Import Competition and Local Deposits: Transmission of the China Shock

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PRELIMINARY DRAFT– NOT FOR CIRCULATION

Abstract

I examine how local deposit outflows in markets affected by import competition constrict bank funding. Utilizing a set of continuous difference-in-differences regressions, I identify shifts in local deposit supply generated by the granting of Permanent Normal Trade Relations with China. I find that local deposit losses generate balance sheet wide funding constraints, especially for banks operating in multiple markets. The banks most constrained by this import competition reallocate their credit portfolios from small business loans to mortgage loans in markets not exposed to import competition.

1 Introduction

Trade shocks originate in the real economy, but their effects can spill over into the financial world. Increased import competition often forces struggling firms to cut wages, lay off employees, and even cease operating, and when many such firms are geographically clustered, the local labor market consequences can be significant. As people and businesses draw down their savings and hold less deposits, local bank funding is constricted and what began as a trade shock spills over into the financial economy. While bank can borrow additional funds to cover liquidity gaps, any borrowed funds will be more expensive than local deposits.

Since the cost of capital is an important determinant of banks' credit decisions, this deposits channel may affect how and where banks lend, and given the important role of local banks in driving economic growth, it is essential to understand this magnitude of this mechanism.

In this paper, I investigate the role of the deposits channel in transmitting exogenous local shocks to banks. I exploit variation in local deposit supply generated by the implementation of Permanent Normal Trade Relations (NTR) with China in 2000, often referred to as the China Shock. The passage of permanent NTR lowered tariffs on Chinese goods and led to both a rapid increase in Chinese imports and a wave of factory closings in the US. While this change in trade policy had far reaching effects, certain manufacturing sectors were more exposed than others based on the difference between tariff rates under NTR and under Column Two status, the alternative to NTR. The China Shock generated large and persistent local labor market shocks in the communities where exposed industries clustered (Pierce and Schott (2016), Pierce and Schott (2020)). I show that these shocks affected banks' local funding, as lowered wages and increased unemployment led people and business to draw down savings and hold less deposits. Retail deposits are often the cheapest source of funding for banks, and a loss of this funding necessitates either a decrease in balance sheet size or a substitution for more expensive funding. I find that rather than attracting more expensive funding, the banks most exposed to import competition dealt with their liquidity shocks by changing their lending patterns. Exposed banks originated fewer small business loans but more mortgage loans, especially in counties not impacted by import competition.

My empirical design relies on measures of local and bank level exposure to increased import competition. Following Pierce and Schott (2016), I use tariff schedules and county labor force compositions from before China was granted permanent NTR to create a measure of each county's exposure to increased import competition[1]. The measure takes into account the change in each industry's tariffs and the proportion of each county's workforce employed in each industry. The measure vary by county but are constant across time. Each bank's exposure to import competition is based on the location of its deposit accepting branches and those counties' exposures to import competition. Similar to county exposure, bank exposure

[1]Others such as Autor et al. (2013) measure exposure to import competition based on increase in imports in each sector. They then use a shift share instrument to control for endogeneity.

varies across banks and is constant across time.

I use a continuous difference-in-difference regression with bank-by-county and bank-by-state-by-year fixed effects to uncover the impact of differential county exposure to import competition on local deposit supply. In my data, banks don't set deposit prices at the branch level, therefore differential movements in the quantity of deposits at branches of the same bank can be attributed to shifts in the local deposit supply curve. Additionally, I aggregate deposits to the bank level and examine whether these local deposit shocks affected funding across banks' full balance sheets. I divide total deposits into core and brokered deposits, where core deposits are deposits sourced from local retail customers and brokered deposits are purchased in external markets.

Results show that exposure to the China Shock reduced banks' funding. The first result finds that deposit shocks began at the county level, where a one standard deviation increase in a county's exposure to the China Shock led to a 1.7 to 4.2% decrease in deposits attributable to supply reductions. At the bank level, the combination of local shocks had significant balance impacts, especially for banks operating in multiple markets. For these multi-market banks, A one standard deviation increase in exposure to the China Shock led to a 2.3% reduction in total deposits. For multi-market banks, a one unit increase in bank exposure led to a 2.2% reduction in core deposits and a 3.5% reduction in brokered deposits.

Once I establish the existence of the deposits channel, I examine the impact it has on local mortgage and small business lending. Similar to the analyses in Khwaja and Mian (2008) and Izadi and Saadi (2023), I use a continuous difference-in-difference regression with bank-by-county and county-by-year fixed effects to isolate changes in each bank's local credit supply caused by bank and county level exposure to increased import competition.

I find that bank level exposure led banks to reallocate lending at the local level from small business credit to mortgage lending, especially in markets not affected by the China Shock. Across the sample of single and multi-market banks, a one standard deviation increase in bank-level exposure led to a 24% reduction in small business loan origination, a 26% increase in mortgage originations, and a 61% increase in mortgages originated then sold. Examining the interaction between bank and county level exposure to import competition shows that the decreases in small business lending were uniform across county exposures, but the partial

effect of county exposure on mortgage lending, holding bank exposure constant, is negative and statistically significant.

Underlying each of these analyses is the identification assumption that in the absence of the China Shock, local trends in deposit and lending growth would have evolved similarly to their pre-period trajectories, and in parallel across counties with varying exposure levels. To provide support for this identification assumption, I provide several event study specifications.

These results are significant as they show that banks operating in local markets exposed to increased import competition saw declines in their deposits. With less deposits, the composition of their outstanding credit changed, as they cut back on small business lending and increased mortgage originations in safe markets. The ability to sell mortgages into secondary markets allowed these banks to originate more markets, even though their funding was constrained. In this way, local labor market shocks generated from increased import competition worked through the deposits channel to affect how banks operated.

My paper contributes to a large literature studying the economic impact of China's reception of permanent NTR. Many papers investigate the harm increased import competition inflicted upon industries and labor markets most exposed to these tariff changes (Autor et al. (2013), Pierce and Schott (2016), Autor et al. (2016)). Autor et al. (2021) find evidence of labor market scarring nearly twenty years after the Shock, and beyond the direct labor market consequences, other studies have found evidence that the Shock reduced the provision of local public goods (Feler and Senses (2017)), led to an increase in "deaths of despair" (Pierce and Schott (2020)), and was amplified by local housing market conditions (Xu et al. (2019)).[2]

The most closely related papers investigate credit market changes following the China's ascension to the World Trade Organization. Izadi and Saadi (2023) show that small business lending decreased in counties most exposed to the Chinese import competition, and Federico et al. (2023) and Mayordomo and Rachedi (2022) similarly show that increased this import competition induced credit constrictions in Italy and Spain. I expand on their work by

[2]Sasahara (2022) provides a more complete overview of the existing literature and methods used in the analysis of the China Shock and other import competition induced shocks.

investigating the role of the deposits channel in driving these credit supply responses and by analyzing the substitution between small business and mortgage lending. I show that the deposits channel played an important role in constricting balance sheets, and while banks reduced their small business lending, they increased their mortgage lending.

My paper is also related to research studying the movement of local shocks through bank networks. Internal capital markets allow the easy movement of capital between markets, but how banks use these networks to transmit or insure against local economic shocks often depends on the bank and the structure of the shock. Many investigations into banks' internal capital markets leverage exogenous credit and liquidity shocks from hurricanes (Schüwer et al. (2018)), the shale oil boom (Gilje et al. (2016)), and floods (Rehbein and Ongena (2022)) to understand their functions. Natural disasters are useful for studying the transmission of economic shocks, since many economic shocks originate in the financial system (Clark et al. (2021))[3]. I complement these papers by isolating a persistent local economic shock originating in the real economy. A persistent shock such as this differs from many of the transitory shocks studied before. While many of the previously mentioned papers show networks being used to transfer liquidity to increase credit supply in affected markets, my analysis shows the opposite, as banks shift credit supply away from impacted markets.

Finally, I contribute to the literature studying the deposits channel of transmission. Many banking models recognize that though demand deposits are a cheap source of funding, their inherent volatility is a fundamental weakness (Diamond and Dybvig (1983)), and this weakness ties bank level outcomes to the real economy (Diamond and Rajan (2006))[4]. Khwaja and Mian (2008) illustrate this principal, examining unexpected liquidity shocks to Pakistani banks, and Karam et al. (2014) similarly investigate the impact of credit rating downgrades on banks' access to deposits. Each shows that when access to deposits is easily lost, credit supply is impacted. Credit contractions created by deposit loss can then lead to a downward feedback loop. Kundu et al. (2021) term this mechanism the "deposits channel of aggregate

[3]Lazzaroni and Bergeijk (2014) provide a more extensive summary of studies examining the macroeconomic impact of natural disasters.

[4]Diamond and Rajan (2006) write that "credit contraction and failure are essentially real phenomena that occur when the bank is squeezed between nonrenegotiable demand deposits and a limited production of consumption goods" (Diamond and Rajan, pp. 39).

fluctuations. An important distinction is that the phenomena I investigate is not a sudden run on deposits, rather, a deliberate draw down of deposits commiserate with real economic conditions

In Section XXX, I introduce the China Shock and provide background on regulatory changes in the financial industry leading up to the early 2000s. In Section XXX, I provide an overview of the data and explain the county and bank level measures I use to quantify exposure to increased import competition. In Section YYY, I introduce the empirical strategies and results connecting the China Shock to bank funding. In Section ZZZ, I explore how these funding shocks affect local lending patterns, and in Section YYY, I conclude.

2 Background

2.1 China Shock Background To understand how changes in trade policy affect local labor market conditions, its important to first give an overview of US trade policy. The US's Harmonized Trade Schedule maintains two tariff schedules for imports– normal trade relations (NTR) and Column Two status[5]. The two schedules outline the tariff rates assessed on different categories of imported goods from a given country, and all tariff rates in the NTR schedule are less than or equal to the Column Two rates. With the passage of the Trade Act of 1974, countries that were currently taxed at the favorable tariff schedule would permanently hold that tariff schedule[6]. Prior to 1974, communist countries, including China, had been excluded from NTR status, and accordingly, their imports had been taxed at Column Two rates.

Section 402 of the Trade Act of 1974 allowed the President to issue annual waivers which would allow imports from a given Column Two to be taxed at NTR rates. In 1980, President Carter granted China one such annual waiver[7]. Opening trade with China was seen as a way to achieve two goals: pushing the Chinese economic model towards a market economy and

[5]Prior to 1998, permanent NTR was referred to as Most Favored Nation status. As of September 2023, Cuba, North Korea, Russia and Belarus are the only countries with Column Two status.

[6]https://www.govinfo.gov/content/pkg/COMPS-10384/pdf/COMPS-10384.pdf

[7]https://www.cartercenter.org/news/features/p/china/40-anniversary-china-relations.html

maintaining political and security stability in Asia (Alexandroff (1998)). President Carter and succeeding Presidents continued to grant China these annual waivers.

As China's industrial capacity continued to increase, lowered tariffs under the temporary NTR waivers allowed trade between the US and China to grow. Uncertainty in the continued passage of the temporary NTR waiver persisted. On many occasions, Congress threatened to block the President's authority to grant these annual waivers (CITE HERE). CITE write that this uncertainty in the continuance of the waivers shielded many domestic industries from import competition, even those operating at a relative disadvantage compared to their Chinese counterparts. Uncertainty meant that business had to weigh the benefit of shifting production to China under the pretense of preferable tariffs with the risk of those tariffs rapidly increasing.

As time progressed, many global trading partners began to question the consistency of the US's annual waiver process with the rules of the World Trade Organization. By not granting China permanent NTR status, the US functionally locked China out of becoming a full member of the World Trade Organization. In May 15, 2000 Representative William Archer introduced H.R. 4444 which would grant China permanent NTR status upon its ascension to the World Trade Organization. Granting China this status was seen as a way to stimulate US economic growth and promote human rights reforms in China (CITE HERE). Economic growth would come from the outsourcing of labor intensive production processes, the importation of less expensive goods, and the opening of agricultural export markets for US farmers.

The bill was not without controversy, as many unions and labor groups lobbied against its passage[8]. Despite the opposition, the bill successfully passed through Congress on May 24, 2000 and through the Senate on September 19, 2000. President Clinton signed the bill into law on October 10, 2000, and with China's ascension to the World Trade Organization on December 11, 2001 tariff rates on Chinese imports were officially and permanently set to the NTR schedule. An important subtlety in this process is that at no point between 1980 and 2001 were Chinese imports taxed at Column Two rates. The "China Shock," as it has been

[8]See WSJ articles: "Unions Debate How Fiercely To Protest China Legislation"; "Senate Passes Bill to Normalize U.S. Trade Relations With China"

called, was not a sudden lowering of tariffs, rather it was a resolution of the uncertainty that tariffs might suddenly rise if Congress blocked China's temporary NTR waiver. Resolution of this uncertainty led to a rapid offshoring of labor intensive manufacturing processes.

2.2 Banking Market Changes The banking system similarly saw great changes during the 1990s which fundamentally changed how it operated. The Riegle–Neal Interstate Banking and Branching Efficiency Act was passed 1994, and it standardized many of the regulations guiding the geographic spread of operations for nationally chartered banks and bank holding companies. Prior to this regulation, many states limited the geographic extent of bank branching in their boundaries. For example, some states would not allow banks to branch across state boundaries.....

The passage of this law sparked a period of rapid consolidation. Some literature to cite

- Aguirregabiria et al. (2019)

The Financial Services Modernization Act, often referred to as Gramm-Leach-Bliley, became law in 1999. The law repealed several parts of the Glass-Steagall Act of 1933 which delineated the business activities of banks, investment firms, and insurance companies. Provisions of Glass-Steagall attempted to protect consumers and the financial system by restricting firms in each industry from operating in the others. Gramm-Leach-Bliley removed many of these barriers. Investment banks, commercial banks, and insurance companies owned by single holding companies could consolidate their business lines. Large firms in each industry had been lobbying for these changes, even though the Securities and Exchange Commission and the Federal Reserve had granted waivers for similar mergers in the years leading up to this act.

3 Data and Defining Exposure Measures

3.1 Data I utilize multiple data sources to examine local banking responses to the increased import competition. The FDIC's Quarterly Call Reports provide balance sheets from FDIC insured commercial banks, spanning from 1994 to the present. These reports

offer valuable insights into bank level variables of interest. I focus particularly on assets, deposits, core and brokered deposits, equity, and non-performing loans. To understand the local nature of bank operations, I turn to more granular data.

The FDIC's Summary of Deposits is an annual survey collected in June of each year from 1994 to the present, and it details all FDIC insured bank branches and their corresponding deposits. I aggregate each bank's deposits to the county-by-year level to match lending data, and I denote banks as single- or multi-market banks based on the spread of their branches across county markets.

I collect data on each bank's small business and mortgage loan originations from the Community Reinvestment Act (CRA) and the Home Mortgage Disclosure Act (HMDA) disclosure files.

The HMDA data provides details on the size of each originated mortgage, the county of origination, the bank originating the loan, and whether or not the loan is held on the originating bank's balance sheet or sold within a year. I aggregate the amount of mortgages held on balance sheet and the amount sold to the bank-by-county-by-year level. The CRA data reports number and size of small business loans under $1 million that each bank originates in each county each year. Greenstone et al. (2020) note that CRA data is fairly representative of all small business lending, as in 2007 it covered 86% of all small business loans under $1 million. I join local lending and deposits data.

I employ annual county-level statistics obtained from the Bureau of Labor Statistics (BLS) to account for local demographic and labor market characteristics. These statistics encompass key economic indicators such as income, population, local college attainment levels, and employment rates. As is typical in analyses such as this, I use averages of each variable from before the granting of permanent NTR as time invariant controls in the county level analyses.

3.2 Defining County Exposure to Import Competition

I follow Pierce and Schott (2020) in measuring each county's exposure to increased import competition by analyzing its labor market composition prior to 2000 and the difference between NTR and

Column Two tariff rates for each industry with a presence in that county.[9]

I utilize 1999 tariff rates from Feenstra et al. (2002) to compute the difference between NTR and Column Two rates for each industry group, and I use data from... labor market data.

Each county's exposure to increased import competition is the weighted sum of the difference between tariff rates using industry-specific labor market shares from before the shock as weights:

$$CountyExp_c = \sum_{i \in I} \frac{L_{i,c,t-1}}{L_{i,t-1}} (ColumnTwoRate_i - NTRrate_i) \tag{1}$$

I then normalize the measure so that across all counties, the mean and standard deviations of exposure are 0 and 1, respectively.

Even with increasingly flexible capital markets, industries have continued to group together in geographic clusters (Porter (1998)). This clustering exposed local markets fluctuations in individual industries. The map in Figure 2 shows the geographic distribution county exposure. There is substantial exposure in most parts of the US, with the exception of the western half of the country.

3.3 Defining Bank Exposure to Import Competition Theoretically, a bank's exposure to any economic phenomena could be perfectly measured if sufficient data on each depositor and borrower could be collected. Business at a bank in an agricultural community is likely to be affected by drought, just as business at a bank in a manufacturing community is likely to be affected by import competition.

With this in mind, I follow Kundu et al. (2021) in creating a measure which finds each bank's exposure to increased import competition based on pre-Shock deposit shares in each county and those counties' exposures:

$$BankExp_i = \sum_{c \in C} \frac{d_{i,c}}{d_i} CountyExp_c \tag{2}$$

[9]Of the nearly 10,000 HS8 code items in the 1999 data, nearly 8 percent had NTR gaps of zero. Summary Statistics: Mean NTR Gap = 0.32, sd = 0.23, max = 4.84, min = 0. Example difference between NTR and Column 2 rates: HS code 91069085 (a form of watches) 0.08 vs. 2.52. HS code 22082020 (Pisco and Singani alcohol) 0 vs. 2.13. HS code 28049000 (tellurum and boron) 0 vs. 0.

where $d_{i,c}$ are bank i's deposits in county c, d_i is the sum of bank i's deposits across all counties it operates in, and Exp_c is county c's exposure to the China Shock, as defined above.

This is not possible, so instead, I rely on banks' geographic locations and the underlying demographics of those areas. While banks can and do operate outside of the geographic bounds of their branch networks, many studies have shown that proximity to physical banking locations matter– Nguyen (2019) argues that deposit and credit services are not perfect substitutes between geographic markets and that closure of local bank branches leads to decreased credit supply for businesses near that closed branch. Celerier and Matray (2019) similarly show that local banks matter for financial inclusion, as increased density of bank branches leads to more households opening bank accounts.

Histograms in Figure 1 show that there is substantial variation in exposure at both the county and bank level. Table 1 show the summary statistics at the county and at the bank level. The average county exposure level is 7.23, and the median is 5.68. The least exposed county had zero exposure, while the most had 44.44. Looking at bank exposure, the average exposure is 6.76, and the median is 5.60. As with counties, the least exposed bank had zero exposure while the most had 44.44. Histograms in Figure 1 show the distribution of normalized county and bank exposure measures.

One concern in studies such as this is that exposure to a shock is correlated with bank level characteristics. Had banks operated their networks such that those in counties exposed to the shock were fundamentally different than those not, identification of causal relationships would be difficult. Difference in means tests are typically employed to test covariate balance across treated and untreated states, but since the exposure measure here is continuous, such tests would not work. To aid in the assessment of the validity, I follow XXX in performing a balance test whereby each bank's exposure level is regressed on a host of pre-shock balance sheet measures:

$$Exp_b = \beta_0 + \beta_1 \bar{X}_b + \epsilon_b \tag{3}$$

where $\bar{X}_b$ is the pre-treatment average of a given measure. The coefficient of interest is β_1, and a rejection of the null hypothesis that $\beta_1 = 0$ would suggest that the measure is not balanced across bank exposure.

Table 2 report the coefficients and standard errors from the test. The balance sheet measures being tested for balance are assets, deposits, branches, return-on-equity, non-performing loan ratios and core deposit ratios. Panel (A) presents the results for the full sample of banks, and Panel (B) presents the results for multi-market banks, and Panel (C) presents the results for single market banks. Across the full panel, none of the coefficients are statistically significant at the 10% level. This suggests that across treatment levels, observations are balanced on pre-shock balance sheet measures. For multi-market banks, however, the coefficients on assets, deposits, branches, and the non-performing loan ratio are statistically significant. These coefficients suggest that larger banks, as measured by deposits, assets, and branches, were likely to be less exposed than smaller banks. This is likely the case because exposure to the shock reflects the extent of each bank's branch network. For single market banks, the coefficient on deposits and branches are positive and statistically significant. This suggests that an opposite relationship than that found in multi-market banks. Though these covariates are not balanced, inference from difference-in-difference regressions can still be valid by controlling for unbalanced covariates.

4 Empirical Strategy and Results

4.1 Framework The following analyses identify mechanisms connecting increased import competition and banking outcomes. I focus specifically on how bank funding is impacted by local deposit supply shifts. In this framework, banks operate deposit collecting and lending operations across multiple markets. Deposits are sourced from customers segmented into local markets, and even considering the costs associated with operating deposit accepting branches, deposits are a relatively inexpensive form of bank funding (Hanson et al. (2015)).

Deposits fund lending operations, and banks use internal capital markets to loan funds collected from one market in another. While there are frictions associated with opening and operating deposit collections in a given local market, the informational frictions associated with lending in different markets are less. HERE TALK ABOUT EXPANDED ROLE OF INDEPENDENT MORTGAGE BROKERS AND FREDDIE MAC[10]. Local shocks to

[10]The idea here is that in this time, independent mortgage brokers were becoming huge. A home buyer

deposit supply and credit demand can permeate across a bank's network due to the interconnected nature of each bank's internal capital markets.

To identify the primary connection between exposure to increased import competition and local deposits supply, I exploit local and bank level heterogeneity in exposure to the the increases after the passage of Normalized Trade Relations with China in several difference-in-difference regression specifications. County level exposure reflects the composition of local labor markets and the individual industries' exposure to decreased tariffs, and bank exposure reflects the geographic distribution of banks' deposit bases and those localities' exposure to the these changes.

4.2 Permanent NTR and Local Labor Markets I begin this exploration by establishing that the China Shock produced local labor market shocks capable of influencing deposit holding behavior. Previous studies have made it clear that the industries most exposed to increased import competition saw large reductions in labor demand (CITE HERE).

Labor market and migration stickiness played an important role in amplifying the impact of job losses. Autor et al. (2021) find only modest out migration from affected counties, and the out migration is primarily in foreign born workers and in workers aged 25-39. The authors conclude that exit from work is the primary means of adjusting to labor demand shocks. Exits from work and increased mechanization of labor processes lead to increased unemployment and decreased wages.

I begin by comparing average wage and employment growth across exposure. High and low exposure is determined on its exposure relative to the median. Time plots in Figures 3 a and b compare average employment and wages across high and low exposure counties. There are clear divergences following the year 2000, as employment rates and average wages in high exposure counties drop below that of low exposure counties.

Even in the presence of government subsidies, it would be natural to expect savings and

would go to a broker, the broker would then "shop" the mortgage around multiple banks, finding the one that would lend the money at the best terms. Banks could then either hold the mortgages on balance sheet or offload them to Freddie Mac. Freddie Mac began using automated underwriting system which streamlined much of this process. See WSJ Article "Why Big Lenders Are So Afraid Of Fannie Mae and Freddie Mac"

deposits within affected communities to decrease. Figure 3 panel (c) plots the trends in deposit growth between high and low exposed counties. There is a clear divergence in the two series following the shock.

4.3 Local Deposit Supply I turn to bank-by-county-by-year data to establish the existence of local shifts in deposit supply[11] Banks attract deposits through the services they offer and the prices they pay on deposit products. If the China Shock were to affect deposits through the labor market market channel, it would be expected to see changes in deposit supply. Deposit demand might also change, as banks operating in markets with decreased demand for credit products may reduce the size of their liabilities. A naive comparison of deposits between counties might then capture both supply and demand factors.

Evidence suggests that banks do not set deposit prices at the individual branch level, rather they utilize uniform pricing across regions or their full markets (Radecki (1998), Edelstein and Morgan (2006), and Granja and Paixao (2021), Begenau and Stafford (2022)). This allows me to isolate deposit supply shifts by comparing deposits within the same bank and within the same state between counties with different exposure to increased import competition. The specification I use isolates changes in deposits due to supply shifts by controlling for demand. I estimate the reduced form parameters in the following equation:

$$ln(D_{bct}) = \beta(Post_t \times NTRGap_c) + \gamma Post_t \times X_{bc} + \delta_{b,s,t} + \delta_{b,c} + \epsilon_{b,c,t} \tag{4}$$

where $D_{b,c,t}$ is the sum of bank b's deposits in county c in year t and X_{bc} is a vector of bank and county controls interacted with the *post* indicator. The bank-by-county fixed effects, $\delta_{b,c}$ control for potential non-random placement of bank branches and all time-invariant factors that may affect deposit activity for a bank in a given county, and bank-by-year fixed effects, $\delta_{b,s,t}$ control for any shock that hits bank deposits in bank b in year t across all markets in state s. This would include pricing changes set by the bank in order to increase or decrease deposit demand. Including this fixed effect then isolates changes in deposit quantity attributed to deposit supply. This specification is similar to the within-bank estimator proposed by Khwaja and Mian (2008).

[11] I follow the convention that banks demand deposits and customers supply them.

For this specification to identify the causal relationship between local increases in import competition and bank deposits, it must be the case that in the absence of the granting of permanent NTR, there would have been similar deposit trends regardless of each county's level of exposure to import competition. In many previous papers, the China Shock is assumed to be exogenous, which aids in identification. However, if banks had pre-sorted into markets based on the manufacturing composition of those local markets, then the analysis would not recover the true causal relationship. The time plot in Figure 3 suggests that prior to the Shock, deposit trends were similar across counties. Banks may have selectively entered and exited markets upon the shock's occurrence, so to control for this I estimate the desired specification with the full sample of bank-by-county-by-year observations and with a sub-sample that excludes any bank-by-county-by-year observations with only a single branch of the bank in that local market.

I bolster this analysis with event studies which estimate the coefficients in the following model:

$$\begin{aligned} ln(D_{b,c,t}) = &\sum_t \theta_t \mathbb{1}\{timeperiod = t\} \times CountyExp_c \\ &+ \sum_t \gamma_t \mathbb{1}\{timeperiod = t\} \times X_c + \delta_{b,s,t} + \delta_{b,c} + \epsilon_{b,c,t} \end{aligned} \tag{5}$$

Though similar to equation yyyy, exposure and control variables are interacted with a dummy variable for each year. Plotting the coefficients gives a visual representation of the impact of exposure on the desired outcomes at each time period. While a lack of pretrends alone does not validate the causal estimates, it adds to the idea that in the absence of the China Shock, bank level outcomes would have continued in a parallel manner between treated and untreated banks.

Results from the first analysis are shown in Table 3. The coefficient of interest is $Post \times CountyExp$, which signifies the percent change in deposits caused by a 1 standard deviation increase in county exposure to the increased import competition. I estimate the specifications in Columns (1) and (2) using the full sample of observations. Column (1) includes $bank \times county$ and $bank \times year$ fixed effects and time-invariant county level controls, and Column (2) includes $bank \times county$ and $bank \times state \times year$ fixed effects and time-invariant county level controls. The first specification varies slightly from the second, as $bank \times year$ fixed

effects are not interacted with the state variable. With this specification,

the coefficient of interest is negative and statistically significant.

I estimate the specifications in Columns (3) and (4) using the sub-sample of bank-by-market observations with more than one branch. Using these observations limits the influence of local deposit shifts that may arise from rapid entry and exit into markets. The goal is to isolate changes in deposit that originate from supply shocks, not market entry and exit. In addition to county level controls, Column(3) includes $bank \times county$ and $bank \times year$ fixed effects and Column (4) includes $bank \times county$ and $bank \times state \times year$ fixed effects. These results indicate that a 1 standard deviation increase in a county's exposure to the China Shock led to a 1.6 to 1.8 percent decrease in deposits that could be attributed to supply.

The single-branch observations likely experienced exaggerated dynamics, as the coefficients of interest from the sun-sample without these observations is only half the magnitude of that from the full sample. Event studies of the desired specification for the full sample and sub-sample are shown in Figure 4. For the full sample, there is a clear downward pre-trend which continues after treatment, but the event study for the sub-sample doesn't have this downward pretrend. This suggests that negative pretrends in the full sample were driven by these single-branch observations. These findings suggest that the causal effect of the China Shock on local deposit supply is more accurately estimated in the specifications estimated using the sub-sample which excludes single-branch observations.

4.4 Core and Brokered Deposits A question now arises whether deposit outflows in local markets had an affect when aggregated up to each bank's balance sheet. If deposits were simply moving between counties but remained in the same bank, then local deposit changes would have no affect on total bank funding. I turn to quarterly balance sheets provided by the FDIC to analyze this question. The balance sheets allow me to view total, brokered, and core deposits for each bank at a quarterly frequency. The time plot in Figure 5 shows that following permanent NTR with China, banks more exposed to import competition than the median saw decrease in all deposits and core deposits but not in brokered deposits. This would suggest that local outflows were important.

I formally analyze this connection by leveraging differential bank exposure to increased

import competition before and after permanent NTR in a difference-in-differences regression with continuous treatment. I estimate the parameters in the following equation:

$$ln(D_{bt}) = \beta(Post_t \times BankExp_b) + \gamma \times Post_t \times X_{bt} + \epsilon_{bt} \quad (6)$$

where D_{bt} is the sum of deposits at bank b in year t, $BankExp_b$ is bank b's exposure to increased import competition, and X_{bt} is a vector of time invariant bank level controls interacted with a post-dummy. The controls measure fundamental characteristics of each bank and are 1997 to 1999 averages of the assets, non-performing loan ratio, and equity ratios of each of the banks. Each regression includes time fixed effects which control for quarter specific shocks which affected every bank and bank fixed effects which control for time invariant bank-level factors which drive banks' individual credit and funding decisions. The coefficient of interest is β and it represents the effect of an increase in bank exposure to the China Shock on a given bank's deposits. Identification of a causal relationship hinges on the assumption that in the absence of the China Shock, bank funding would have been similar across banks.

Results of the regression are shown in Table 4. The regression is run over the full sample and the sets of multi-market and single market banks. Each panel includes one of the samples, and the dependent variables in each panel are the log of total deposits, the log of core deposits, and the log of brokered deposits. Within the full sample, a one unit increase in bank exposure led to a 2.2% decrease in total deposits and a 2.0% decrease in core deposits, and the two coefficients are statistically significant at the 1% level. While the coefficient of interest for brokered deposits is negative, it is not statistically significant. For the sample of multi-market banks, a one unit increase in bank exposure led to a 2.3% decrease in total deposits, a 2.2% decrease in core deposits, and a 3.5% decrease in brokered deposits, and each of the coefficients is statistically significant at the 1% level. Finally, in the sample of single-market banks, a one unit increase in bank exposure led to a 1.4% decrease in total deposits and a 1.2% decrease in core deposits, and each of the coefficients is statistically significant at the 1% level. The coefficient on brokered deposits is positive but not statistically significant.

Event studies are shown in Figure **??**. For multi-market banks, the plots show that prior to permanent NTR, the coefficients of interest were identical to zero. This supports

the idea of parallel pretrends. For single market banks, however, there appear to be strong negative pretrends that continue past treatment. Such pretrends suggest that though most exposed single-market banks had less deposits, this phenomena was a continuation of a trend that began prior to permanent NTR. Such pre-trends make it difficult to assign a causal interpretation of the difference-in-difference results for single market banks.

Together, the evidence supports the fact that the local deposit caused by increased import competition impacted bank's balance sheets, especially for banks operating in multiple markets.

5 Local Lending Changes

With an understanding of the local nature of funding shocks, its important to investigate how each bank's exposure to increased import competition affected its lending patterns. In a previous study, Izadi and Saadi (2023) show decreases in small business lending in counties most exposed to import competition. Credit supply responses were not homogeneous, as banks with high local specialization and low ex-ante market share increased their lending to increase their local market shares. I extend these findings by examining home mortgage originations in addition to small business lending.

I begin by investigating how bank level exposure to increased import competition affected credit origination. I estimate parameters from Equation XXX using the log of each bank's small business, mortgage loans originations, and the sum of mortgage loans that were originated and then sold to a third party within a year as dependent variables. I estimate the parameters using the full sample of observations and sub-samples with only single-market banks and only multi-market banks since previous results show differential funding responses following permanent NTR. The parameter of interest is the coefficient on the variable Post x BankExp which represents the percent change in lending due to a 1 unit increase in bank exposure.

Results are shown in Table 5. The coefficient of interest is not statistically significant for any of the specifications using the either full data or the multi-market sub-sample. This suggests that exposure to the China Shock had little sway over the total amount of small

business and mortgage loan originations for multi-market banks. For single market banks, however, the coefficients on the amount of mortgage originations and on the amount of mortgage originations sold to the secondary market are both positive and statistically significant. A one unit increase in exposure to the China Shock is associated with a 20% increase in mortgage originations and a 39% increase in mortgage sales. This suggests that exposure to the China Shock led single market banks to increase their mortgage lending, and given their possible funding constraints, they utilized secondary markets to free up capital.

While these findings suggest a connection between the China Shock and outstanding credit, regressions at the bank level can mask whether observed changes are due to supply or demand shifts and whether banks reallocated lending activities between markets. To investigate if these changes in credit origination were driven by either of these factors, I turn to more granular bank-by-county-by-year data to estimate the coefficients in the following model which controls for local credit demand:

$$ln(L_{bct}) = \beta(Post_t \times BankExp_b \times CountyExp_c) + \gamma \times Post_t \times X_{bc} + \delta_{b,c} + \delta_{c,t} + \epsilon_{b,c,t} \quad (7)$$

where L_{bct} are loan originations from bank b in county c in year t, and $BankExp_b$ is bank b's exposure to increased import competition interacted with County c's exposure. Bank and county exposure are interacted in order explore heterogeneous changes in lending across different levels of bank and county exposure. I include bank-county fixed effects to control for potential non-random placement of bank branches and all time-invariant factors that may affect lending activity for a bank in a given county, and I include county-year fixed effects to control for any shock that hits counties in year t including county specific credit demand shocks following permanent NTR. This within county estimator leverages banks' differential exposures to import competition to uncover local credit supply shifts. As before, I estimate the coefficients using the full sample and the sub-samples with single and multi-market banks.

Results are shown in Table 6. For the full sample, a one unit increase in bank exposure in the average county ($CountyExp = 0$) is associated with a 24% reduction in the supply of small business loans, a 25% increase in mortgage originations, and 60% increase in mortgages originated for sale into the secondary market. The first two coefficients are statistically significant at the 10% level, and the third is significant at the 1% level. The interaction

term is not significant for small business loans, but the partial effect of a one standard deviation increase in county exposure led to a 12% decrease in mortgage originations and a 16% decrease in mortgage originations for sale. These coefficients suggest that banks more exposed to import competition decreased their small business lending uniformly across markets and increased their mortgage lending, but only in counties not exposed to import competition.

Dividing the banks into single- and multi-market samples shows that though similar results hold across each of these samples, single market banks are more sensitive to exposure to import competition. For small business lending, the coefficient on bank exposure is -0.03 for multi-market banks and -0.46 for single-market banks, and while the coefficient is statistically significant at the 5% level for single-market banks, it is statistically insignificant for multi-market banks. As with the full sample, the coefficients on the exposure term are statistically insignificant for each sub-sample, suggesting that decreases in small business lending were uniform across markets.

For mortgage originations, the coefficient on bank exposure is 0.10 for multi-market banks and 0.51 for single-market banks. The coefficient for single-market banks is statistically significant at the 1% level but not significant for multi-market banks. The coefficient on interaction term is -0.06 for multi-market banks and -0.11 for single market banks. The coefficient on the interaction term is statistically significant at the 5% level for multi-market banks but not statistically significant for single-market banks.

The coefficient on bank exposure for mortgages originated to sale is 0.35 for multi-market banks and 0.90 for single-market banks, and both are statistically significant at more that the 5% level. The coefficients on the interaction term are negative but only statistically at the XXX level for multi-market banks and the XXX level for single-market banks.

To summarize these results, exposure to increased import competition led banks to decrease small business lending and increase mortgage lending, primarily in counties not exposed to the shock. For mortgages originated to sell, the same pattern emerges, as the coefficients on exposure are positive and statistically significant and the coefficients on the interaction terms approach statistical significance. Combined with the previous results, this suggests that high exposed banks were able to continue originating mortgage loans in coun-

ties not exposed to the China Shock because they could sell those loans in the secondary market. A

These results are important for several. The first reason is the reallocation of lending capital from small business to mortgage markets. Drechsler et al. (2017) write that small business loans are risky, illiquid, and rarely securitized. Mortgages, on the other hand, are frequently sold off balance sheet and have large secondary markets backed by other banks, financial institutions, and government sponsored enterprises. The fact that the banks which saw reduced funding following the China Shock reduced their small business lending and replaced it with mortgage lending provides evidence of what some have coined a flight to quality (Bernanke et al. (1996)). Single-market banks did not see the same reduction in lending as multi-market banks, perhaps because single-market banks are often focused on relationship lending and have vested interests in maintaining those lending relationships.

The second is the increase in mortgage originations for sale. When a mortgage is originated and then rapidly moved off balance sheet, the bank making the initial loan is able to preserve its core liquidity. While the returns from such a sale may be less than if the mortgage had not been sold, such a strategy frees up bank capital. Funding constraints can force banks to value liquidity over profit.

Finally, the difference in magnitude of coefficients between single- and multi-market banks suggests that diversification of branch networks can have a stabilizing effect on credit supply, even when bank funding is strained.

6 Summary and Concluding Remarks

In this paper, I show that the local labor market shock generated by the granting of Permanent Normal Trade Relations with China in 2000 had implications beyond the real economy. Banks rely on cheap funding from customer deposits in local markets, and when those local markets experience increased unemployment and decreased wages, deposit supply is constrained. I show that banks saw statistically significant declines in deposit supply in markets exposed to the China Shock, and these local deposit declines aggregated up to the balance sheet level.

These funding constraints changed how and where banks extended credit. Banks exposed to the shock saw aggregate decreases in small business lending but increases in mortgage lending. This transition was a flight to quality, as mortgage lending is less risky than small business lending. A large secondary market for mortgage loans allowed banks to originate mortgage loans and then sell them to other financial institutions.

With any analysis like this, caution must be taken when assigning causality. Violations of the identification assumption can limit the ability for a causal interpretation of reduced form parameters. I support identification in many of my analyses by showing parallel pre-trends and event study plots, and while many of these support identification, there are some worries with single-market banks. During this era of rapid bank consolidation and branch expansion, single market banks, especially in counties exposed to the China Shock, were rapidly declining. Some of this decline can be attributed to the rapid expansion of regional and national banks.

Nonetheless, the insights from this paper have broader implications for how we understand the transmission of local shocks. The deposits channel means that local shocks can constrict banks' funding, and when bank funding is limited, the type and location of credit they extend changes.

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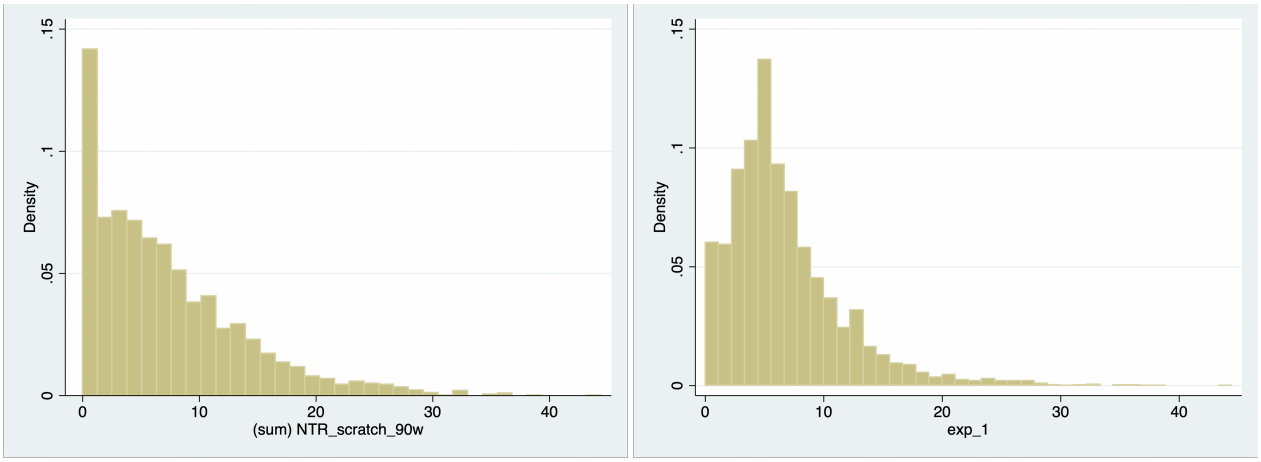
Figure 1: County and Bank Exposure to PNTR



(a) County Exposure

(b) Bank Exposure

Table 1: Bank and County Exposure to PNTR

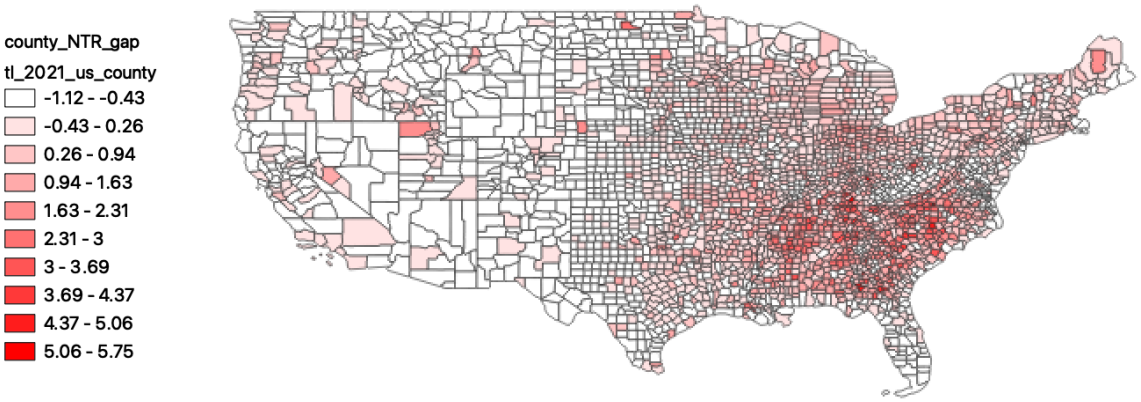
Measure	Mean	Sd.	Median	Min.	Max.
County Exposure	7.23	6.47	5.68	0	44.44
County Exposure Normalized	0	1	-0.24	-1.11	5.75
Bank Exposure [n = 10,177]	6.76	4.95	5.60	0	44.44
Normalized Bank Exposure [n = 10,177]	-0.07	0.76	-0.24	-1.11	5.75

8 Additional Figures and Tables

8.1 Figures

8.2 Tables

Figure 2: Map of County Exposure (Normalized)



Note: Plots the normalized NTR gap in each county.

Table 2: Correlation Between Bank Exposure and Pre-Shock Measures

$BankExp_b = \beta_0 + \beta_1 \bar{X}_b + \epsilon_b$							
		Explanatory Variable:					
		Assets	Deposits	Branches	ROE	NPL Ratio	Core Dep. Ratio
Pan. (A)							
	Est.	-0.00703	0.00133	-0.000489	0.00106	-0.000479	0.0744
	SE	(0.00499)	(0.00481)	(0.000138)	(0.000709)	(0.000422)	(0.0665)
	N	9307	9306	9202	9290	9290	9301
Pan. (B)							
	Est.	-0.0187***	-0.0123*	-0.000451***	0.000941	-0.00156**	-0.0317
	SE	(0.00655)	(0.00650)	(0.000134)	(0.00131)	(0.000758)	(0.128)
	N	2793	2792	2688	2793	2793	2787
Pan. (C)							
	Est.	0.0133	0.0268***	0.0218***	0.00114	0.000132	0.107
	SE	(0.00864)	(0.00822)	(0.00486)	(0.000842)	(0.000518)	(0.0769)
	N	6514	6514	6514	6497	6497	6514

Note: Data from FDIC Quarterly call reports. The balance tests regress each bank's exposure, Exp_b, on a pre-Shock average of a given balance sheet item. Each column presents the estimated coefficient, β_1 and its heteroskedasticity robust standard error. Panel (A) includes the full sample of banks and Panel (B) includes only banks operating in multiple markets, and Panel (C) includes only banks operating in a single market.

Table 3: Deposit Supply Shifts

	Full Sample		Established Markets	
	dep	dep	dep	dep
Post x Exp	-0.0446***	-0.0421***	-0.0188**	-0.0168*
	(0.00869)	(0.00868)	(0.00884)	(0.0102)
Post x avg_pay	0.159***	0.182***	0.185***	0.240***
	(0.0319)	(0.0268)	(0.0355)	(0.0285)
Post x man_share	0.0299	-0.00769	-0.118*	-0.182***
	(0.0552)	(0.0542)	(0.0609)	(0.0597)
Post x pct_college	0.0129***	0.0119***	0.00881***	0.00760***
	(0.000758)	(0.000664)	(0.000724)	(0.000607)
Bank-by-County FE	yes	yes	yes	yes
Bank-by-Year FE	yes		yes	
Bank-by-Year-by-State FE		yes		yes
N	193995	189943	97715	95584
R^2	0.953	0.959	0.971	0.976

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$

Note: Data are bank-by-county-by year observations. Each regression is a continuous difference-in-difference regression. The fixed effects included in each regression are denoted in the table. The parameter of interest is the coefficient $PostxNTR\_gap$, which signifies the percent change in local deposit supply due to a one standard deviation increase in county level exposure. The Established Markets sub-sample focuses on markets where banks have an established presence by excluding observations where the given bank has only one branch in the local market.

Table 4: Bank Deposit Levels

	Full Sample			Multi-Market			Single-Market		
	ldep	coredep	brokdep	ldep	coredep	brokdep	ldep	coredep	brokdep
Post x BankExp	-0.0217***	-0.0198***	-0.00962	-0.0234***	-0.0223**	-0.0351***	-0.0135***	-0.0120**	0.0105
	(0.00487)	(0.00530)	(0.00864)	(0.00908)	(0.00895)	(0.0131)	(0.00477)	(0.00588)	(0.0108)
Post x NPR	-0.00295***	-0.00269***	-0.00328***	-0.00301***	-0.00284***	-0.00377***	-0.00272***	-0.00250***	-0.00299***
	(0.000404)	(0.000472)	(0.000819)	(0.000811)	(0.000782)	(0.000953)	(0.000458)	(0.000566)	(0.00114)
Post x Asset	0.000778	0.0184**	-0.0320**	0.00984	0.00465	0.0100	-0.0151	0.00479	-0.0766***
	(0.00804)	(0.00829)	(0.0144)	(0.0108)	(0.0110)	(0.0128)	(0.0126)	(0.0132)	(0.0293)
Post x EQR	25.31	-62.38*	41.91	-65.18	-65.37	-32.88	65.12**	-27.99	60.80
	(28.65)	(33.52)	(44.12)	(52.98)	(51.63)	(54.14)	(27.03)	(38.86)	(52.87)
N	376831	376830	376831	154465	154465	154465	222131	222130	222131
R^2	0.947	0.942	0.907	0.967	0.966	0.946	0.934	0.923	0.874

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$

Note: Data come from FDIC Quarterly Call Reports. The regression is a continuous difference-in-difference, and dependent variables include the log of total deposits, core deposits, and brokered deposits. Variables include an indicator *Post* which is equal to 1 for observations after the year 2000; *Exp*, which is each bank's exposure to the China Shock based on its deposit collecting locations; the average non-performing loan ratio, log of assets, and equity-to-assets ratio for each bank in the years prior to 2000. Each regression includes time period and bank fixed effects. The first panel includes all banks, the second includes only banks operating branches in more than one local market, and the final includes only banks operating branches in a single market.

Table 5: Bank Level Lending Changes

	Full Sample			Multi-Market			Single Market		
	amt cra	amt hmda	hmda sold	amt cra	amt hmda	hmda sold	amt cra	amt hmda	hmda sold
Post x BankExp	-0.0430	0.0403	0.117	-0.0325	0.0147	0.0893	0.0633	0. 195*	0.385**
	(0.0716)	(0.0380)	(0.0760)	(0.0708)	(0.0369)	(0.0799)	(0.0770)	(0.114)	(0.182)
Post x Asset	0.924***	-0.106***	0.0505	1.033***	-0.0875***	0.0708	-0.435***	- 0.111	0.134
	(0.0484)	(0.0330)	(0.0464)	(0.0498)	(0.0337)	(0.0487)	(0.108)	(0.149)	(0.139)
Post x NPR	-14.11***	-2.242	-6.649	-14.54***	-1.926	-8.297*	-9.351	5.116	30.17
	(5.251)	(3.560)	(4.817)	(5.219)	(3.627)	(4.807)	(14.86)	(15.82)	(19.89)
Post x EQR	-2.825**	-0.730	1.457	-2.959**	-0.437	1.196	-4.278*	-1.663	4.521
	(1.388)	(0.707)	(1.309)	(1.326)	(0.672)	(1.354)	(2.428)	(3.015)	(3.914)
N	32877	32877	32877	30123	30123	30123	2558	2558	2558
R^2	0.755	0.839	0.726	0.756	0.828	0.730	0.809	0.907	0.808

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$

Note: The table presents the results of the continuous difference-in-difference regression using bank-by-year observations. Each regression includes bank and county. Dependent variables include the log of small business lending, home mortgage originations, and home mortgages that were originated and sold within a year. The first panel includes all banks, the second includes only banks operating branches in more than one local market, and the final includes only banks operating branches in a single market.

Table 6: Credit Supply at Bank-by-County Level

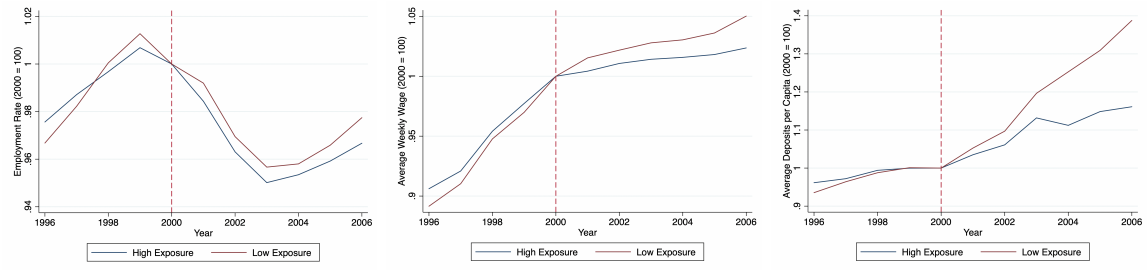
	Full Sample			Multi-Market			Single Market		
	amt_cra	amt_hmda	sold_hmda	amt_cra	amt_hmda	sold_hmda	amt_cra	amt_hmda	sold_hmda
Post x BankExp	-0.242*	0.259*	0.607***	-0.0300	0.101	0.349***	-0.463**	0.531***	0.903**
	(0.144)	(0.137)	(0.193)	(0.0422)	(0.0956)	(0.113)	(0.221)	(0.200)	(0.399)
Post x BankExp x Exp	0.0416	-0.120***	-0.161***	0.00717	-0.0636**	-0.0524	-0.000451	-0.113	-0.173
	(0.0404)	(0.0376)	(0.0492)	(0.0317)	(0.0301)	(0.0352)	(0.0550)	(0.0920)	(0.132)
Post x Asset	-0.206***	-0.0449	0.0290	0.0156	-0.00756	0.129***	-0.304***	-0.203**	-0.385*
	(0.0545)	(0.0285)	(0.0508)	(0.0239)	(0.0254)	(0.0429)	(0.0771)	(0.0893)	(0.197)
Post x NPR	-6.802	1.306	20.10**	-9.855	2.591	20.34**	9.392	8.350	40.77
	(10.42)	(5.546)	(9.741)	(7.213)	(5.417)	(9.613)	(18.00)	(14.04)	(27.12)
Post x EQR	0.708	0.581	2.509	0.140	0.00632	0.973	0.662	3.669	13.88**
	(1.973)	(1.506)	(3.073)	(1.315)	(1.760)	(3.834)	(3.479)	(2.284)	(5.695)
N	341291	381808	381807	125920	350546	350545	204135	16351	16351
R^2	0.786	0.818	0.716	0.794	0.826	0.728	0.827	0.884	0.819

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$

Note: The table presents the results of the continuous difference-in-difference regression using bank-by-county-by-year observations. Each regression includes bank-by-county and county-by-year fixed effects. Dependent variables include the log of small business lending, home mortgage originations, and home mortgage originated then sold within a year. The first panel includes all banks, the second includes only banks operating branches in more than one local market, and the final includes only banks operating branches in a single market.

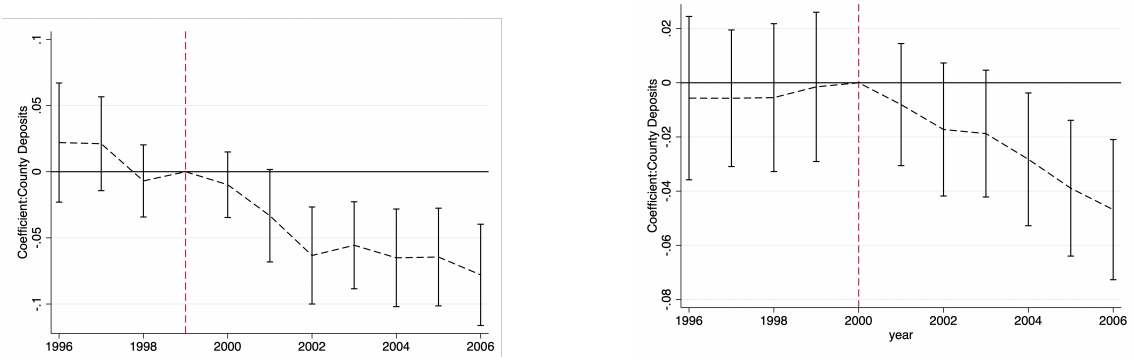
Figure 3: County Variables by Exposure to China Shock



(a) Employment Rate (b) Average Wage (c) Deposits

Note: The figure presents the average employment rate, weekly wage, and deposits per capita at the county level based on exposure to the China Shock. Counties are divided into high and low based on the value of their exposure relative to the median. Values are then normalized such that 2000 is equal to 100.

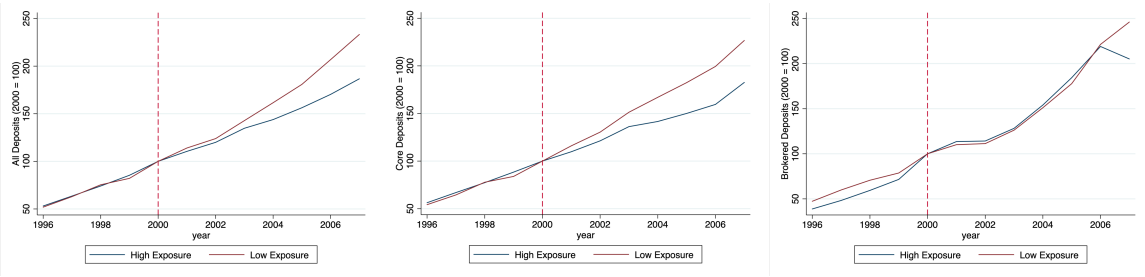
Figure 4: Effect of China Shock on Deposits at Bank-County Level



(a) Full Sample (b) SubSample

Note: The figure present the estimates from the difference-in-difference regression from the panel of bank-county level deposits in FDIC insured banks. The dependent variable is the log of deposits at the bank-county level. Controls are interacted with a post- dummy and include.... Regression includes bank-by-state-by-year and bank-by-county fixed effects. Panel A is estimated using the full sample of bank-by-county-by year observations and Panel B is estimated using the sub-sample that excludes bank-by-county-by-year observations in which only one bank is present.

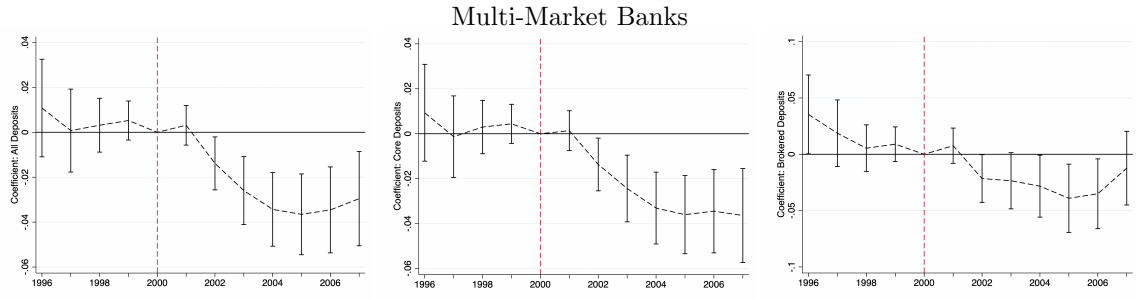
Figure 5: Deposit Trends by Exposure to China Shock



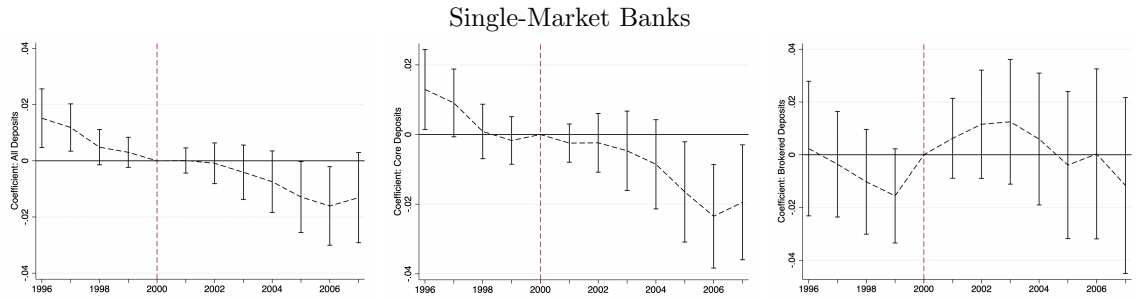
(a) All Deposits (b) Core Deposits (c) Brokered Deposits

Note: The figure presents the average of all deposits, core deposits, and brokered deposits at the bank level based on exposure to the China Shock. Banks are divided into high and low based on the value of their exposure relative to the median. Values are then normalized such that 2000 is equal to 100.

Figure 6: Deposit Reaction to China Shock



(a) All Deposits (b) Core Deposits (c) Brokered Deposits



(d) All Deposits (e) Core Deposits (f) Brokered Deposits

Note: The figure presents the event studies of the reaction of all deposits, core deposits, and brokered deposits to exposure to the China Shock. Regressions are continuous difference-in-difference regressions with bank and period fixed effects. Standard errors are clustered at the bank level, and the coefficient for year 2000 is standardized to zero.