

From Cayman to Main Street: Offshore Tax Transparency and Small Business Lending

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Abstract

The Foreign Account Tax Compliance Act of 2010 required foreign financial institutions to identify and report U.S. account holders or face a 30% withholding tax on U.S.-source payments. We exploit this regulatory shock in a difference-in-differences analysis, comparing banks with pre-existing tax haven operations to banks without such operations, before and after FATCA implementation. We find affected banks replaced foreign deposit outflows with domestic deposit inflows, maintaining stable aggregate funding. However, the compositional shift in liabilities appears to cause a duration gap between assets and liabilities. At the bank-county-year level, we find that these composition changes reduced small-business lending even when total deposits remained stable. Affected banks appear to reduce long-term relationship lending when funding becomes less committed. Effects persist across bank size categories and do not correlate with compliance costs, reputational damage, or structured finance exposure. The findings demonstrate that funding composition matters independently of funding quantity: compositional changes constrain relationship lending even when aggregate funding remains stable.

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1. Introduction

The composition of bank funding can affect credit supply independently of total funding levels. We establish this result by exploiting a regulatory shock that changed the structure of bank liabilities while leaving aggregate funding unchanged. The Foreign Account Tax Compliance Act (FATCA), enacted in March 2010 and implemented in July 2014, required foreign financial institutions to identify and report U.S. account holders or face a 30% withholding tax.¹ This transparency regulation disrupted offshore banking: U.S. taxpayers repatriated deposits from tax haven branches to domestic branches, replacing contractually committed foreign time deposits (3-, 6-, or 12-month maturities) with callable domestic savings deposits. We document that affected banks successfully replaced foreign deposit outflows with domestic deposit inflows, maintaining stable aggregate funding. However, this compositional shift shortened liability duration and widened the duration gap between assets and liabilities.

We test whether this compositional shift reduced small-business lending. The economic mechanism operates through duration mismatch: when banks fund long-duration relationship loans with callable deposits rather than committed time deposits, they face greater liquidity and interest rate risk. Even if aggregate funding remains constant, the shift from committed to callable liabilities forces banks to either accept wider duration gaps or reduce long-term lending. Small businesses—informationally opaque borrowers requiring relationship-specific investments—are the marginal borrowers cut when funding becomes less committed.

Identification is challenging because FATCA implementation (July 2014) coincided with Basel III capital requirements becoming binding (January 2014-2015). We separate these confounded regulatory shocks using two sources of variation. First, cross-sectional

¹See Joint Committee on Taxation (2010) and IRS FATCA Resource Center, <https://www.irs.gov/businesses/corporations/foreign-account-tax-compliance-act-fatca>.

variation: Basel III varied by bank size (stricter for banks exceeding \$250 billion), while FATCA exposure varied by pre-existing tax haven branch operations, independent of size. Second, timing variation: FATCA was enacted in March 2010, creating immediate uncertainty, while Basel III became binding four years later. We implement a difference-in-differences design comparing banks with versus without tax haven operations, before and after FATCA, using county-year fixed effects to absorb local credit demand.

Banks with tax haven operations reduced small-business lending relative to control banks in the same counties. The effect is economically meaningful and robust across specifications. Three patterns support a duration mismatch interpretation rather than alternative channels. First, effects are consistent across bank size categories, ruling out Basel III capital constraints that varied by size. Second, both small-business and mortgage lending decline, ruling out flight-to-quality substitution. Third, effects do not correlate with measures of compliance costs, reputational damage, or structured finance exposure, isolating the deposit composition channel.

This paper makes three contributions. First, we provide causal evidence that tax transparency regulation has unintended spillovers on domestic credit markets. Prior work documents taxpayer responses to information sharing agreements (Johannesen and Zucman 2014; De Simone, Lester, and Markle 2020) and cross-border deposit outflows (D’Avino, Fella, and Mendicino 2023), but the real effects on domestic lending remain unexplored. We show that FATCA reduced small-business credit in U.S. counties even when banks maintained aggregate funding levels, demonstrating that regulatory shocks to offshore financial centers propagate to Main Street.

Second, we identify a novel transmission mechanism: funding composition matters independently of funding quantity. The banking literature emphasizes aggregate funding shocks—deposit outflows during crises (Ivashina and Scharfstein 2010), wholesale funding disruptions (Cornett et al. 2011), or regulatory requirements forcing deleveraging. We show that composition changes within stable aggregate funding also constrain lending.

When banks substitute callable for committed deposits, they reduce relationship lending even without losing total deposits. This finding extends Bai and Qin (2024)’s result that wholesale-to-retail substitution is non-neutral by demonstrating that even retail-to-retail substitution affects credit supply when compositional changes alter liability duration.

Third, we demonstrate that the composition channel operates through duration mismatch rather than risk rebalancing or alternative non-deposit mechanisms. When stress tests reveal capital shortfalls, banks substitute from risky small-business loans toward safe mortgages (Cortés et al. 2020). In contrast, FATCA reduced both loan types—the pattern predicted by duration mismatch (both are long-term commitments) rather than flight-to-quality. Cross-sectional tests systematically rule out alternative channels: effects persist across bank size categories (ruling out Basel III), do not correlate with compliance complexity (ruling out direct costs), exhibit no differential market reactions around enforcement events (ruling out reputational stigma), and remain consistent across round-tripping versus wealth management jurisdictions (ruling out structured finance unwinding). These tests isolate deposit composition as the transmission mechanism.

The remainder of this paper proceeds as follows. Section 3 describes our data sources and sample construction. Section 4 presents our empirical strategy for identifying FATCA’s causal effect on deposit composition and small-business lending. Section 5 presents our main results. Section 6 addresses identification concerns and presents robustness tests. Section 7 concludes with policy implications.

Related Literature

Our paper contributes to four strands of literature. Early work documents the scale of corporate profit-shifting to tax havens (Hines and Rice 1994; Desai, Foley, and Hines 2006). Bilateral information exchange agreements induced deposit shifting to non-treaty jurisdictions (Johannesen and Zucman 2014), while FATCA led to declining cross-border deposits

(Menkhoff and Miethe 2019) and similar effects under the Common Reporting Standard (Casi, Spengel, and Stage 2020). De Simone, Lester, and Markle (2020) find decreases in foreign portfolio investment and increased expatriations post-FATCA. D’Avino, Fella, and Mendicino (2023) document deposit reductions in tax haven branches using branch-level data. We extend this work by connecting deposit outflows to lending outcomes and isolating the composition mechanism.

Work on information disclosure and bank funding shows that transparency enhances market discipline but increases vulnerability to runs (Bushman and Williams 2012; Bushman 2016), and that mandated transparency increases deposit flow sensitivity to bank performance (Chen et al. 2022). FATCA differs in that it targets account-holder information rather than bank financial conditions. We show that compositional changes affect relationship lending even when banks successfully replace lost funding.

Bai and Qin (2024) show that banks cannot perfectly substitute wholesale with retail deposits without affecting lending behavior; funding substitution is non-neutral. We examine a setting where wholesale funding remained stable but retail deposit composition changed. Small-business lending contracted despite stable total funding, suggesting composition matters independently of funding level. This extends Bai and Qin (2024) by showing that retail-to-retail substitution also affects relationship lending.

Cortés et al. (2020) find that stress-tested banks reduced small-business lending by 13%, substituting toward lower-risk mortgages through capital constraints. We identify a different mechanism: FATCA operates through funding composition changes that disrupt duration matching. While stress tests induce substitution toward mortgages, FATCA reduces both loan types (though small-business lending responds more strongly). This supports the idea that duration mismatch affects relationship lending independent of capital adequacy or total funding levels.

2. Institutional Background

2.1. FATCA Background and Implementation

Congress enacted the Foreign Account Tax Compliance Act (FATCA) on March 18, 2010, as part of the Hiring Incentives to Restore Employment (HIRE) Act.²³ The Joint Committee on Taxation estimated that offshore tax evasion cost the U.S. government \$40 billion annually in lost revenue, and projected FATCA would raise \$8.7 billion over a decade.

FATCA requires foreign financial institutions (FFIs), including banks, broker-dealers, hedge funds, and insurance companies, to identify and report information about financial accounts held by U.S. taxpayers to the IRS. Non-compliant institutions face a 30% withholding tax on certain U.S.-source payments (Christians 2017).

FATCA's implementation occurred in three distinct phases. The legislative shock began in March 2010, creating immediate uncertainty for FFIs and U.S. taxpayers with foreign accounts despite implementation being delayed until 2014. From July 2012 to June 2014, the U.S. Treasury negotiated bilateral intergovernmental agreements (IGAs) with foreign jurisdictions. Model 1 IGAs provide for automatic exchange of information between governments, while Model 2 IGAs require FFIs to report directly to the IRS (Morse 2013). The U.S. Treasury designed these IGAs to remove domestic legal impediments to FATCA compliance and reduce administrative burdens on FFIs. Full implementation began July 1, 2014, when FATCA withholding became effective, with the first reports due in March 2015 covering the 2014 tax year. By 2017, over 280,000 financial institutions had registered under FATCA.

²Although coinciding with the Global Financial Crisis, experts tie the legislation to the 2008-2009 UBS tax evasion scandal, which shattered Swiss banking secrecy and exposed tax non-compliance by U.S. persons. The scandal provided the political impetus for Congress to address tax avoidance (Lengwiler and Saljihaj 2018).

³For official FATCA guidance and regulations, see IRS FATCA Resource Center, <https://www.irs.gov/businesses/corporations/foreign-account-tax-compliance-act-fatca>, accessed November 2025.

Staggered IGA adoption across jurisdictions creates variation in compliance timing. We examine eleven tax haven jurisdictions: Bahamas, Bahrain, British Virgin Islands, Brunei, Cayman Islands, Channel Islands (Jersey and Guernsey), Hong Kong, Ireland, Lebanon, Panama, and Singapore.⁴⁵ U.S. banks maintained branch networks in these offshore financial centers.

Early IGA adopters include Ireland (January 2013), Switzerland (February 2013), the Cayman Islands (November 2013), and Luxembourg (March 2014). The Cayman Islands alone accounted for approximately 46% of all U.S. bank branches in tax havens as of 2009, based on Federal Reserve National Information Center data. Late adopters include Singapore (December 2014), Hong Kong (November 2014), the Bahamas (November 2014), Bahrain (June 2015), and Panama (April 2016). Panama's Model 1 IGA faced implementation delays due to political resistance and concerns about information exchange. Several jurisdictions resisted FATCA, and financial centers without reciprocal IGAs became destinations for deposit shifting (D'Avino, Fella, and Mendicino 2023).

Basel III's near-simultaneous implementation during 2013-2015 complicates identifying FATCA's effects. Regulators published Basel III final U.S. rules on October 11, 2013, with compliance beginning January 1, 2014 for advanced approaches banks (assets exceeding \$250 billion or \$10 billion foreign exposure) and January 1, 2015 for other banks. This timeline overlapped with FATCA's July 1, 2014 withholding start date.⁶⁷

Despite this overlapping timeline, Basel III and FATCA affected banks through distinct

⁴Uruguay, while appearing on historical tax haven lists (Johannesen and Zucman 2014), lacks a FATCA Intergovernmental Agreement as of our sample period and is excluded. Uruguay has since reformed its tax transparency regime through 2025 budget changes.

⁵For FATCA IGA jurisdictions and signing dates, see U.S. Department of the Treasury, "Foreign Account Tax Compliance Act," <https://home.treasury.gov/policy-issues/tax-policy/foreign-account-tax-compliance-act>, accessed November 2025.

⁶The Liquidity Coverage Ratio (LCR) phased in from January 2015 to January 2017. The Capital Conservation Buffer phased in from 2016-2019. The Basel Committee finalized the Net Stable Funding Ratio (NSFR) in October 2014, though U.S. implementation was delayed until 2020. The Volcker Rule became effective April 1, 2014, and regulators finalized Enhanced Prudential Standards on February 18, 2014.

⁷For Basel III implementation timelines, see Board of Governors of the Federal Reserve System, "Basel III Regulatory Capital Framework," <https://www.federalreserve.gov/supervisionreg/basel/>, accessed November 2025.

channels, which allow us to distinguish between the effects of the two shocks. Basel III used a tiered implementation based on bank size with no distinction by depositor nationality or account location. FATCA applies universally to all foreign financial institutions regardless of size, focusing specifically on U.S. person accounts. Basel III's Liquidity Coverage Ratio (LCR) distinguishes among deposit types and stability levels (retail versus wholesale, stable versus unstable) but not beneficial owner nationality. In contrast, FATCA distinguishes based on account holder citizenship but not deposit stability characteristics.

This regulatory difference generates cross-sectional predictions: if Basel III capital constraints drive our results, effects should concentrate among the largest banks (assets $\geq$ \$250 billion) facing the strictest requirements. If FATCA-induced deposit composition changes drive results, effects should be similar across bank size categories but vary with tax-haven exposure. Section 6 tests these predictions and shows that FATCA effects persist across size categories while varying with tax-haven exposure, ruling out Basel III as the primary driver.

2.2. Deposit Composition and Characteristics

To understand FATCA's potential impact on bank lending, we first characterize the deposits that FATCA affected. Foreign deposits, particularly those from tax havens, exhibit distinct stability characteristics compared to domestic core deposits. We distinguish between two fundamentally different types of tax haven deposits: domestic "state tax havens" and foreign offshore financial centers. These distinctions have important implications for deposit duration, stability, and the deposits' capacity to fund relationship lending.

Domestic state tax havens—such as South Dakota, Delaware, and Nevada—attract fiduciary deposits from domestic trusts, family offices, and wealth management vehicles.⁸

⁸South Dakota abolished the Rule Against Perpetuities in 1983, permitting perpetual dynasty trusts. As of 2025, Sioux Falls hosts over 50 trust companies managing \$165 billion in fiduciary assets. South Dakota-chartered banks hold \$3.5 trillion in total assets according to FDIC data, though most represent nationwide operations of institutions like Citibank, N.A. (Sioux Falls) rather than South Dakota trust activities (Harding

These deposits serve asset protection and estate planning, maintained in the United States under U.S. regulatory oversight with state-level tax treatment. The depositor base consists of domestic wealth vehicles, not rate-seeking institutional investors.

State tax haven deposits are classified as *savings deposits* due to their fiduciary structure. Trust companies hold custodial accounts for multiple beneficiaries, requiring continuous liquidity for distributions, reallocations, and fee payments. Because these funds must remain accessible on demand, they are placed in money market deposit accounts (MMDAs) or similar non-transactional savings deposits, not certificates of deposit with maturity restrictions.⁹

Foreign tax havens—the offshore financial centers we examine, such as the Cayman Islands, Singapore, Hong Kong, and the Bahamas—exhibit different deposit composition. These jurisdictions attract institutional depositors who structure placements as *time deposits*, contractual term deposits with 3-, 6-, or 12-month maturities.¹⁰ Foreign branches of U.S. banks are not constrained by Federal Reserve Regulation D definitions that apply domestically, allowing tailored deposit contracts where institutional depositors accept lock-in periods for higher yields or tax treatment. This structure made foreign tax haven deposits functionally similar to Eurodollar funding: term-structured wholesale placements

2013). Major institutions, including Citibank, established trust operations in Sioux Falls during the 1990s.

⁹Under Federal Reserve Regulation D, transaction accounts allow unlimited third-party payments, while savings deposits limit certain withdrawals but have no fixed maturity and earn interest. Trust accounts require interest-bearing instruments without maturity lock-up—precisely the savings deposit definition. They are non-transactional (so they do not count as checking accounts) but not term-restricted (so they are not time deposits). Banks in these jurisdictions report deposits as custodial, fiduciary, or inter-affiliate, classified as savings deposits (RCFD 2396) in Call Reports. Economic logic supports this: time deposits would impose early-withdrawal penalties unacceptable for fiduciary purposes, as trust funds may need to move rapidly between custodians or settle trades. Empirically, South Dakota-chartered trust banks such as Citibank, N.A. (Sioux Falls) and BNY Mellon Trust of Delaware show Call Reports with almost all deposits as savings deposits, with negligible time deposits and minimal lending activity.

¹⁰Foreign tax haven depositors include U.S. multinational subsidiaries managing inter-affiliate liquidity, hedge funds seeking tax-advantaged placements, correspondent banking relationships, and high net worth individuals holding wealth offshore for tax arbitrage (Alstadsæter, Johannesen, and Zucman 2018). BIS Locational Banking Statistics confirm that offshore financial centers show 60-70% of deposits in term or wholesale form, compared to predominantly savings deposits in domestic operations (McGuire and von Peter 2010). Before FATCA, offshore branches of major U.S. banks—including Citibank, JPMorgan Chase, and Bank of America—used these time deposits to fund cross-border lending and securities portfolios.

with contractual maturities that banks could match against long-duration assets. FATCA repatriation transformed these deposits into callable domestic savings deposits, altering the liability duration profile for affected banks even when aggregate deposit levels remained stable.

This state-versus-foreign distinction is central to our identification strategy. FATCA targeted foreign financial institutions and accounts held by U.S. persons offshore, while state tax haven deposits in South Dakota, Delaware, or Nevada were outside FATCA's jurisdiction. Our treatment group consists of banks with foreign tax haven branch operations (Cayman Islands, Singapore, Hong Kong, Bahamas, etc.), and variation in FATCA exposure operates through loss of foreign time deposits. The mechanism operates through the disruption of contractually committed, term-based funding, not through changes in domestic fiduciary savings deposits. Control banks include purely domestic banks and banks with foreign operations in non-tax-haven jurisdictions, neither of which experienced FATCA-induced deposit composition shocks. We empirically verify these characteristics, showing that foreign deposits in tax haven branches were predominantly time deposits before FATCA, while replacement domestic deposits took the form of savings deposits.

2.3. Hypotheses

Why should deposit composition changes affect small-business lending when total funding levels remain unchanged? This section develops the conceptual framework linking deposit structure to lending capacity, which we operationalize and test empirically in Sections 4 and 5.

Prior research on regulatory shocks and small-business lending identifies capital constraints as a primary transmission channel. Cortés et al. (2020) document that stress-tested banks reduced small-business lending by 13%, substituting toward lower-risk mortgage lending through capital adequacy requirements. Stress tests revealed capital shortfalls

that forced banks to reduce risk-weighted assets.

We propose an alternative mechanism: deposit composition changes disrupt banks' ability to fund long-duration relationship lending through duration mismatch. We build on the deposit franchise literature's core insight that stable deposits enable relationship lending by functioning as a hedge for banks' illiquid loan portfolios (Drechsler, Savov, and Schnabl 2017; Berlin and Mester 1999; Li, Loutskina, and Strahan 2023).

Drechsler, Savov, and Schnabl (2021) demonstrate that banks with stronger deposit franchises—able to pay deposit rates insensitive to market conditions—can supply more long-term credit because stable funding insulates them from refinancing risk. The deposit franchise operates as an implicit interest rate swap: banks accept the liability of paying stable deposit rates and hedge this by extending long-term, relationship-intensive loans. This mechanism is important for small-business lending, where informational opacity requires banks to make multi-year commitments based on soft information accumulated through relationships (Berger and Udell 1995; Petersen and Rajan 1994).

FATCA disrupted this deposit franchise mechanism through a specific channel: converting contractually committed foreign time deposits into on-demand domestic savings deposits. Before FATCA, banks with tax haven operations funded their loan portfolios partly with foreign time deposits held in offshore branches—contractual term deposits with maturities of 3, 6, or 12 months that provided predictable, committed funding.

These deposits served primarily institutional clients, including U.S. multinational subsidiaries managing inter-affiliate liquidity, hedge funds seeking tax-advantaged placements, and correspondent banking relationships. The wholesale nature of these deposits made them functionally similar to Eurodollar funding: large-denomination, term-structured placements with contractual lock-in periods that banks could match against long-duration assets.¹¹

¹¹Foreign branches of major U.S. banks historically used Cayman Islands, Bahamas, and Channel Islands operations to access wholesale dollar funding outside U.S. regulatory constraints. These deposits were predominantly classified as time deposits (Call Report items RCFN 6648, RCFN 2604) with explicit maturity

FATCA created detection risk for tax-motivated depositors, inducing repatriation to U.S. banks or shifts to non-IGA jurisdictions (Johannesen and Zucman 2014; De Simone, Lester, and Markle 2020; D’Avino, Fella, and Mendicino 2023). Repatriated funds returned as domestic savings deposits rather than time deposits.

Depositors valued flexibility and immediate access following the regulatory disruption. U.S. branches offered these funds as money market deposit accounts (MMDAs) and savings deposits rather than recreating the term structure available offshore. This reflected depositor preference for liquidity insurance after experiencing regulatory risk and banks’ inability to offer the same wholesale funding arrangements domestically under Federal Reserve Regulation D constraints.

Despite stable total deposit levels, this shift altered the bank’s liability structure from committed to callable funding—a transformation from contractually locked wholesale funding to on-demand retail funding with identical legal right of immediate withdrawal.

This distinction matters for lending capacity through a duration mismatch channel. Banks engage in maturity transformation, funding long-duration, illiquid loans (small-business loans with 5–10 year terms, relationship banking commitments spanning multiple credit cycles) with shorter-duration deposits.¹² Time deposits provide contractual lock-in periods during which banks face no withdrawal risk, enabling them to match funding duration to loan duration and support long-term relationship commitments. The duration gap—the difference between asset duration and liability duration—determines the bank’s exposure to liquidity and interest rate risks. When foreign time deposits (6–12 month contractual terms) are replaced with domestic savings deposits (legally withdrawable on

terms, in contrast to domestic savings deposits (RCFD 2396), which are callable on demand despite typical stability.

¹²A large literature examines how funding shocks affect bank lending. Kashyap and Stein (2000) formalized the bank lending channel, showing that banks with limited access to uninsured funding reduce lending more during monetary contractions. Ivashina and Scharfstein (2010) and Cornett et al. (2011) confirmed that wholesale funding disruptions during the 2008 crisis triggered credit contractions. More recently, Demyanyk, Loutskina, and Murphy (2022) document that banks relying on wholesale funding create less liquidity, while Granja and Leuz (2017) examine how stress test disclosures affect deposit flows.

demand), the liability duration contracts sharply while asset duration remains unchanged. This widens the duration gap, increasing the bank's vulnerability to deposit outflows and rising interest rates.

When banks instead fund long-duration relationship loans with demand deposits, they bear multiple risks. First, liquidity risk intensifies. Depositors can withdraw anytime, potentially forcing premature loan liquidation or denial of pre-committed credit lines. Second, interest rate risk increases. If rates rise, savings deposits reprice immediately while fixed-rate loans remain locked at old rates, compressing net interest margins. Third, funding stability becomes uncertain. Even if deposits are stable in expectation, the legal right of immediate withdrawal creates option value for depositors that constrains bank behavior.

Kashyap, Rajan, and Stein (2002) formalize this trade-off, showing that banks manage liquidity risk by holding buffer stocks or shortening asset maturity when funding becomes less stable. Even if deposits are stable in expectation, increased funding volatility forces banks to hold larger liquidity buffers, directly reducing lending capacity.

This compositional effect operates independently of funding levels. A bank maintaining \$100 million in total deposits experiences a binding constraint if those deposits shift from 3-month time deposits to overnight savings deposits, because the duration gap widens and the bank must either accept greater mismatch risk or contract long-duration lending to realign asset and liability durations.

Why should small-business lending bear the primary adjustment? Greenwald, Krainer, and Paul (2025) show that when banks face liquidity pressures, they accommodate existing credit line commitments from large firms while cutting term lending disproportionately to smaller borrowers lacking such commitments. Chodorow-Reich et al. (2020) document that 30% of credit lines extended to small SMEs are demand loans immediately callable by lenders, in contrast to committed facilities provided to large firms. Large, transparent firms receive committed liquidity backed by syndication markets and bond financing

alternatives, while small businesses depend entirely on individual bank relationships with discretionary contracts (Petersen and Rajan 1994; Berger et al. 2005). When banks experience funding pressure, small businesses become the marginal borrowers whose credit gets cut because banks face no contractual obligation to maintain discretionary facilities and because alternative lenders cannot easily substitute, given informational opacity.

The deposit composition mechanism we propose complements but differs from the aggregate funding shock literature. Prior work shows that banks reduce lending when they lose access to funding sources, with persistent effects on real outcomes. For instance, Chen, Hanson, and Stein (2017) document that large bank withdrawal from small-business lending during the financial crisis had lasting negative effects on local employment even after credit supply partially recovered, suggesting relationship-specific capital was destroyed. Our contribution is in demonstrating that funding composition matters independent of funding quantity. A bank that successfully substitutes \$1 billion of lost foreign time deposits with \$1 billion of domestic savings deposits maintains its total deposit base but loses its ability to fund long-duration relationship loans because the liability structure has changed. This extends Bai and Qin (2024)’s finding that wholesale-to-retail funding substitution is non-neutral by showing that even retail-to-retail substitution affects lending when the compositional change involves duration and commitment characteristics.

3. Data and Sample Construction

The conceptual framework developed in Section 2.3 generates testable predictions about how FATCA-induced deposit composition changes affected bank lending. Testing these predictions requires data linking bank-level funding composition, foreign branch operations, and small-business lending outcomes at fine geographic resolution.

This section describes the four primary data sources we combine to construct our

empirical sample: Call Reports for bank-level financial characteristics and foreign deposit measures, National Information Center records for tax haven branch operations, CRA data for small-business lending outcomes, and Summary of Deposits for local market structure. We then present summary statistics comparing banks with and without tax haven operations along key dimensions relevant to our identification strategy.

Three features of our data enable identification. First, the Call Report foreign deposit data allows us to measure FATCA exposure through pre-existing tax haven branch operations. Second, CRA small-business lending data provide county-level outcomes enabling within-county comparisons that absorb local demand shocks. Third, staggered IGA adoption timing creates variation in treatment timing that we exploit in robustness tests.

Our empirical analysis combines four data sources: bank-level characteristics, branch-level foreign operations, small-business lending activity, and local deposit market structure. We match these datasets using the Federal Reserve’s Research, Statistics, Supervision, and Regulation (RSSD) identifier.

3.1. Bank Call Reports

We obtain quarterly bank-level financial data from Consolidated Reports of Condition and Income (Call Reports) filed with the FFIEC for 2005Q1 through 2017Q4. FDIC-insured commercial banks and savings institutions file Call Reports, providing balance sheet and income statement information required for prudential supervision. We construct bank-level variables including total assets, capital ratios (Tier 1 capital divided by risk-weighted assets), return on assets, liquidity ratios (liquid assets divided by total assets), and funding composition measures.

Call Reports distinguish between domestic and foreign deposits through line items that report deposits booked at foreign branches (Schedule RC-M, items RCFN 6631 and RCFN 6636). Foreign deposits are deposits held at U.S. bank branches operating in for-

eign jurisdictions, which include our treatment group's tax haven branch operations. We calculate the share of foreign deposits in total deposits as our measure of exposure to FATCA-induced deposit composition shocks. We construct wholesale funding measures as the sum of federal funds purchased and securities sold under repurchase agreements (RCON 2800), subordinated debt (RCON 3200), and other borrowed money (RCON 2850), scaled by total liabilities.

Bank-level data are aggregated to the annual frequency by taking fourth-quarter values for stock variables and averaging across quarters for flow variables. We match Call Report data to bank holding company (BHC) level data using RSSD identifiers, which allows us to link subsidiary banks to their ultimate parent organizations. This is important because regulatory decisions, including foreign expansion strategies and FATCA compliance, are typically made at the holding company level.

3.2. National Information Center (NIC) Branch Structure Data

We identify banks' foreign branch operations using the Federal Reserve's National Information Center (NIC), which maintains comprehensive information on the organizational structure and branch networks of all banking organizations for which the Federal Reserve has supervisory, regulatory, or research interest. The NIC provides quarterly snapshots of active and historical branch locations, including both domestic branches within the United States and foreign branches in other jurisdictions.

For each bank, we identify the presence and location of foreign branches as of 2009, the year before FATCA enactment, to construct our treatment variable. A bank is classified as treated if it operated at least one branch in any of the eleven tax haven jurisdictions examined in this study: Bahamas, Bahrain, British Virgin Islands, Brunei, Cayman Islands, Channel Islands (Jersey and Guernsey), Hong Kong, Ireland, Lebanon, Panama, and Singapore. This treatment definition is time-invariant by construction, ensuring that our

identification strategy captures the ex-ante exposure to FATCA rather than endogenous responses to the regulation.

The NIC data also allow us to measure the intensity of tax haven exposure through several dimensions: the number of branches operated in tax haven jurisdictions, the number of distinct tax haven jurisdictions where a bank maintains operations, and the specific jurisdictions of operation. This granularity enables heterogeneity analysis by IGA adoption timing, as different tax haven jurisdictions signed Intergovernmental Agreements with the United States at different dates between 2013 and 2016.

3.3. Community Reinvestment Act (CRA) Small Business Lending Data

Our primary lending outcomes come from small-business lending data collected under the Community Reinvestment Act (CRA), enacted by Congress in 1977 to encourage depository institutions to meet the credit needs of their local communities. The CRA regulations require commercial banks and savings associations with total assets exceeding approximately \$1.25 billion (the threshold varies by year and is adjusted for inflation) to collect and report data on small-business and small-farm lending annually.

The CRA dataset reports small-business loans—defined as commercial and industrial loans and loans secured by nonfarm nonresidential real estate with original amounts of \$1 million or less—aggregated by lender, year, and census tract. For each bank-county-year observation, the data report the number and dollar volume of small-business loans originated or purchased during the calendar year, stratified by loan size categories (\$100,000 or less, \$100,000–\$250,000, \$250,000–\$1 million) and borrower revenue size (gross annual revenues of \$1 million or less versus greater than \$1 million). We aggregate census tract-level data to the county-level to construct our bank-county-year panel, which forms the basis for our lending analysis with county-year fixed effects.

An important feature of CRA data is that they capture credit supply decisions—loans

actually originated—rather than credit demand as proxied by applications. This distinction is valuable for our purposes because we aim to identify supply-side effects of FATCA-induced deposit composition changes. However, CRA data have several limitations. First, they exclude banks with assets below the reporting threshold, though such banks account for a small share of small-business lending. Second, the data report only originated loans, not applications or rejections, limiting our ability to distinguish supply from demand without additional analysis. Third, loan-level information is aggregated to geographic units, preventing firm-level analysis. Despite these limitations, CRA data represent the most comprehensive source of small-business lending information at the bank-geography-time level and have been widely used in prior research on bank credit supply.

3.4. FDIC Summary of Deposits (SOD)

We supplement our analysis with branch-level deposit data from the FDIC's Summary of Deposits (SOD), an annual survey conducted each June 30 of branch office deposits for all FDIC-insured institutions, including insured U.S. branches of foreign banks. The SOD reports the dollar amount of deposits held by each branch, the branch's geographic location (including street address, city, county, state, and MSA), and the date the branch was established or acquired.

The SOD data serve two purposes in our analysis. First, they allow us to construct geographic measures of bank presence and local market structure, including the number of branches each bank operates in a given county and the bank's deposit market share. These variables help control for the potential that banks with tax haven operations may also differ in their domestic geographic footprint in ways that correlate with small-business lending. Second, the SOD data enable us to examine whether FATCA-induced changes in foreign deposit composition propagated through domestic branch networks. For example, if foreign deposit outflows were replaced by increased domestic deposit gathering, we

might observe differential growth in domestic branch deposits for treated banks.

We match SOD data to our main dataset using FDIC Certificate Numbers and RSSD identifiers. The Federal Reserve’s attribute files provide a crosswalk between these identification schemes, ensuring accurate linkage across data sources. All deposit amounts are adjusted to real 2015 dollars using the GDP deflator.

3.5. Sample Construction and Summary Statistics

Our baseline sample includes all FDIC-insured commercial banks and savings institutions with total assets exceeding \$1 billion as of 2009. This asset threshold ensures that banks in our sample are subject to CRA small-business lending reporting requirements and are large enough to have made meaningful foreign expansion decisions. The \$1 billion cutoff is well below the smallest banks with tax haven operations in our sample, ensuring that the threshold itself does not mechanically define treatment status.

We exclude credit card banks, trust companies, and other specialized institutions that do not engage in traditional commercial lending. We also exclude banks that merged, failed, or were acquired during our sample period from the year of the structural change forward, though our results are robust to alternative treatments of mergers and acquisitions.

Table 1 presents summary statistics comparing treated (tax haven) banks to control (non-tax haven) banks along key dimensions including size, capitalization, profitability, funding composition, and lending activity. Table 2 shows the geographic distribution of small-business lending by treated versus control banks.

4. Empirical Strategy and Identification

Having described our data sources and sample construction, we now present our empirical strategy for identifying FATCA’s causal effect on deposit composition and small-business lending. We begin by specifying our main difference-in-differences regression models at

both the bank-year level (for funding outcomes) and bank-county-year level (for lending outcomes). We then discuss the identifying assumptions required for causal interpretation, with particular attention to separating FATCA effects from contemporaneous Basel III implementation. Finally, we operationalize the testable predictions derived from our conceptual framework in Section 2.3.

4.1. Main Specification

Our empirical strategy exploits variation in bank exposure to FATCA through their pre-existing branch operations in tax haven jurisdictions. We implement a difference-in-differences design comparing banks with tax haven branch operations (treated group) to banks without such operations (control group), before and after FATCA implementation. We examine outcomes at both the bank-year level (deposit composition) and the bank-county-year level (small-business lending).

4.1.1. Bank-level analysis

For bank-level outcomes related to funding composition, we estimate the following specification:

$$(1) \quad Y_{b,t} = \alpha_b + \alpha_t + \alpha_r + \beta \text{Treated}_b \times \text{Post}_t + \Gamma' X_{b,t} + \varepsilon_{b,t}$$

where b indexes banks, t indexes years, and r indexes primary regulatory agencies. The dependent variable $Y_{b,t}$ captures various aspects of bank funding composition, including the share of wholesale funding in total liabilities (WSF%), the share of foreign deposits in total deposits (Foreign Dep.%), the share of domestic deposits in total deposits (Domestic Dep.%), and the share of retail deposits in total deposits (Retail Dep.%). Treated_b is an indicator variable equal to one for banks with branch operations in tax haven jurisdictions

as of 2009, the year before FATCA enactment.¹³ $Post_t$ is an indicator variable equal to one for years 2011 and after. We set 2011 as the demarcation year because FATCA was enacted in March 2010, creating immediate uncertainty for banks and depositors, and the post-period captures both anticipatory responses and actual implementation effects leading up to the July 2014 withholding start date.

The coefficient β captures the differential effect of FATCA on funding composition for treated banks relative to control banks. For example, when $Y_{b,t}$ is Foreign Dep.%, a negative β indicates treated banks experienced larger declines in foreign deposits post-FATCA.

$X_{b,t}$ is a vector of time-varying bank-level control variables that account for characteristics that may correlate with both tax haven operations and funding or lending decisions, and Γ is the corresponding vector of coefficients. Specifically, we control for: log total assets (to capture bank size), Tier 1 capital ratio (capitalization strength), return on assets (profitability), liquidity ratio (the share of liquid assets in total assets), and wholesale funding share (reliance on non-deposit funding sources).

α_b , α_t , and α_r represent bank fixed effects, year fixed effects, and primary regulatory agency fixed effects, respectively. Bank fixed effects absorb all time-invariant heterogeneity across banks, including differences in business models, management quality, and strategic orientation that may have influenced the decision to establish foreign branches. Year fixed effects capture aggregate macroeconomic conditions, monetary policy changes, and common regulatory shocks affecting all banks. Primary regulatory agency fixed effects (Federal Reserve, OCC, FDIC, or state regulators) account for differences in supervisory intensity and regulatory treatment across agencies. We cluster standard errors at the bank-level to account for serial correlation in bank outcomes over time.

¹³Tax haven jurisdictions are defined following Dyreng, Hanlon, and Maydew (2008), Gravelle (2015), Dyreng, Hoopes, and Wilde (2016), and Andersen et al. (2022). The eleven tax haven jurisdictions in our sample are: Bahamas, Bahrain, British Virgin Islands, Brunei, Cayman Islands, Channel Islands (Jersey and Guernsey), Hong Kong, Ireland, Lebanon, Panama, and Singapore.

4.1.2. Bank-county-level analysis

For small-business lending outcomes, we exploit finer geographic variation by estimating:

$$(2) \quad Y_{b,c,t} = \alpha_b + \alpha_{c,t} + \alpha_r + \beta \textit{Treated}_b \times \textit{Post}_t + \Gamma' X_{b,t} + \varepsilon_{b,c,t}$$

where c indexes counties. The dependent variable $Y_{b,c,t}$ measures small-business lending activity, specifically the number of small-business loans originated (# of SBL) or the natural logarithm of the dollar volume of small-business loans ($\ln(\text{SBL})$). Small-business loans are defined as loans of \$1 million or less in principal amount, following standard definitions in the Community Reinvestment Act (CRA) data. Note that $X_{b,t}$ remains bank-level controls (not bank-county) as these characteristics vary at the bank-year level.

We also examine mortgage originations to distinguish between competing mechanisms. If FATCA operates through a duration mismatch channel—where the shift from committed time deposits to callable savings deposits constrains banks’ ability to fund long-duration assets—we expect both small-business and mortgage lending to decline, as both are long-term commitments requiring stable funding.

In contrast, if FATCA operates through a flight-to-quality or capital reallocation channel similar to stress testing effects (Cortés et al. 2020), we would expect small-business lending to decline while mortgage lending remains stable or increases, as banks substitute toward collateralized, lower-risk-weight assets.

Even under the duration mismatch mechanism, we expect small-business lending to respond more strongly than mortgage lending due to its lack of collateral, higher information opacity, greater monitoring costs, higher capital requirements, and relationship-specific investment that cannot be easily redeployed.

We find that both loan types decline with point estimates of similar magnitude, but

small-business lending shows statistically significant effects while mortgage lending does not. This pattern—joint decline with differential response intensity—supports the duration mismatch mechanism amplified by risk characteristics, and rules out pure flight-to-quality substitution.

The coefficient β measures the change in small-business lending for treated banks relative to control banks in the same county, holding constant county-level demand factors. This isolates the supply-side effect of FATCA-induced deposit composition changes.

The key innovation in equation (2) is the inclusion of county-year fixed effects ($\alpha_{c,t}$). These fixed effects absorb all time-varying county-level factors that affect credit demand, including local economic conditions, industry composition, house price dynamics, employment growth, and demographic changes. By comparing lending from treated versus control banks within the same county and year, we effectively control for local demand shocks that might otherwise confound our estimates. This identification strategy ensures that we are capturing credit supply effects rather than credit demand effects.

Bank fixed effects (α_b) continue to absorb time-invariant bank characteristics, while primary regulatory agency fixed effects (α_r) control for differences in supervisory treatment. We cluster standard errors at the bank-level, as treatment is determined at the bank-level and we are concerned about serial correlation in bank lending behavior.

4.2. Identification Strategy

Our identification strategy relies on a difference-in-differences framework that compares changes in outcomes for banks with tax haven operations to changes for banks without such operations, before and after FATCA implementation. The validity of this approach rests on several key identifying assumptions.

The core identifying assumption is that, absent FATCA, banks with tax haven operations would have experienced similar trends in funding composition and lending behavior as

banks without such operations. Formally, we require $\mathbb{E}[\Delta Y_{b,t} \mid Treated_b = 1] = \mathbb{E}[\Delta Y_{b,t} \mid Treated_b = 0]$ in the absence of FATCA. This parallel trends assumption would be violated if banks with tax haven operations were on differential trajectories prior to FATCA for reasons unrelated to the regulatory change. We test this assumption through event study specifications that estimate year-specific treatment effects:

$$(3) \quad Y_{b,t} = \alpha_b + \alpha_t + \alpha_r + \sum_{\tau \neq 2010} \delta_\tau Treated_b \times \mathbb{1}\{t = \tau\} + \Gamma' X_{b,t} + \varepsilon_{b,t}$$

where 2010 serves as the omitted base year. The coefficients δ_τ for $\tau < 2010$ test for differential pre-trends. Finding statistically insignificant pre-treatment coefficients ($\delta_{2005}, \dots, \delta_{2009} \approx 0$) provides evidence supporting the parallel trends assumption. Moreover, examining the timing of when effects emerge—whether they materialize immediately after FATCA enactment in 2010, during IGA negotiations in 2012-2014, or after withholding begins in mid-2014—helps us understand the channel through which FATCA affected bank behavior and strengthens the causal interpretation.

Our identification also requires that banks' pre-FATCA decisions to establish tax haven branches were not driven by anticipation of FATCA itself. This assumption is credible because most tax haven branch operations were established decades before FATCA was conceived. The Cayman Islands alone hosted 44 U.S. bank branches as of 2009, representing 46% of all U.S. tax haven branches, with many operations dating back to the 1970s and 1980s when offshore financial centers first emerged. Banks established these branches to serve two types of clients: foreign nationals with legitimate asset protection needs and U.S. persons seeking to minimize tax obligations. This client mix existed long before FATCA. The regulatory change specifically targeted the latter group through detection risk, creating exogenous variation in deposit stability unrelated to banks' initial expansion decisions.

However, a potential concern is that banks with tax haven operations may differ systematically in ways that correlate with their response to regulatory shocks. For example, these banks tend to be larger, more internationally oriented, and may have different risk appetites or business models compared to purely domestic banks. The bank fixed effects in equations (1) and (2) address this concern by absorbing all time-invariant differences between treated and control banks, including their size, complexity, international orientation, and management quality. Our identification comes solely from within-bank changes over time, comparing each bank to itself before and after FATCA rather than comparing different types of banks in levels.

A key identification challenge stems from the near-simultaneous implementation of Basel III capital and liquidity requirements during 2013-2015. Basel III final U.S. rules took effect January 1, 2014, for advanced approaches banks and January 1, 2015, for other banks—overlapping almost perfectly with FATCA’s July 1, 2014, withholding start date. If banks with tax haven operations were systematically subject to more stringent Basel III requirements, our estimates could reflect capital constraints rather than deposit composition effects.

We address this concern through two complementary approaches. First, Basel III and FATCA affected banks through distinct channels. Basel III imposed tiered requirements based on bank size, with the strictest standards applying to banks with assets exceeding \$250 billion. FATCA applied uniformly to all foreign financial institutions regardless of size, focusing specifically on accounts held by U.S. persons. This difference in regulatory focus provides identification leverage. If our effects were driven by Basel III capital constraints, they should be concentrated among the largest banks facing advanced approaches requirements. If effects are similar across bank size categories, this supports the FATCA interpretation.

Second, we exploit timing variation between FATCA enactment (March 2010) and Basel III implementation (January 2014-2015). If effects emerge during 2010-2013—after FATCA enactment but before Basel III became binding—this supports the FATCA channel. We

test this through event studies and period-specific treatment effects.

A potential concern is that treated banks' deposit losses may flow to control banks, creating spillover effects. For example, if U.S. depositors repatriate funds from tax haven branches and deposit them in domestic-only banks, control banks would experience inflows mechanically linked to treated banks' outflows.

However, several factors mitigate this concern. First, our bank-level analysis examines deposit composition (shares) rather than levels. Even if aggregate deposits are reallocated across banks, the compositional changes we document—treated banks shifting from foreign to domestic deposits—reflect changes in funding structure rather than pure deposit flight. Second, at the bank-county-level, the county-year fixed effects absorb local deposit supply shocks. Even if repatriated deposits flow to control banks in the same county, the fixed effects absorb this mechanical reallocation. Our estimates therefore capture only the differential lending response of treated versus control banks to changes in their deposit composition. Third, we show that control banks do not exhibit mirror-image patterns of increased foreign deposits or decreased domestic deposits, which would be expected if pure deposit shifting were driving results.

In equation (2), the county-year fixed effects enable us to identify credit supply rather than credit demand. By comparing lending from treated versus control banks within the same county and year, we hold constant local economic conditions, industry composition, house prices, employment, and all other factors that affect credit demand. Any remaining difference in lending must reflect supply-side factors specific to treated banks. This identification strategy is particularly powerful because it controls for unobservable credit demand that varies at the county-year level.

For example, if certain counties experienced differential economic shocks that both reduced credit demand and happened to be correlated with the presence of banks with tax haven operations, a bank-level analysis (without county-year fixed effects) would spuriously attribute demand-side effects to supply-side factors. The within-county comparison

eliminates this bias.

However, one potential concern is that treated and control banks may serve different types of borrowers within the same county. If treated banks (which tend to be larger, more sophisticated institutions) systematically lend to different segments of the small-business market than control banks, the observed lending differences could reflect compositional changes in borrower pools rather than pure credit supply effects. We address this concern by controlling for bank-level characteristics that proxy for lending specialization (size, capitalization, liquidity) and by showing that effects persist when we restrict to counties with multiple treated and control banks operating side-by-side, ensuring comparability of local lending markets.

Under these identifying assumptions, the coefficient β in equations (1) and (2) captures the causal effect of FATCA exposure on bank funding composition and credit supply.

Several potential identification threats warrant robustness tests. Basel III's near-simultaneous implementation could confound our results if treated banks faced binding capital constraints. We address this by exploiting cross-sectional variation in Basel III treatment (which varies by bank size) versus FATCA exposure (which varies by tax haven presence), and by exploiting timing variation between FATCA enactment (2010) and Basel III implementation (2014-2015). Alternative mechanisms including compliance costs, reputational risk, or unwinding of complex offshore structures could also explain our findings. We examine these channels in our robustness tests. Demand-side explanations remain possible despite county-year fixed effects. We use CRA loan application data to distinguish supply versus demand. Sample construction choices could also drive results. We conduct propensity score matching, use foreign banks as alternative controls, and exploit staggered IGA adoption across jurisdictions for dynamic treatment effects.

5. Results

5.1. FATCA and Deposit Composition

Banks operating in domestic "state tax havens" (South Dakota, Delaware, Nevada) experienced no changes in deposit composition post-FATCA (untabulated). This null result further confirms that FATCA's effects operated through foreign offshore deposits rather than domestic fiduciary deposits, consistent with the regulation's specific targeting of foreign financial institutions and accounts held by U.S. persons outside the United States.

5.2. FATCA and Small Business Lending

The lending reduction effects concentrate in banks' local operations rather than non-local activities (untabulated). Banks with tax haven operations reduced small-business lending in counties where they have physical branch presence more than in counties where they lend without a local branch network. This pattern is consistent with relationship lending being disrupted—local branches facilitate the soft information collection and relationship monitoring that characterize small-business lending, and these relationship-intensive activities were most affected by the deposit composition shock.

6. Robustness Tests

Our baseline results document effects of FATCA exposure on small-business lending. This section addresses four primary concerns: (1) confounding from contemporaneous Basel III implementation, (2) alternative mechanisms beyond the funding composition channel, (3) demand-side explanations, and (4) sample selection and specification sensitivity.

6.1. Separation from Basel III Effects

The primary identification challenge stems from the near-simultaneous implementation of Basel III capital and liquidity requirements. Basel III's U.S. rules became effective January 1, 2014, for advanced approaches banks (assets $\geq$ \$250 billion) and January 1, 2015, for all other banks—overlapping almost perfectly with FATCA's July 1, 2014, withholding start date. If banks with tax haven operations were systematically weaker or more internationally exposed, they would face binding Basel III constraints independent of FATCA deposit effects. We present several tests to separate these two regulatory shocks.

Heterogeneous Effects by Bank Size. Basel III applied more stringently to larger banks, particularly those exceeding \$250 billion in assets. If Basel III capital requirements are the primary driver, effects should concentrate among the largest banks facing the most stringent requirements. In contrast, FATCA applied uniformly to all foreign financial institutions regardless of size. We estimate heterogeneous treatment effects across four bank size categories based on 2009 assets. If we observe similar treatment effects across bank size categories, this supports the FATCA interpretation.

Triple-Difference Specification. To more directly separate FATCA from Basel III effects, we implement a triple-difference specification that interacts FATCA exposure with Basel III treatment intensity. This approach exploits the fact that while both regulations were implemented during 2013-2015, they affected banks through different channels and with different treatment intensities.

The logic is straightforward: banks with tax haven operations faced FATCA compliance obligations and deposit composition changes, while banks subject to advanced approaches Basel III (assets $\geq$ \$250 billion or foreign exposure $\geq$ \$10 billion) faced stricter capital and liquidity requirements. The triple interaction term captures whether FATCA effects differ

for banks facing stricter Basel III requirements. If FATCA and Basel III operated through independent channels—deposit composition versus capital constraints—the interaction should be insignificant. Finding that FATCA effects persist even after controlling for Basel III treatment intensity would strongly support our interpretation.

Timing Analysis: Enactment vs. Implementation. Basel III implementation occurred in phases, with rules published in October 2013 but not becoming binding until January 2014-2015. FATCA was enacted in March 2010 but withholding didn't begin until July 2014. We exploit this timing variation to distinguish between anticipatory responses to FATCA versus actual Basel III implementation effects.

The key insight is that if effects emerge during 2010-2013—after FATCA enactment but before Basel III became binding—this would support the FATCA channel operating through anticipatory deposit movements. Johannesen and Zucman (2014) documented that taxpayers began shifting offshore deposits in response to bilateral tax information exchange treaties well before those treaties were fully implemented. Similarly, if U.S. taxpayers began closing or transferring tax haven accounts between 2010 and 2013 in anticipation of FATCA reporting requirements, banks would experience deposit composition changes during this period.

6.2. Alternative Explanations: Non-Deposit Channels

Even if we successfully separate FATCA from Basel III, several alternative mechanisms could explain our findings that do not operate through deposit composition changes. We organize these alternative explanations around distinct causal channels and present evidence distinguishing each from our proposed duration mismatch mechanism.

Compliance Cost Channel. FATCA imposed substantial compliance costs on FFIs, ranging from \$25,000 for smaller institutions to over \$1 million for large banks (Morse 2012).

Banks with extensive tax haven operations may have faced disproportionate costs from implementing customer due diligence systems, upgrading information technology, hiring compliance personnel, and navigating complex IGA requirements across multiple jurisdictions. If these costs were sufficiently large, banks might have reduced lending to preserve profitability rather than because of deposit composition changes.

If compliance costs drive our results, lending reductions should be proportional to compliance cost burdens, measured by the number of foreign branches, number of foreign countries with operations, and exposure to heightened regulatory scrutiny (e.g., banks named in Department of Justice investigations). We control for proxies of FATCA compliance complexity in our baseline lending regressions. Specifically, we interact the treatment indicator with: (1) log number of foreign branches, (2) number of distinct foreign jurisdictions, and (3) an indicator for banks subject to DOJ investigation related to offshore tax evasion (UBS, Credit Suisse, and others documented in Section 2).

If the compliance cost channel dominates, effects should be stronger for banks with higher compliance complexity, and the baseline treatment effect should attenuate substantially when controlling for these proxies. If effects persist with similar magnitudes across complexity levels, this supports deposit composition rather than compliance costs as the primary driver.

Reputational Risk Channel. The UBS scandal (2008-2009), Wegelin bank closure (2013), and subsequent prosecutions of Credit Suisse and other Swiss banks created substantial reputational risk for financial institutions with tax haven operations. Banks may have feared being perceived as facilitators of tax evasion, potentially triggering Department of Justice investigations, regulatory sanctions, or customer flight. In response, banks might have strategically reduced visible activities like small-business lending to lower their profile with regulators and avoid scrutiny.

If reputational risk drives our results, banks with tax haven operations should experi-

ence negative market reactions (stock returns, CDS spreads) around key FATCA-related enforcement events, and lending reductions should correlate with the magnitude of reputational damage. We examine cumulative abnormal stock returns and changes in credit default swap spreads for treated versus control banks during event windows around: (1) UBS settlement (February 2009), (2) FATCA enactment (March 2010), (3) FATCA implementation (July 2014), and (4) Credit Suisse guilty plea (May 2014). We then include these market-based measures of reputational damage as controls in our lending regressions.

If the reputational channel operates, we should observe negative differential market reactions for treated banks. Moreover, if controlling for these market-based reputational measures eliminates our baseline lending effects, this would support reputation over deposit composition. Conversely, finding no differential market reactions or persistent lending effects after controlling for reputation would rule out this channel.

Structured Finance Unwinding Channel. De Simone, Lester, and Markle (2020) document that some tax haven deposits represented U.S. funds "round-tripped" through offshore entities. U.S. residents transferred wealth to foreign accounts, which then invested back into U.S. markets through structures that obscured beneficial ownership. FATCA may have forced unwinding of these complex structures as taxpayers could no longer maintain anonymity. If specific small-business lending relationships were tied to these round-tripping structures (e.g., loans to entities controlled by the same individuals with offshore accounts), FATCA could have disrupted these relationships independently of general deposit composition effects.

If this mechanism operates, effects should be concentrated in banks with exposure to jurisdictions commonly used for round-tripping U.S. investment (Cayman Islands, British Virgin Islands, Luxembourg) rather than pure wealth management centers (Singapore, Switzerland). We estimate heterogeneous treatment effects by jurisdiction type, classifying tax havens into: (1) round-tripping centers (Cayman, BVI, Luxembourg) with easy

incorporation of anonymous shell companies and proximity to U.S. markets, versus (2) wealth management centers (Singapore, Switzerland, Hong Kong) serving primarily foreign nationals. We also examine whether effects are concentrated in commercial lending to entities with complex ownership structures.

If round-tripping unwinding dominates, effects should be stronger for banks with exposure to round-tripping jurisdictions. Observing consistent effects across both jurisdiction types supports a general deposit stability mechanism rather than specific structured finance relationships.

The small-business lending effects concentrate among banks with foreign tax haven operations, not domestic state tax havens (South Dakota, Delaware, Nevada), consistent with FATCA's targeting of foreign accounts (untabulated). This result is consistent with FATCA targeting foreign accounts held by U.S. persons—domestic state tax haven deposits were outside FATCA's jurisdiction and thus did not experience the regulatory shock that disrupted foreign deposit stability.

6.3. Mechanism Refinement: Distinguishing Deposit Channels

Having addressed alternative non-deposit explanations, we now refine our understanding of the deposit composition mechanism itself. Two potential channels could link deposit composition changes to lending reductions: duration mismatch (our proposed mechanism) versus general risk rebalancing.

Duration Mismatch vs. Risk Rebalancing. Under the duration mismatch channel, foreign deposits provided contractually committed funding with explicit maturities (3, 6, or 12 months), enabling banks to make long-term relationship loans despite maturity transformation risk. FATCA converted these time deposits into callable domestic savings deposits, widening the duration gap between assets and liabilities. Banks responded by shortening asset duration, reducing both the volume and maturity of relationship lending.

Under the risk rebalancing channel, FATCA increased general funding uncertainty, causing banks to reduce overall risk-taking by cutting lending to opaque, risky borrowers (small businesses) independent of duration considerations. Banks maintained or increased lending to safe, collateralized borrowers (mortgages, commercial real estate).

These two channels generate different predictions. For loan maturity, duration mismatch predicts declining average maturity for new loans (banks shorten asset duration to match shorter liability duration). Risk rebalancing predicts stable maturity but declining volume to risky borrowers. For loan type substitution, duration mismatch predicts both small-business and mortgage lending decline (both are long-duration assets requiring stable funding). Risk rebalancing predicts substitution from small-business loans (risky, uncollateralized) toward mortgages (safe, collateralized). For borrower heterogeneity, duration mismatch predicts effects across all borrower types requiring long-term funding. Risk rebalancing predicts effects concentrated among riskiest borrowers (smallest loans, lowest-revenue firms).

We examine: (1) average maturity of newly originated small-business loans (using available maturity data in CRA disclosures), (2) mortgage originations alongside small-business lending (Table 8 Panel B presents these results), (3) commercial real estate lending (long-duration, collateralized), and (4) heterogeneity by loan size and borrower revenue. Finding that (a) loan maturity declined, (b) both small-business and mortgage lending declined rather than substituting, and (c) effects are present across borrower types (not just riskiest) would support duration mismatch. Finding stable maturity with substitution toward collateralized lending concentrated among riskiest borrowers would support risk rebalancing.

Interest Rate Sensitivity Channel. Ahmed (2024) shows that foreign deposits exhibit higher deposit betas (greater interest rate sensitivity) than domestic deposits due to their uninsured treatment and exposure to multiple monetary policy regimes. If FATCA-induced

deposit composition shifts increased banks' overall deposit beta, this could affect lending through interest rate risk channels rather than duration mismatch (Ahmed 2024).

If this channel operates, lending effects should be concentrated during periods of interest rate volatility and should correlate with changes in banks' deposit rate sensitivity (deposit beta). We examine whether our effects are stronger during periods of rising interest rates and whether banks experienced differential changes in deposit betas post-FATCA.

This mechanism is unlikely to drive our results for three reasons. First, our sample period (2005-2015) was characterized by near-zero policy rates with minimal variation post-2008. The Federal Reserve held the federal funds rate at 0-0.25% from December 2008 through December 2015, eliminating deposit rate competition during the FATCA implementation period (Bernanke 2015). Second, ultra-high-net-worth depositors using offshore accounts for wealth preservation are less interest-rate elastic than retail depositors seeking yield, as these deposits remained stable for decades despite varying rate environments. Third, our findings are concentrated in the immediate post-FATCA period (2010-2014) when regulatory detection risk, not interest rate changes, drove deposit reallocations. The timing, magnitude, and cross-sectional patterns we observe are more consistent with regulatory shock than interest rate sensitivity.

6.4. Demand-Side Explanations

Our county-time fixed effects absorb local economic conditions, but residual demand concerns remain. Perhaps counties with greater exposure to banks with tax haven operations experienced differential economic shocks that reduced credit demand. We conduct tests to rule out demand-side explanations.

Loan Application Data. Using confidential Community Reinvestment Act (CRA) loan application data, we examine whether application rates or rejection rates changed differentially

for treated versus control banks. This test directly distinguishes supply-side credit tightening from demand-side application reductions.

If credit supply contracted, we should observe: (1) stable or increasing application rates to treated banks (borrowers still seeking credit), combined with (2) increasing rejection rates and (3) declining approved loan amounts. This pattern would indicate banks turned away willing borrowers. Alternatively, if applications to treated banks declined while rejection rates remained stable, this suggests borrowers anticipated credit unavailability and shifted to other banks (demand-side substitution). Finally, if both applications and rejections declined proportionally, this could indicate either general demand weakness or that borrowers and banks mutually disengaged from lending relationships.

The CRA data is particularly valuable because it contains loan-level application information including borrower characteristics, requested loan amounts, and bank decisions. This granularity allows us to control for changes in applicant quality that might spuriously appear as supply-side tightening. For example, if economic conditions deteriorated in counties served by treated banks, we might observe declining approvals simply because applicant quality declined—a demand-side effect. Controlling for observable borrower characteristics helps isolate the pure supply-side component.

Within-Firm Analysis. For counties where multiple banks operate, we can examine whether the same borrower received different treatment from treated versus control banks. Following Khwaja and Mian (2008), we include firm-county-time fixed effects that absorb all borrower-specific credit demand, investment opportunities, and creditworthiness.

This specification is the gold standard for identifying credit supply shocks because it compares lending from different banks to the exact same borrower at the same point in time, completely eliminating demand-side variation. If we continue to find negative effects of FATCA exposure even with firm-county-time fixed effects, this conclusively demonstrates a supply-side mechanism—the same borrower, seeking the same credit,

received less from FATCA-exposed banks than from non-exposed banks.

One limitation is data availability: CRA data does not contain firm-level identifiers that would allow us to directly observe multiple lending relationships for the same firm. We can approximate this identification strategy by using finer geographic controls (ZIP code or census tract fixed effects) and borrower size categories available in CRA data. While not as clean as true within-firm identification, this approach substantially tightens the comparison and reduces concerns about unobserved borrower heterogeneity.

6.5. Sample and Specification Robustness

We conduct several robustness tests to ensure our results are not sensitive to sample construction or specification choices.

Alternative Control Groups. Our baseline uses all banks without tax haven operations as controls. However, this comparison may be problematic if banks with tax haven operations differ systematically in ways beyond FATCA exposure. We consider three alternative control group definitions to assess robustness.

First, we implement propensity score matching to construct a control group of banks that are observably similar to treated banks on pre-treatment characteristics. The propensity score approach addresses a fundamental concern: banks that establish foreign tax haven operations are not randomly selected from the population of all banks. They are likely larger, more internationally oriented, serve different customer bases, and may have different risk appetites or business models. If we simply compare all tax haven banks to all non-tax haven banks, we may be comparing fundamentally different institutions, and our treatment effect estimates could be contaminated by these pre-existing differences.

We estimate a logit model predicting the probability that a bank has tax haven operations based on 2009 characteristics: total assets (to capture size), Tier 1 capital ratio (financial strength), ROA (profitability), liquidity ratio (funding structure), wholesale fund-

ing share (reliance on non-deposit funding), and geographic footprint measured by the number of states with branch operations (complexity and reach). Using the predicted probabilities from this model, we match each treated bank to one or more control banks with similar propensity scores using nearest-neighbor matching with replacement and a caliper restriction to ensure close matches.

The matched sample has several advantages. First, it ensures that treated and control banks have similar observable characteristics in the pre-treatment period, strengthening the parallel trends assumption. Second, it focuses the comparison on banks that were ex-ante similar, improving the credibility of our counterfactual—what would have happened to treated banks absent FATCA. Third, matching can improve precision by reducing heterogeneity in the control group. If our results persist in the matched sample, this provides strong evidence that FATCA exposure, rather than pre-existing bank characteristics, drives the lending effects we document.

Second, we use foreign banking organizations with U.S. operations as an alternative control group. These banks faced FATCA obligations (they are foreign financial institutions required to identify U.S. account holders) but their deposit structures differ from U.S. banks with foreign tax haven branches. This test helps distinguish FATCA compliance costs (which foreign banks also bore) from deposit composition effects (which should be specific to U.S. banks losing tax haven deposits). If we observe similar effects using foreign banks as controls, this suggests compliance costs dominate. If effects disappear or reverse, this supports the deposit composition channel being specific to U.S. banks with tax haven operations.

Third, we restrict the control group to large banks (assets > \$10 billion) to ensure we're not comparing large international banks to small community banks with fundamentally different business models. This addresses the concern that size itself drives differential lending behavior rather than tax haven exposure. Community banks under \$10 billion typically focus on local relationship lending and rarely have foreign operations, while

banks over \$10 billion are more likely to have the scale and sophistication to consider international expansion. By restricting to large banks only, we compare treated banks to the subset of control banks that could plausibly have established tax haven operations but chose not to.

Consistent results across these alternative control group definitions would strengthen confidence that we're identifying a genuine FATCA effect rather than an artifact of how we define treatment and control groups.

Dynamic Treatment Effects by IGA Timing. Our baseline exploits the July 1, 2014 FATCA withholding date as the treatment event. However, Intergovernmental Agreement (IGA) signing dates varied substantially across jurisdictions, ranging from Ireland and Switzerland in early 2013 to Singapore, Hong Kong, and Bahrain in late 2014-2015. This staggered adoption provides additional identification leverage.

The institutional details matter for interpretation: while FATCA withholding became effective uniformly on July 1, 2014, the practical compliance environment differed across jurisdictions based on IGA timing. Early IGA adopters created clearer paths for FFI compliance and may have induced earlier deposit movements as taxpayers anticipated information sharing. Late adopters created uncertainty about compliance requirements, potentially delaying deposit responses.

We classify banks by their exposure to early-IGA jurisdictions (Ireland, Switzerland, Cayman Islands—signing before 2014) versus late-IGA jurisdictions (Singapore, Hong Kong, Bahrain, Panama—signing after July 2014). If deposit composition effects drove lending reductions, we should observe earlier effects for banks with early-IGA exposure. This timing pattern is inconsistent with a pure Basel III story (which had uniform timing) or general post-crisis deleveraging.

The test also addresses concerns about spurious correlation with other time-varying bank characteristics. If treated banks were simply on declining trajectories for reasons

unrelated to FATCA, we wouldn't expect the timing of effects to vary systematically with IGA adoption timing in the specific jurisdictions where banks had operations.

Bank-level aggregation following Carletti et al. (2021, JFE) confirms our county-level findings: banks with tax haven operations reduced aggregate small-business lending relative to control banks post-FATCA (untabulated). The consistency between bank-level and bank-county-level results strengthens our interpretation that deposit composition changes affected overall lending capacity rather than reflecting geographic reallocation of credit within banks.

Excluding Financial Crisis Period. Our baseline sample spans 2005-2017, including the 2008-2009 financial crisis. The crisis itself may have fundamentally altered bank-borrower relationships in ways that affect our estimates. Banks that suffered severe losses during the crisis may have permanently changed their approach to relationship lending. Counties that experienced housing busts may have seen persistent changes in credit demand and small-business formation.

We address this by re-estimating our specifications excluding 2008-2010, and alternatively starting the sample in 2011 to focus purely on the post-crisis recovery period. This test is conservative because it reduces our sample size and limits the pre-treatment period available for assessing parallel trends. However, it ensures our results are not mechanically driven by differential crisis experiences between treated and control banks.

If effects persist when excluding the crisis period, this suggests FATCA genuinely affected lending during the 2014-2017 period rather than our estimates reflecting lingering crisis dynamics. This is particularly important because the crisis itself saw massive small-business lending reductions (20% decline from 2008-2014 according to our background document), and we need to ensure we're not simply capturing the tail end of crisis-related deleveraging that happened to coincide with FATCA timing.

Consistent results across these sample period definitions would demonstrate that our

findings reflect genuine FATCA effects during 2014-2017 rather than artifacts of including the crisis period in our estimation window.

7. Conclusion and Policy Implications

This paper documents that information transparency regulation can have unintended consequences for domestic credit markets through bank funding composition channels. Exploiting FATCA implementation in 2014, we find that banks with tax haven operations experienced deposit composition shifts—foreign time deposits declined while domestic savings deposits increased—that reduced small-business lending even when total deposit levels remained stable. The effects are economically meaningful and persist across multiple robustness tests. Cross-sectional and timing tests exploiting variation in bank size, IGA adoption timing, and FATCA enactment versus Basel III implementation support a causal interpretation and rule out alternative explanations including capital constraints, compliance costs, and demand-side factors. The mechanism operates through duration mismatch: converting contractually committed time deposits to callable savings deposits widened the duration gap between assets and liabilities, constraining banks’ capacity to fund long-term relationship lending.

Our findings have implications for financial regulation design. Policymakers evaluating transparency regulations typically focus on direct compliance costs and tax revenue effects, but our results show that funding composition changes can generate spillovers to credit markets even when banks successfully substitute funding sources to maintain aggregate levels. The effects concentrate in relationship lending to small businesses—borrowers who depend on stable bank funding and cannot easily access alternative credit sources—suggesting that regulatory shocks affecting bank liability structures may disproportionately harm informationally opaque borrowers. More broadly, our results demonstrate that funding substitution is non-neutral: banks cannot seamlessly replace one funding source with

another of equal quantity but different structural characteristics without affecting lending behavior. This insight extends beyond FATCA to any regulatory change affecting deposit composition, including recent debates about deposit insurance reform, stablecoin regulation, and central bank digital currencies, all of which could alter the composition and contractual structure of bank funding sources.

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Figures and Tables

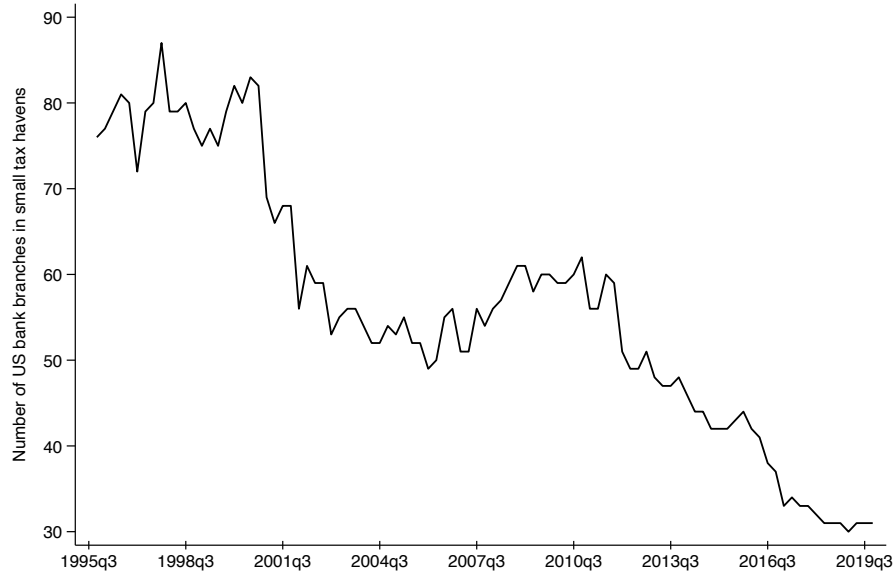


FIGURE 1. US Bank Branches in Small Tax (i.e., Dot) Havens

This figure plots aggregate time-series evolution of the number of US bank branches located in small tax (dot) havens from 1995q3 to 2019q3. Dot haven jurisdictions are defined in Hines and Rice (1994), Desai et al. (2006), Dyreng and Lindsey (2009), and Dyreng et al. (2020). These jurisdictions include: Aruba, Bahamas, Bahrain, British Virgin Islands, Brunei, Cayman Islands, Channel Islands, Macau, Marshall Islands, Monaco, Netherlands Antilles, and Palau.

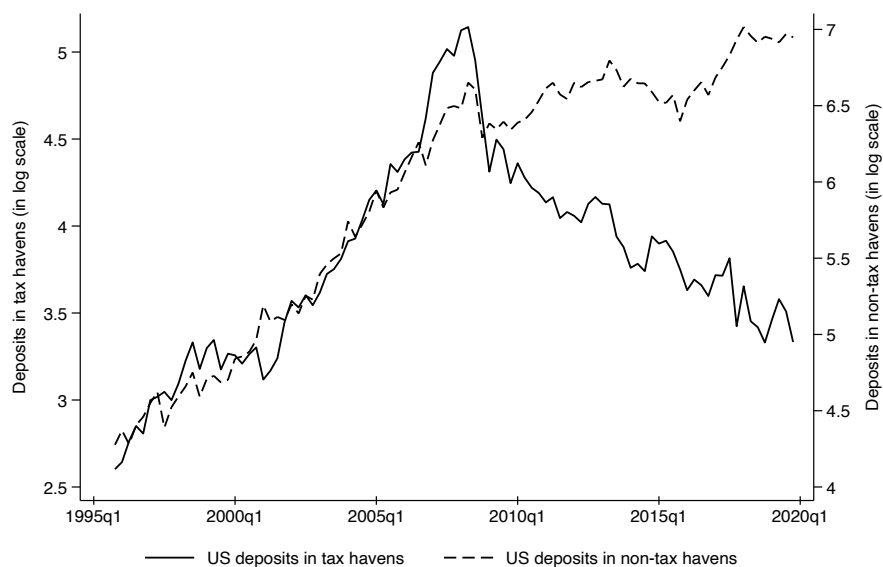


FIGURE 2. US Deposits in Tax Havens vs. Non-Tax Havens

This figure plots aggregate time-series evolution of: (1) cross-border deposits held by US residents in tax haven jurisdictions and (2) cross-border deposits held by US residents in non-tax haven jurisdictions. The sample period spans from 1995q1 to 2020q1. Cross-border deposits represent liabilities (in the form of deposits and loans) of financial institutions located across tax haven and non-tax haven jurisdictions. These liabilities are held by US non-banking sector. Tax haven jurisdictions are defined in Dyreng and Lindsey (2009), Gravelle (2015), Dyreng et al. (2020), and Andersen et al. (2022). In this figure, the following set of tax haven jurisdictions are included: Austria, Belgium, Chile, Guernsey, Hong Kong, Ireland, Isle of Man, Jersey, Luxembourg, Macao, and Switzerland. Deposit values are presented in log scale.

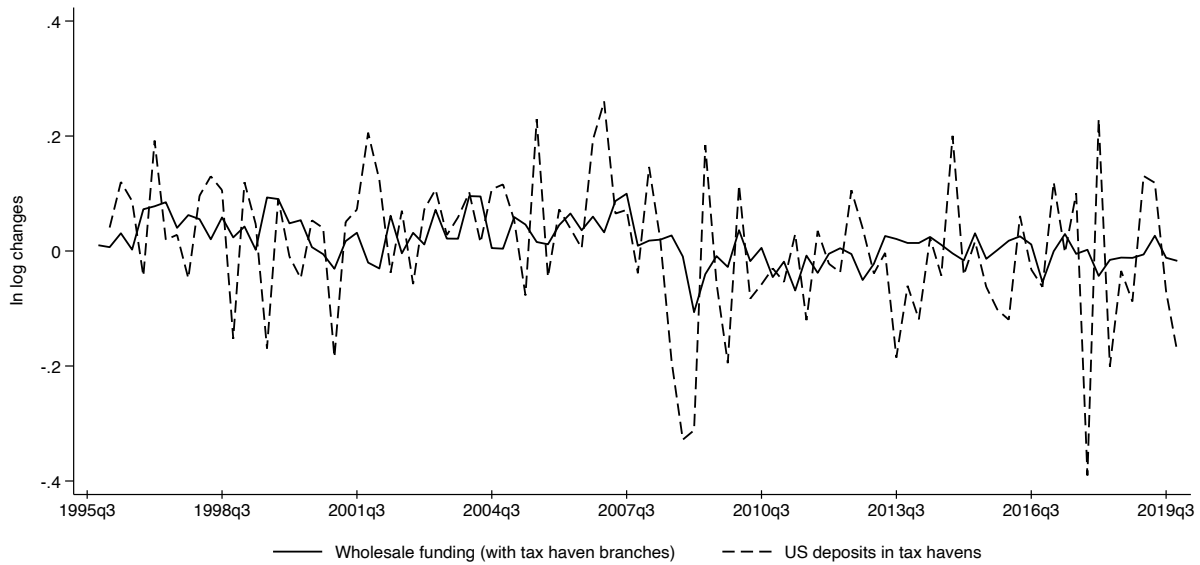


FIGURE 3. Wholesale Funding and US Deposits

This figure plots the time-series of the log change in aggregate wholesale funding of banks with tax haven branch operations and the log change in aggregate deposits held by US residents in tax haven jurisdictions. Wholesale funding is the sum of (1) other borrowed money owed to unrelated entities in foreign countries and the U.S. and others, (2) Fed funds purchased and securities sold under repurchase agreements, (3) foreign deposits, and (4) subordinated debt. US deposits in tax haven jurisdictions represent liabilities (in the form of deposits and loans) of financial institutions located in tax haven jurisdictions. These liabilities are held by US non-banking sector. One caveat to note is that tax haven jurisdictions represented across the two plotted time-series are not identical. For example, the publicly disclosed Locational Banking Statistics (LBS) data provided by the Bank for International Settlements (BIS), the source of US deposit series, does not provide information on US deposits in Cayman Islands. The sample period spans from 1995q3 to 2019q3.

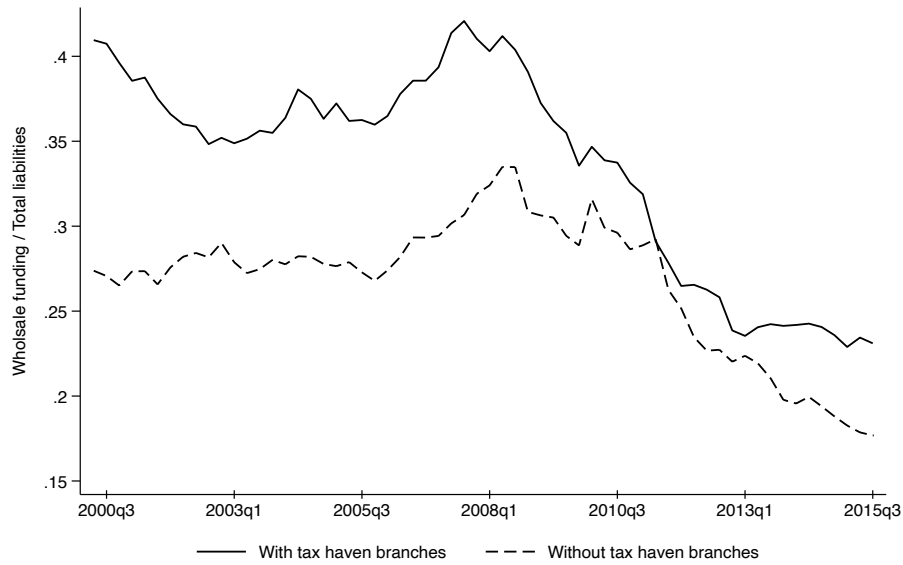


FIGURE 4. Wholesale Funding over Time

This figure plots the aggregate share of wholesale funding in bank liabilities for banks with vs. without tax haven branch operations. The sample period spans from 2000q1 to 2015q4. Wholesale funding is the sum of (1) other borrowed money owed to unrelated entities in foreign countries and the U.S. and others, (2) Fed funds purchased and securities sold under repurchase agreements, (3) foreign deposits, and (4) subordinated debt. Tax haven jurisdictions are defined in Dyreng and Lindsey (2009), Gravelle (2015), Dyreng et al. (2020), and Andersen et al. (2022). The tax haven jurisdictions represented in this figure are: Bahamas, Bahrain, British Virgin Islands, Brunei, Cayman Islands, Channel Islands, Hong Kong, Ireland, Lebanon, Panama, and Singapore.

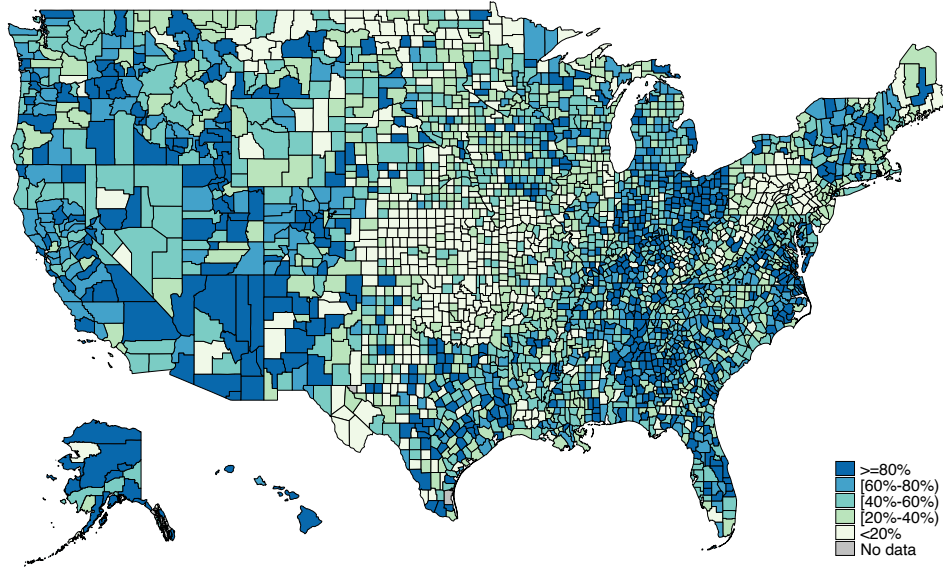


FIGURE 5. Geographic Distribution of Small Business Lending

This figure plots the cross-county distribution of small-business lending by banks with tax haven branch operations. This snapshot is for the year prior to the enactment of Foreign Account Tax Compliance Act (FATCA), i.e., 2009. We calculate the share of banks with branch operations in tax havens extending small-business loans in each county. The cross-county distribution of this share measure is then divided into quintiles. Darker shades represent counties taking loans from higher share of banks with tax haven branch operations. “No data” represents counties with no small-business lending activity reported by banks with tax haven branch operations in 2009. Tax haven jurisdictions are defined in Dyreng and Lindsey (2009), Gravelle (2015), Dyreng et al. (2020), and Andersen et al. (2022). The tax haven jurisdictions in which banks in our sample set up their branches include: Bahamas, Bahrain, British Virgin Islands, Brunei, Cayman Islands, Channel Islands, Hong Kong, Ireland, Lebanon, Panama, and Singapore.

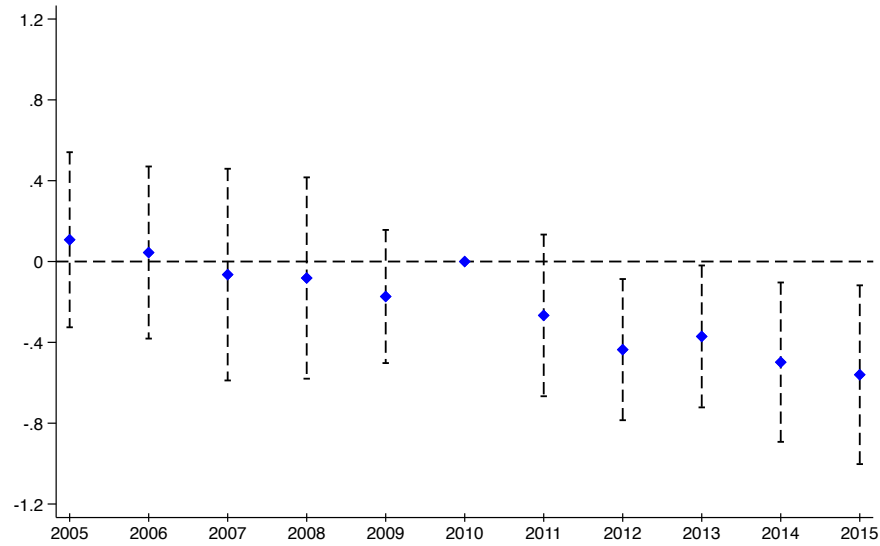


FIGURE 6. Dynamic Effects of FATCA on Small Business Loan Originations

This figure plots the small-business lending outcome processes for banks with vs. without branch operations in tax haven jurisdictions. The outcome variable of interest is the natural log of small-business loans originated by bank b in county c . Banks with branch operations in tax haven jurisdictions are considered as the treated group, and banks without branch operations in tax haven jurisdictions are considered as the control group. The point estimates and 95% confidence intervals of the effect of FATCA on small-business lending are plotted for the [2005, 2015] window. 2010 serves as the reference year.

TABLE 1. Banks with Branches in Tax Havens

	Assets (in \$billions in 2009)
Bank of America	\$1,577.18
Citibank	\$1,192.51
Wells Fargo	\$595.60
First Union	\$508.20
PNC Bank	\$271.33
Star Banc Corporation	\$270.71
HSBC Bank USA	\$167.93
The Bank of New York Mellon Corporation	\$165.59
SunTrust Bank	\$165.32
Branch Banking and Trust Company	\$158.60
State Street Bank and Trust Company	\$144.48
Regions Financial Corporation	\$136.64
Capital One	\$127.78
Citizens Bank	\$119.89
TD Bank	\$112.49
Fifth Third Bank	\$109.42
KeyBank	\$92.37
JPMorgan Chase Bank	\$86.41
Union Bank of California	\$81.97
Compass Bancshares	\$66.87

This table presents top-20 banks in size—measured in total assets—with branches in tax haven jurisdictions as of 2009, i.e., a year prior to the enactment of Foreign Account Tax Compliance Act (FATCA). Tax haven jurisdictions are defined in Dyreng and Lindsey (2009), Gravelle (2015), Dyreng et al. (2020), and Andersen et al. (2022). The tax haven jurisdictions in which banks in our sample set up their branches include: Bahamas, Bahrain, British Virgin Islands, Brunei, Cayman Islands, Channel Islands, Hong Kong, Ireland, Lebanon, Panama, Singapore, and Uruguay. Total assets are in expressed in billions of USD.

TABLE 2. Branch Locations across Tax Havens

	Dot Haven	# of Branches	Percent	IGA Date
Cayman Islands	✓	44	45.83	Nov 2013
Hong Kong		25	26.04	Nov 2014
Singapore		7	7.29	Dec 2014
Bahamas	✓	5	5.21	Nov 2014
Panama		3	3.12	Apr 2014
Uruguay		3	3.12	June 2015
British Virgin Islands	✓	3	3.12	June 2014
Bahrain	✓	2	2.08	June 2015
Ireland		1	1.04	Jan 2013
Lebanon		1	1.04	No IGA
Brunei	✓	1	1.04	No IGA
Channel Islands	✓	1	1.04	Dec 2013

This table presents 12 tax haven jurisdictions in which banks in our sample have branch operations as of 2009, i.e., a year prior to the enactment of Foreign Account Tax Compliance Act (FATCA). Both tax haven and small tax (dot) haven jurisdictions are defined in Hines and Rice (1994), Desai et al. (2006), Dyreng and Lindsey (2009), and Dyreng et al. (2020). Along with the 12 jurisdictions, this table presents the number of branches operated by the US banks in our sample and the date of Intergovernmental Agreement (IGA) adoption with the United States. Major islands of Channel Islands are Alderney, Guernsey, Jersey, and Sark.

TABLE 3. Descriptive Statistics

	Mean	SD	P25	P50	P75
Panel A: Bank Characteristics					
<i>Total Assets (in \$m)</i>	14,179	100,727	705	1,411	3,287
<i>Total Deposits (in \$m)</i>	10,131	70,125	568	1,117	2,550
<i>Total Deposits / Total Liab.</i>	0.880	0.096	0.832	0.902	0.950
<i>Wholesale Funding / Total Liab.</i>	0.115	0.106	0.040	0.090	0.160
<i>Total Loans / Total Assets</i>	0.654	0.139	0.586	0.676	0.748
<i>Cash / Total Assets</i>	0.053	0.056	0.021	0.033	0.062
<i>Securities / Total Assets</i>	0.208	0.127	0.119	0.187	0.273
<i># of Branches</i>	80	378	9	17	38
<i>1(Foreign Deposits Indicator)</i>	0.080	0.271	0.000	0.000	0.000
Obs. (bank-year) 8,520					
Panel B: Bank-County Characteristics					
<i>Small Business Loan (in \$m)</i>	2.729	15.564	0.028	0.180	0.911
<i># of Small Business Loans</i>	59	528	1	3	19
<i>Mortgage Origination (in \$m)</i>	9.927	98.029	0.000	0.092	1.884
<i># of Mortgage Origination</i>	45	299	0	1	12
Obs. (bank-county-year) 833,029 for the SBL Sample; 664,796 for the HMDA Sample					

This table presents descriptive statistics for the bank-year and bank-county-year observations analyzed in our study. Panel A reports bank-year level summary statistics for 8,520 observations. Panel B reports bank-county-year level summary statistics for two separate samples: (1) small business loan (SBL) origination sample and (2) mortgage origination sample. The SBL origination sample comes from the Community Reinvestment Act (CRA) data. On the other hand, the underlying source of mortgage origination sample is the Home Mortgage Disclosure Act (HMDA) loan application register (LAR) data. The sample period covers years 2005 to 2015. All variables transformed from their raw counterparts are winsorized at the top and bottom 1%. Variable definitions are provided in Appendix A.

TABLE 4. FATCA and Bank Balance Sheet

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>ln(Total Assets)</i>	<i>ln(Total Liab.)</i>	<i>ln(Total Assets)</i>	<i>ln(Total Liab.)</i>	<i>ln(Total Assets)</i>	<i>ln(Total Liab.)</i>
<i>Post × Foreign Branch Op.</i>	0.000 (0.005)	0.006 (0.359)				
<i>Post × Tax Haven Branch Op.</i>			0.004 (0.229)	0.011 (0.648)		
<i>Post × Dot Haven Branch Op.</i>					0.005 (0.274)	0.012 (0.655)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Primary Reg. Agency FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.991	0.989	0.991	0.989	0.991	0.989
Observations	8,520	8,520	8,520	8,520	8,520	8,520

This table estimates the effect of FATCA on banks' total assets and total liabilities. The dependent variables examined in this table are *ln(Total Assets)* and *ln(Total Liab.)*. Post variable is equal to 1 for years from 2011. Foreign Branch Op., Tax Haven Branch Op., and Dot Haven Branch Op. indicate banks with branches in foreign countries, tax haven jurisdictions, and dot haven jurisdictions, respectively. Across all columns, bank and time fixed effects are controlled. Fixed effects for banks' primary regulatory agencies are also included. The unit of observation in this table is bank-year. The sample period covers years 2005 to 2015. All variables transformed from their raw counterparts are winsorized at the top and bottom 1%. Variable definitions are provided in Appendix A. Standard errors are clustered at the bank level. *t*-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (all two-tailed), respectively.

TABLE 5. Wholesale Funding and Foreign Deposits

	(1)	(2)	(3)	(4)
	WSF%	WSF%	Foreign Dep.%	Foreign Dep.%
<i>Post × Tax Haven Branch Op.</i>	-0.078*** (-7.239)		-0.047*** (-5.580)	
<i>Post × Dot Haven Branch Op.</i>		-0.077*** (-6.693)		-0.048*** (-5.464)
Controls	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Primary Reg. Agency FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.790	0.789	0.839	0.839
Observations	8,520	8,520	8,520	8,520

This table estimates the effect of FATCA on wholesale funding and foreign deposits. The dependent variables examined in this table are WSF% and Foreign Dep.%. WSF% is defined as wholesale funding as a share of total liabilities. Wholesale funding is the sum of (1) other borrowed money owed to unrelated entities in foreign countries and the U.S. and others, (2) Fed funds purchased and securities sold under repurchase agreements, (3) foreign deposits, and (4) subordinated debt. Foreign Dep.% is defined as foreign deposits as a share of total deposits. Post variable is equal to 1 for years from 2011. Tax Haven Branch Op. and Dot Haven Branch Op. indicate banks with branches in tax haven jurisdictions and dot haven jurisdictions, respectively. Across all columns, bank, time, and primary regulatory agency fixed effects are controlled. The unit of observation in this table is bank-year. The sample period covers years 2005 to 2015. All variables transformed from their raw counterparts are winsorized at the top and bottom 1%. Variable definitions are provided in Appendix A. Standard errors are clustered at the bank level. t-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (all two-tailed), respectively.

TABLE 6. Domestic Deposits

	(1)	(2)	(3)	(4)	(5)	(6)
	Domestic Dep.%	Domestic Dep.%	Retail Dep.%	Retail Dep.%	Large Time Dep.%	Large Time Dep.%
<i>Post × Tax Haven Branch Op.</i>	0.080*** (7.130)		0.045*** (2.763)		-0.007 (-0.578)	
<i>Post × Dot Haven Branch Op.</i>		0.081*** (6.601)		0.039** (2.297)		0.001 (0.058)
Controls						
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Primary Reg. Agency FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.810	0.809	0.799	0.799	0.740	0.740
Observations	8,520	8,520	8,520	8,520	8,520	8,520

This table estimates the effect of FATCA on domestic deposits and the two main domestic deposit types: (1) retail deposits and (2) large-time deposits. Domestic Dep.% is defined as domestic deposits as a share of total liabilities. Retail Dep.% is defined as retail deposits as a share of total deposits. Retail deposits are calculated after subtracting brokered deposits and time deposits of \$100,000 or more from domestic deposits. Large Time Dep.% is defined as large-time deposits as a share of total liabilities. Large-time deposits are time deposits of \$100,000 or more for years before 2010 and time deposits of \$250,000 or more for years from 2010. We define large-time deposits in such a way because the increase in deposit insurance limit from \$100,000 to \$250,000 was made permanent by the Dodd-Frank Wall Street Reform and Consumer Protection Act in 2010. Post variable is equal to 1 for years from 2011. Tax Haven Branch Op. and Dot Haven Branch Op. indicate banks with branches in tax haven jurisdictions and dot haven jurisdictions, respectively. Across all columns, bank, time, and primary regulatory agency fixed effects are controlled. The unit of observation in this table is bank-year. The sample period covers years 2005 to 2015. All variables transformed from their raw counterparts are winsorized at the top and bottom 1%. Variable definitions are provided in Appendix A. Standard errors are clustered at the bank level. t-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (all two-tailed), respectively.

TABLE 7. Effective Interest Rate (EIR) on Deposits

	(1)	(2)	(3)	(4)
	EIR^{Retail}	EIR^{Retail}	$EIR^{Large-Time}$	$EIR^{Large-Time}$
<i>Post</i> × <i>Tax Haven Branch Op.</i>	-0.002** (-2.125)		0.001 (0.948)	
<i>Post</i> × <i>Dot Haven Branch Op.</i>		-0.001* (-1.721)		0.000 (0.413)
Controls	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Primary Reg. Agency FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.562	0.562	0.764	0.764
Observations	8,520	8,520	8,520	8,520

This table estimates the effect of FATCA on effective interest rates on the following deposit types: (1) retail deposits and (2) large-time deposits. EIR^{Retail} is defined as annual interest expense on deposits other than time deposits of \$100,000 or more in t scaled by retail deposits in $t - 1$. $EIR^{Large-Time}$ is defined as annual interest expense on time deposits of \$100,000 or more in t scaled by large-time deposits in $t - 1$. *Post* variable is equal to 1 for years from 2011. *Tax Haven Branch Op.* and *Dot Haven Branch Op.* indicate banks with branches in tax haven jurisdictions and dot haven jurisdictions, respectively. Across all columns, bank, time, and primary regulatory agency fixed effects are controlled. The unit of observation in this table is bank-year. The sample period covers years 2005 to 2015. All variables transformed from their raw counterparts are winsorized at the top and bottom 1%. Variable definitions are provided in Appendix A. Standard errors are clustered at the bank level. t-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (all two-tailed), respectively.

TABLE 8. Loan Origination

Panel A: Small Business Loans (SBL)	(1)	(2)	(3)	(4)
	<i># of SBL</i>	<i>ln(SBL)</i>	<i># of SBL</i>	<i>ln(SBL)</i>
<i>Post × Tax Haven Branch Op.</i>	-6.546 (-0.517)	-0.381** (-2.252)		
<i>Post × Dot Haven Branch Op.</i>			-1.432 (-0.105)	-0.422** (-2.563)
Controls	Yes	Yes	Yes	Yes
All FEs	Yes	Yes	Yes	Yes
Adj. R-squared	0.228	0.426	0.228	0.427
Observations	833,029	833,029	833,029	833,029
Panel B: Mortgage Originations	(1)	(2)	(3)	(4)
	<i># of Originations</i>	<i>ln(Mortgage)</i>	<i># of Originations</i>	<i>ln(Mortgage)</i>
<i>Post × Tax Haven Branch Op.</i>	-13.393* (-1.731)	-0.324 (-1.369)		
<i>Post × Dot Haven Branch Op.</i>			-9.480 (-1.149)	-0.328 (-1.306)
Controls	Yes	Yes	Yes	Yes
All FEs	Yes	Yes	Yes	Yes
Adj. R-squared	0.202	0.417	0.202	0.417
Observations	664,796	664,796	664,796	664,796

This table estimates the effect of FATCA on small business loan (SBL) and mortgage origination. The dependent variable of interest in Panel A is either *# of SBL* or *ln(SBL)*. *# of SBL* is the raw count of SBL origination. *ln(SBL)* is the natural log of SBL originated by bank *b* in county *c*. SBLs are defined as loans of \$1 million or less in principal amount. The dependent variable of interest in Panel B is either *# of Mortgage Origination* or *ln(Mortgage)*. *# of Mortgage Origination* is the raw count of mortgages originated by bank *b* in county *c*. *ln(Mortgage)* is the natural log of mortgage origination (in thousands of USD). Post variable is equal to 1 for years from 2011. Tax Haven Branch Op. and Dot Haven Branch Op. indicate banks with branches in tax haven jurisdictions and dot haven jurisdictions, respectively. Across all columns of Panels A and B, bank, county-time, and primary regulatory agency fixed effects are controlled. The unit of observation in this table is bank-county-year. The sample period covers years 2005 to 2015. All variables transformed from their raw counterparts are winsorized at the top and bottom 1%. Variable definitions are provided in Appendix A. Standard errors are clustered at the bank level. t-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (all two-tailed), respectively.

TABLE 9. Additional Tests on Small Business Loans

	(1)	(2)
	$\ln(SBL)$	$\ln(SBL)$
<i>Post</i> $\times$ <i>Foreign Branch Op.</i>	-0.250 (-1.424)	
<i>Post</i> $\times$ <i>Big6 Branch Op.</i>		0.042 (-0.221)
Controls	Yes	Yes
Bank FE	Yes	Yes
Year FE	Yes	Yes
Primary Reg. Agency FE	Yes	Yes
Adj. R-squared	0.426	0.426
Observations	833,029	833,029

This table estimates the effect FATCA on small business loan (SBL) origination. $\ln(SBL)$ is the natural log of SBL originated by bank b in county c . SBLs are defined as loans of \$1 million or less in principal amount. *Post* variable is equal to 1 for years from 2011. *Foreign Branch Op.* and *Big6 Branch Op.* indicate banks with branches in foreign countries and big-6 tax haven jurisdictions, respectively. Big-6 tax haven jurisdictions include: Hong Kong, Ireland, Lebanon, Panama, Singapore, and Uruguay. This list is generated after excluding small tax (dot) havens from the list of tax havens examined in this study. Dot haven jurisdictions are defined in Hines and Rice (1994), Desai et al. (2006), Dyreng and Lindsey (2009), and Dyreng et al. (2020). Across all columns, bank, county-time, and primary regulatory agency fixed effects are controlled. The unit of observation in this table is bank-county-year. The sample period covers years 2005 to 2015. All variables transformed from their raw counterparts are winsorized at the top and bottom 1%. Variable definitions are provided in Appendix A. Standard errors are clustered at the bank level. t-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (all two-tailed), respectively.

A. Appendix

A.1. Appendix A: Variable Definitions

A.1.1. Bank-Level Variables (Panel A of Table 3)

- **Total Assets:** Total assets of the bank in millions of USD, obtained from Call Reports (RCFD 2170).
- **Total Deposits:** Total deposits in millions of USD, obtained from Call Reports (RCFD 2200).
- **Total Deposits / Total Liabilities:** Ratio of total deposits to total liabilities, measuring deposit reliance.
- **Wholesale Funding / Total Liabilities:** The sum of (1) other borrowed money owed to unrelated entities (RCON 2850), (2) federal funds purchased and securities sold under repurchase agreements (RCON 2800), (3) foreign deposits (RCFN 6631 and RCFN 6636), and (4) subordinated debt (RCON 3200), scaled by total liabilities.
- **Total Loans / Total Assets:** Ratio of total loans and leases to total assets, measuring lending intensity.
- **Cash / Total Assets:** Ratio of cash and due from depository institutions to total assets, measuring liquidity.
- **Securities / Total Assets:** Ratio of securities held for investment and trading to total assets.
- **# of Branches:** Number of domestic branches operated by the bank, obtained from FDIC Summary of Deposits.
- **Foreign Deposits Indicator:** Binary indicator equal to 1 if the bank reports positive foreign deposits (deposits booked at foreign branches).

A.1.2. Bank-County-Level Variables (Panel B of Table 3)

- **Small Business Loan (in \$m):** Dollar volume of small-business loans originated by bank b in county c in year t , in millions of USD. Small-business loans are defined as commercial and industrial loans and loans secured by nonfarm nonresidential real estate with original amounts of \$1 million or less. Source: Community Reinvestment Act (CRA) data.
- **# of Small Business Loans:** Number of small-business loans originated by bank b in county c in year t . Source: CRA data.
- **Mortgage Origination (in \$m):** Dollar volume of mortgage loans originated by bank b in county c in year t , in millions of USD. Source: Home Mortgage Disclosure Act (HMDA) Loan Application Register (LAR) data.
- **# of Mortgage Origination:** Number of mortgage loans originated by bank b in county c in year t . Source: HMDA LAR data.

A.1.3. Treatment and Control Variables

- **Treated (Tax Haven Branch Op.):** Binary indicator equal to 1 if the bank operated at least one branch in any of the following tax haven jurisdictions as of 2009: Bahamas, Bahrain, British Virgin Islands, Brunei, Cayman Islands, Channel Islands (Jersey and Guernsey), Hong Kong, Ireland, Lebanon, Panama, Singapore. This variable is time-invariant by construction.
- **Dot Haven Branch Op.:** Binary indicator equal to 1 if the bank operated at least one branch in a small tax (dot) haven jurisdiction as of 2009. Dot havens are defined following Hines and Rice (1994) and include: Bahamas, Bahrain, British Virgin Islands, Brunei, Cayman Islands, and Channel Islands.
- **Foreign Branch Op.:** Binary indicator equal to 1 if the bank operated at least one branch in any foreign country (not restricted to tax havens) as of 2009.

- **Big6 Branch Op.:** Binary indicator equal to 1 if the bank operated at least one branch in any of the six largest non-dot tax haven jurisdictions as of 2009: Hong Kong, Ireland, Lebanon, Panama, Singapore, Uruguay. This list excludes small tax (dot) havens.
- **Post:** Binary indicator equal to 1 for years 2011 and after. Year 2011 is chosen as the demarcation because FATCA was enacted in March 2010, and this definition captures both anticipatory responses and implementation effects leading up to the July 2014 withholding start date.

A.1.4. Funding Composition Variables (Tables 4-7)

- **WSF% (Wholesale Funding Share):** Wholesale funding as a share of total liabilities. Identical definition to “Wholesale Funding / Total Liabilities” above.
- **Foreign Dep.% (Foreign Deposits Share):** Foreign deposits (deposits booked at foreign branches) as a share of total deposits.
- **Domestic Dep.% (Domestic Deposits Share):** Domestic deposits as a share of total liabilities. Domestic deposits are calculated as total deposits minus foreign deposits.
- **Retail Dep.% (Retail Deposits Share):** Retail deposits as a share of total deposits. Retail deposits are calculated by subtracting brokered deposits and large time deposits from domestic deposits.
- **Large Time Dep.% (Large Time Deposits Share):** Time deposits of \$100,000 or more for years before 2010, and time deposits of \$250,000 or more for years from 2010 onward (reflecting the Dodd-Frank increase in FDIC insurance limit), as a share of total deposits.
- **Brokered Dep.% (Brokered Deposits Share):** Brokered deposits as a share of total deposits.

A.1.5. Control Variables

- **Log Total Assets:** Natural logarithm of total assets, used as a size control.

- **Tier 1 Capital Ratio:** Tier 1 capital divided by risk-weighted assets, measuring bank capitalization.
- **Return on Assets (ROA):** Net income divided by total assets, measuring profitability.
- **Liquidity Ratio:** Cash and securities divided by total assets, measuring asset liquidity.

Note: All continuous variables transformed from their raw counterparts are winsorized at the top and bottom 1% to mitigate the influence of outliers. Sample period covers years 2005 to 2015.