240)
4	0.172	0.067*	11.745	-0.539**
	(0.233)	(0.035)	(22.832)	(0.250)
5	-0.532*	0.011	53.407***	0.113
	(0.299)	(0.036)	(18.801)	(0.190)
6	0.341*	0.129***	20.426	0.009
	(0.206)	(0.036)	(21.543)	(0.265)
7	0.132	0.140**	-7.955	-0.596*
	(0.215)	(0.055)	(21.708)	(0.315)
8	0.454*	0.159***	-50.696***	-0.673***
	(0.260)	(0.052)	(18.400)	(0.229)
9	-0.463	0.005	17.979	0.379
	(0.298)	(0.045)	(24.175)	(0.370)
10	-0.499	-0.042	-11.865	0.484
	(0.367)	(0.036)	(25.344)	(0.344)

Table A5. Dynamic DiD Coefficients: European Banks with MMF Access vs. U.S. Banks. This table reports the event-study coefficients and clustered standard errors (in parentheses) underlying Figure 6, for the ten quarters before and ten quarters after the TCJA shock (2017Q4), relative to the omitted reference quarter. The treated group is restricted to European banks with pre-existing MMF access; the control group is U.S. banks. Columns report four outcomes, separated by vertical rules: the log USD loan amount, the USD share of total loan amount, the loan-amount-weighted average spread on USD loans (in basis points above LIBOR/SOFR), and the loan-amount-weighted average loan maturity (in years). Standard errors are clustered at the lender level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Data sources: DealScan LPC; Crane Data MMF Holdings.

Quarter	Log USD Amount	USD Share	Margin (bps)	Maturity (yrs)
-10	-0.088	0.149**	36.749*	-0.258
	(0.318)	(0.067)	(20.137)	(0.412)
-9	0.377	0.230**	-7.103	1.385**
	(0.450)	(0.100)	(27.985)	(0.553)
-8	0.396	0.110**	43.784***	0.154
	(0.310)	(0.049)	(15.949)	(0.514)
-7	-1.314***	-0.148***	27.954	0.546*
	(0.276)	(0.047)	(22.207)	(0.323)
-6	0.323	0.099*	43.683***	0.393
	(0.337)	(0.054)	(13.186)	(0.269)
-5	0.545	0.130***	28.190	0.697
	(0.450)	(0.046)	(19.619)	(0.458)
-4	0.649**	0.248***	-3.335	-0.471
	(0.283)	(0.056)	(16.810)	(0.315)
-3	-0.082	0.089***	44.985	0.538
	(0.241)	(0.032)	(37.001)	(0.403)
-2	0.512	0.320***	-11.938	-0.633**
	(0.495)	(0.060)	(24.303)	(0.258)
-1	-0.009	0.161**	-4.055	-0.683**
	(0.656)	(0.069)	(25.604)	(0.316)
1	-0.850**	-0.047	13.765	0.074
	(0.370)	(0.031)	(17.220)	(0.292)
2	0.353	0.097	52.041*	0.281
	(0.362)	(0.088)	(28.127)	(0.277)
3	-0.022	0.226***	37.929*	0.972
	(0.429)	(0.066)	(20.620)	(0.651)
4	-0.239	0.052	111.284***	0.322
	(0.427)	(0.065)	(28.783)	(0.303)
5	-1.344**	-0.047	-47.077*	0.088
	(0.573)	(0.045)	(26.086)	(0.463)
6	-0.612**	0.084**	58.966**	0.950***
	(0.304)	(0.038)	(23.408)	(0.360)
7	-0.434	0.068	95.227***	0.886
	(0.312)	(0.048)	(20.696)	(0.560)
8	-1.455***	0.100	54.724**	0.783**
	(0.358)	(0.066)	(23.042)	(0.313)
9	-0.802**	0.023	86.328***	1.038***
	(0.367)	(0.046)	(24.854)	(0.354)
10	-0.034	0.119**	42.732**	0.467
	(0.431)	(0.053)	(17.019)	(0.321)

Table A6. Dynamic DiD Coefficients: MMF vs. Non-MMF Banks, Short-Maturity-Focused. This table reports the event-study coefficients and clustered standard errors (in parentheses) underlying Figure 7, for the ten quarters before and ten quarters after the TCJA shock (2017Q4), relative to the omitted reference quarter. The sample is restricted to short-maturity-focused banks (pre-shock weighted-average loan maturity below the sample median). Columns report four outcomes, separated by vertical rules: the log USD loan amount, the USD share of total loan amount, the loan-amount-weighted average spread on USD loans (in basis points above LIBOR/SOFR), and the loan-amount-weighted average loan maturity (in years). Standard errors are clustered at the lender level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Data sources: DealScan LPC; Crane Data MMF Holdings.

Quarter	Log USD Amount	USD Share	Margin (bps)	Maturity (yrs)
-10	-1.166***	0.050	89.628***	-0.190
	(0.309)	(0.045)	(16.965)	(0.257)
-9	-1.469***	0.060	39.136*	0.786
	(0.260)	(0.089)	(23.314)	(0.592)
-8	-0.381	-0.010	72.518***	0.496
	(0.274)	(0.045)	(17.325)	(0.574)
-7	-0.734	-0.095*	87.642***	0.213
	(0.486)	(0.052)	(14.200)	(0.373)
-6	-0.696**	0.038	90.191***	0.034
	(0.290)	(0.079)	(22.611)	(0.425)
-5	-0.822	-0.117**	123.799***	1.132**
	(0.521)	(0.051)	(21.058)	(0.551)
-4	-0.124	0.013	128.364***	-0.335
	(0.161)	(0.051)	(34.497)	(0.341)
-3	-0.602*	-0.088*	70.304***	1.245***
	(0.320)	(0.047)	(11.261)	(0.478)
-2	-0.752*	-0.020	39.936**	-0.535
	(0.435)	(0.052)	(17.392)	(0.372)
-1	-0.368	0.046	39.912	-0.877
	(0.488)	(0.055)	(28.833)	(0.686)
1	-0.307	0.038	40.885	-0.462
	(0.390)	(0.066)	(27.462)	(0.647)
2	-0.035	0.036	58.578***	0.500
	(0.407)	(0.066)	(19.235)	(0.353)
3	-0.109	0.098*	89.587***	-0.030
	(0.351)	(0.051)	(19.072)	(0.458)
4	-1.081***	-0.103**	65.855***	0.495
	(0.283)	(0.051)	(20.025)	(0.309)
5	-0.805*	0.026	39.259**	-0.359
	(0.451)	(0.069)	(15.507)	(0.567)
6	-1.069***	0.017	64.863**	-0.371
	(0.304)	(0.040)	(28.036)	(0.321)
7	-0.802**	0.025	63.106**	-0.088
	(0.335)	(0.059)	(27.014)	(0.646)
8	-1.407***	-0.088	61.407***	0.491
	(0.337)	(0.065)	(12.414)	(0.428)
9	-0.394	0.009	58.609***	0.870*
	(0.487)	(0.036)	(17.881)	(0.508)
10	-0.515	0.060	112.012***	-1.274***
	(0.485)	(0.069)	(24.687)	(0.402)

Table A7. Dynamic DiD Coefficients: MMF vs. Non-MMF Banks, Long-Maturity-Focused. This table reports the event-study coefficients and clustered standard errors (in parentheses) underlying Figure 7, for the ten quarters before and ten quarters after the TCJA shock (2017Q4), relative to the omitted reference quarter. The sample is restricted to long-maturity-focused banks (pre-shock weighted-average loan maturity at or above the sample median). Columns report four outcomes, separated by vertical rules: the log USD loan amount, the USD share of total loan amount, the loan-amount-weighted average spread on USD loans (in basis points above LIBOR/SOFR), and the loan-amount-weighted average loan maturity (in years). Standard errors are clustered at the lender level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Data sources: DealScan LPC; Crane Data MMF Holdings.

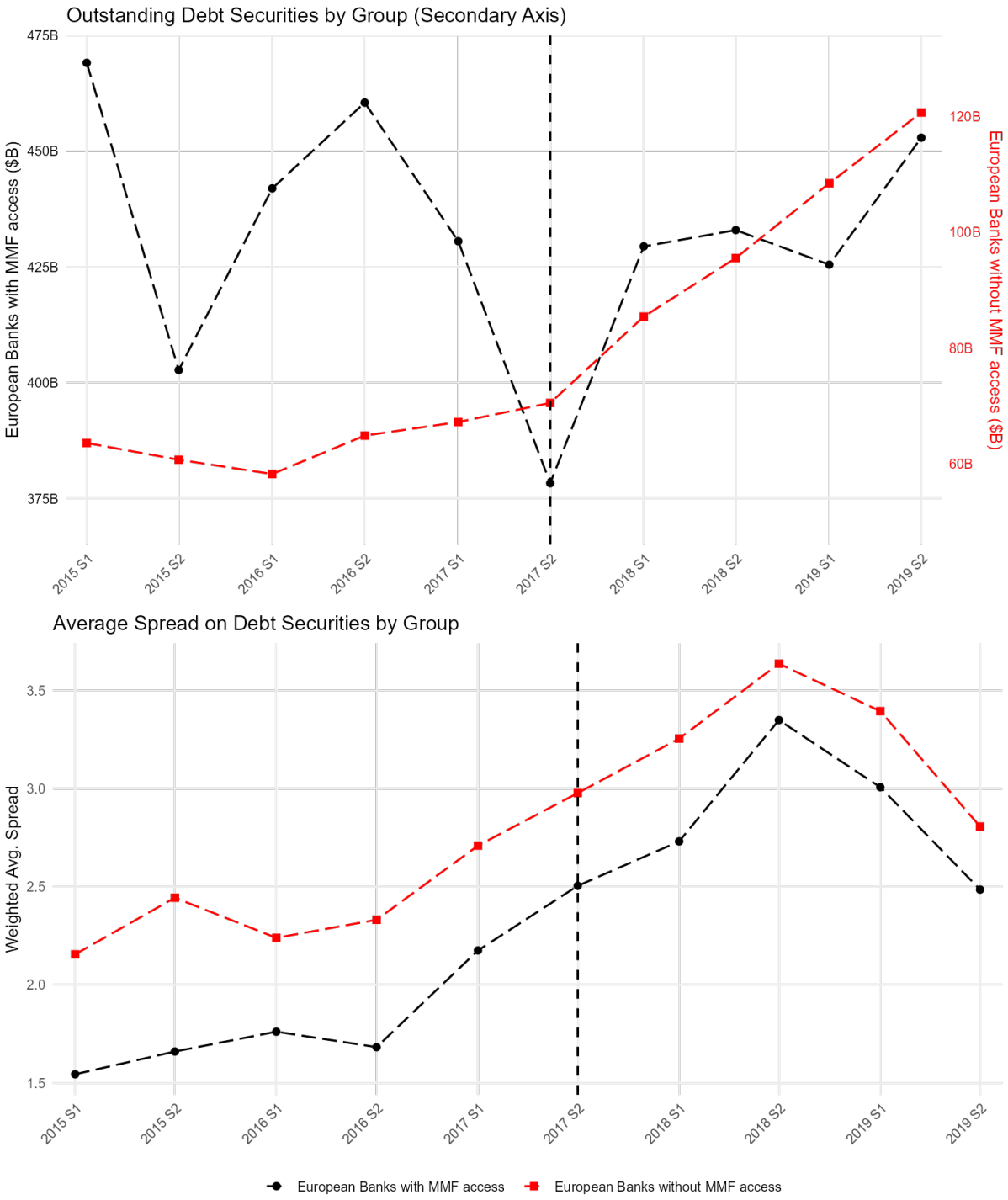


Figure A1. Outstanding Debt Securities and Spreads by Group. This figure reports semi-annual outstanding debt securities issued by European banks (top panel) and the corresponding weighted-average spread (bottom panel), split by pre-shock access to U.S. Money Market Funds (MMFs). In the top panel, European banks with MMF access (black) are plotted against the primary (left) axis and European banks without MMF access (red) against the secondary (right) axis, since the two groups issue at very different scales; the bottom panel plots both groups' average spread on a single shared axis. The dashed vertical line marks 2017 S2 (enactment of the TCJA policy in December 2017). Data source: European Central Bank (ECB).

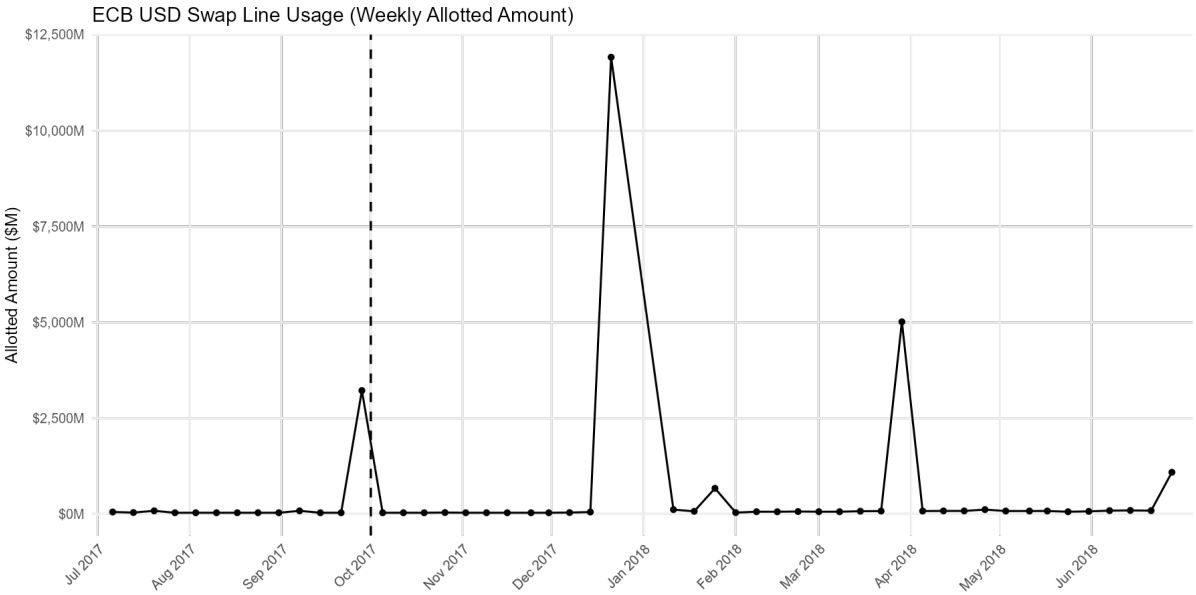


Figure A2. ECB USD Swap Line Usage. This figure plots the weekly amount allotted in the ECB's USD liquidity-providing operations, funded through the ECB-Federal Reserve central bank swap line, over the same one-year window as Figure 2 (July 2017 through June 2018). The series exhibits pronounced spikes at quarter-ends, including at the December 2017 year-end. The dashed vertical line marks the start of 2017Q4 (October 2017). Data source: European Central Bank (ECB).