Data Manual

# The Construction of Bank Holding Company-Level Data

Using Call Reports, Y-9C Reports, Summary of Deposits, and Other*

Xuan Zou†

Rutgers University

First Draft: September 2018

Update: August 11, 2019

## 1 Overview

The purpose of this manual is to provide detailed information about how to construct bank holding company (BHC)-level data using raw regulatory data from the Federal Reserve System and other sources. The data construction process is complex due to many reasons. First, the definitions of bank accounting variables are complicated and changing over time, so they should be defined and clarified carefully. Second, different types of financial institutions report to different organizations, such as Federal Reserve System, the Federal Deposit and Insurance Corporation (FDIC), the Comptroller of Currency, and the Federal Financial Institutions Examination Council (FFIEC) with responsibilities of Community Reinvestment

*I am grateful to Joseph Hughes for his guidance.

†Department of Economics, Rutgers University, New Brunswick, NJ, 08901. Email: x.zou@rutgers.edu

Act (CRA), so the data should be filtered properly according to certain criteria. Third, to merge data from different sources, we need to search for a common identifier, which is not easy and usually requires external identifiers. Moreover, the bank level data needs to be aggregated to BHC level, because banks under the same BHC would behave collectively due to financial regulations or company strategies. The process of summing up could be tricky due to complex bank structures. Lastly, when calculating the deposit-weighted GDP, income per capita, and Herfindahl-Hirschman index (HHI), one could easily get confused about the deposit share for one county, one state, one branch, and one BHC. This data manual provides step-by-step guide to building a BHC-level data.

I combine BHC accounting data collected from Federal Reserve Y-9C reports,[1] market value data from Wharton Research Data Service (WRDS) Compustat, small business lending (SBL) data from the Consolidated Reports of Condition and Income (Call reports),[2] branch level bank deposit data from Summary of Deposits,[3] and state level GDP and county level income per capita data from Bureau of Economic Analysis.[4] The time period of interest is 2001–2018, covering both before and after the financial crisis. Except for SBL and deposits data from June reports, other data are collected at the end of each year during 2001–2018. The methodology of this manual is adopted from Hughes, Jagtiani, and Mester (2016) with some variations.

# 2 Bank Accounting Data from Y-9C Reports

Federal Reserve Y-9C data are quarterly collected for all domestic holding companies with certain amount of consolidated assets. This manual only uses data in the fourth quarter during 2001-2018. The filtering criteria and accounting variable definitions in this section closely follow Hughes, Jagtiani, and Mester (2016).

[1] Available from the Federal Reserve Bank of Chicago (`https://www.chicagofed.org/banking/financial-institution-reports/bhc-data`)

[2] Available from the FDIC (`https://cdr.ffiec.gov/public/`)

[3] Available from the FDIC (`https://www5.fdic.gov/sod/sodMarketBank.asp?barItem=2`)

[4] Available from BEA: `https://apps.bea.gov/regional/downloadzip.cfm`

## 2.1 Bank data filtering criteria

There are approximately 5000 observations in each year's raw dataset, and several criteria are used to filter the data:

1. The observations with missing values or non-positive values for total assets are deleted (BHCK2170>0).

2. Keep bank holding companies (RSSD9331=28) and thrift holding company (RSSD9331=37), and exclude "not available" (RSSD9331=0). Note that large banks such as Credit Suisse, Synchrony Financial, and UBS are kept, although their category is not available.

3. The legal structure of the organization should be corporation (RSSD9047=1) or limited liability company or corporation (RSSD9047=1)[5].

4. Keep holding company (RSSD9048=500) and securities broker or dealer (RSSD9048=700), and exclude insurance broker or company (RSSD9048=550), utility company (RSSD9048=710), and other non-depository institution (RSSD9048=720). Notice that Goldman Sacks, Morgan Stanley, Ally, and American Express are kept, although they are not in the desired category.

5. Drop Grandfathered savings and loan holding company (RSSD9425=18).

6. Drop lower-tier holding companies whose higher-tier also files Y-9C (BHCK9802=2).

Note that I restrict the sample to banks that are holding company corporations with positive total assets. In the sixth criterion, I cannot keep both lower-tier and higher-tier holding companies because I will combine the data to the higher-tier, which could lead to double counting.

[5](Foreign banks with more than $50 billion in assets were required by the Dodd-Frank Act to set up an Intermediate Holding Company to operate all their subsidiaries, therefore we need to include the form of LLC in the dataset.)

The list of number of observations in each year and in total is provided in Table 1 Notice that during 2001-2005, there were approximately 2000 observations each year, but during 2006-2014, there were about 1000 observations and afterwards, there were only around 570 observations. This is because the asset-size threshold for filing the FR Y-9C increased from $150 million to $500 million in March 2006, and it increased further to $1 billion in March 2015 and $3 billion in September 2018.[6] This respondent burden reduction is to reflect the influences of inflation, industry consolidation, and normal asset growth of bank holding companies.

Table 1: **Number of Y-9C Observations in My Sample during 2001-2018**

| **Year** | **2001** | **2002** | **2003** | **2004** | **2005** | | | | |
|---|---|---|---|---|---|---|---|---|---|
| N of Obs. | 1794 | 1929 | 2078 | 2198 | 2210 | | | | |
| **Year** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** |
| N of Obs. | 946 | 923 | 928 | 966 | 958 | 964 | 1014 | 1025 | 1022 |
| **Year** | **2015** | **2016** | **2017** | | | | | | |
| N of Obs. | 586 | 579 | 577 | | | | | | |
| **Year** | **2018** | | | | | | | | |
| N of Obs. | 340 | | | | | | | | |

## 2.2 Definition of Accounting Variables

The bank accounting items[7] with corresponding codes from Y-9C reports and descriptions are listed in the Table 2. Below are some additional explanations for the accounting variables.

### 2.2.1 Book value and market value of assets

Although BHCK2170 is usually used as total assets, I subtract total assets by the goodwill (BHCK3163) and use it as the proxy of book value of assets. To calculate the Tobin's Q

[6] `https://www.federalreserve.gov/apps/reportforms/reportdetail.aspx?sOoYJ+5BzDal8cbqnRxZRg==`

[7] Note that all accounting amounts are in Thousand dollars.

Table 2: **Accounting Variables in Y-9C Reports**

| Class | Variable | My Code | Code in Y-9C | Note |
|---|---|---|---|---|
| Identifier | Entity | ID | RSSD9001 | |
| | Short Name | NAME | RSSD9010 | |
| Liabilities | Book Value of Liabilities | TLIB | BHCK2948 | |
| Assets | Book Value of Assets Net of Goodwill | BVA | BHCK2170 -BHCK3163 | |
| | Total Assets | TOTA | BHCK2170 | |
| | Liquid Assets | LQA | BHCK0081 +BHCK0295 +BHCK0397 +BHDMB987 +BHCK1754 +BHCK1773 +BHCKB989 | |
| Revenue | Total Revenue | REVENUE | BHCK4079 +BHCK4107 | |
| Loans | Total loans | LSUM | BHCK2122 +BHCK2123 | |
| | Total Business Loans | LCIL | BHCK1763 +BHCK1764 | |
| | Residential RE Loans | LRRE | BHDM1797 +BHDM5367 +BHDM5368 | Before 1991/03: not exist |
| | Commercial RE Loans | LCRE | BHCK1410 -LRRE | |
| | Consumer Loans (including credit cards) | LIND | BHDM1975 | |
| Equity | Tier 1 Capital | ECAP | BHCK3210 | |
| | Tier 2 Capital | FCAP | BHCK3210 +BHCK4062 +BHCK3123 | |
| Interest Rate | Interest on Loans | INT_LOANS | BHCK4435 +BHCK4436 +BHCKF821 +BHCK4059 | 2001/03 – 2007/12: BHCK4010 |
| | Interest on Lease | INT_LEASES | BHCK4065 | |
| | Total Interest Income | INTL | INT_LOANS +INT_LEASES | |
| | Contractual Rate | LTOTROA | INTL/LTOT | |
| Cost of Funding | Interest Expense | INTEXP | BHCK4073 | |
| | Total Deposits | TDEP | BHDM6631 +BHDM6636 +BHFN6631 +BHFN6636 | |
| | Other Borrowed Funds | OBMO | BHCK3190 | |
| | Cost of Funding | | INTEXP/(TDEP+OBMO) | |
| Nonperforming Loans | Past Due but Accruing | | BHCK5525 +BHCK5524 | |
| | Non-accruing | | BHCK5526 | |
| | Gross Charge-offs | | BHCK4635 | |
| | Nonperforming C&I | BNPL | BHCK1606 +BHCK1607 +BHCK1608 | |
| | Total NPL | NPL | BHCK5525 +BHCK5524 +BHCK5526 +BHCK4635 | |
| | Other Owned RE | ORO | BHCK2150 | 1990/09-2009/03: BHCK2744 +BHCK2745 |

ratio, I use BHCK2948 as book value of liabilities, and then calculate the sum of the market value of bank equity and the book value of its liabilities as the proxy of market value of assets.

### 2.2.2 Loans

The amount of total loans is calculated as the sum of BHCK2122 and BHCK2123, because BHCK2122 is the sum of different types of loans minus the unearned income on loans (BHCK2123). Total business loans, or Commercial & Industrial loans, include business loans both from domestic and foreign offices. Residential real estate loans include loans secured by residential properties and extended under lines of credit and other loans secured by residential properties as first liens or junior liens. Commercial real estate loans include construction loans, loans secured by farmland, 1-4 family and multi-family residential real estate loans, and other real estate loans. Consumer loans include credit cards, revolving credit plans, automobile loans, and other consumer loans such as student loans. Note that automobile loans (BHCKK137) and other consumer loans (BHCKK207) are not available until 2011.

### 2.2.3 Cost of Funding and Contractual Loan Interest Rate

Cost of funding and contractual loan interest rate are very important for the analysis of credit access. Cost of funding is calculated as interest expense divided by the sum of total deposits and other borrowed funds. Contractual loan interest rate is calculated as the sum of interest and fees on loans and interest on lease divided by the total loan amount. Note that before 2008, the item of interest and fees on loans is available as BHCK4010 and afterwards it is calculated as the sum of BHCK4435, BHCK4436, BHCKF821, and BHCK4059. The spread is defined as the difference between cost of funding and contractual loan interest rate. The observations are deleted if either funding cost or loan rate is larger than 50%, or the spread is less than -10%.

### 2.2.4 Non-performing loans

Nonperforming loan-to-total loan ratio is usually used to measure one bank's loan quality. Nonperforming loans (NPL) are calculated by summing up the delinquent loans and gross charge-offs. Charge-offs are uncollectible loans and leases whose amounts are charged off against the allowance for credit loss. Net charge-offs are calculated as gross charge-offs minus recoveries. Delinquent loans include those past due and still accruing interest and those not accrual. Because gross charge-offs are not included in the total loans, NPL ratio is defined as the amount of NPL divided by the sum of total loans and gross charge-offs. Although some literature included other real estate owned in calculation of NPL, which is foreclosed real estate which is nonaccrual but have not been sold for recoveries yet, I do not include this item. Outliers are eliminated by deleting the banks with the value of charge-offs more than four times of that of delinquent loans.[8]

# 3 Bank Market Values from Compustat

The stock data are collected from WRDS Compustat. The market value of bank equity is calculated as the product of stock prices and outstanding shares by the end of each fourth quarter during 2001–2018. Specifically, this manual uses the quarterly close market price (PRCCQ) and the quarterly shares outstanding number (CSHOQ) for the fourth quarters, instead of the monthly close market price (PRC) and the shares outstanding (SHROUT) on Center for Research in Securities Prices (CRSP), because CRSP data only contains one single class of stock.

To link the market values with BHCs, this manual uses the link created by the Federal Reserve Bank of New York,[9] which matches the unique bank identifier assigned by the Federal Reserve System (RSSD9001) with that used in CRSP (PERMCO). However, since

[8] Although the magnitude of delinquent loans is usually more than three time of that of charge-offs (`https://www.federalreserve.gov/releases/chargeoff/delallnsa.htm`), I do not want to reduce much of the sample size. Further discussion are needed.

[9] Available here: `https://www.newyorkfed.org/research/banking_research/datasets.html`

Compustat does not use PERMCO, this manual first matches RSSD9001 with PERMCO, and then links PERMCO to CUSIP, which is used in Compustat. Below are the matching steps:

1. Download the link table from the website of New York Fed and extract the linkage between RSSD9001 and PERMCO.
2. Use the list of PERMCO to retrieve a list of corresponding CUSIP in CRSP. Note that the CUSIP here is eight-digit code.
3. Submit the list of CUSIP in Compustat and retrieve the data of CSHOQ and PRCCQ. Keep only the data in the fourth quarter.
4. Note that the CUSIP here is nine-digit code. Drop the last digit of CUSIP and match the market value data with PERMCO and then with RSSD9001.
5. Calculate the market value for each bank by multiplying PRCCQ with CSHOQ and adjust the unit by multiplying the product by 1000. Note that the unit of CSHOQ is million, so the unit of MVE should be adjusted to thousand to match that of Y9C accounting information.

Because the link table provided by New York Fed does not include foreign banks in the U.S., you need to add them manually. In the section of SIB, I describe how to add foreign banks to the datasets.

# 4 Weight of Deposits and Bank Structure from Summary of Deposits

Summary of Deposits is an annual survey about the branch level deposits and locations that all FDIC-insured institutions[10] are required to file by the end of June. We can calculate

[10]Note that small banks with total assets under $1 billion are also required to file Summary of Deposits as long as it is FDIC-insured.

each BHC's weight of deposits in the operating counties and states which then can be used to calculate deposit-weighted average HHI and GDP for BHCs. Since Summary of Deposits contains the bank structure of BHCs, we can extract it to sum up other bank level data to BHC level.

There are approximately 90,000 observations in each year's raw dataset, and several criteria are used to filter or revise the data:

1. For banks without holding companies, use their bank identifier (RSSDID) as their holding company identifier (RSSDHCR) and drop banks without valid identifier.
2. Drop branches with no deposits (DEPSUMBR =0).
3. Drop branches in the U.S. territories (STNUMBR in (60 64 66 68 69 70 72 78)).
4. Drop holding companies with no domestic deposits (DEPDOM =0).
5. Create FIPS code[11] by combining state identifier (STNUMBR) and county identifier(CNTYNUMB), and note that if county identifier is not 3 digit then put 0 or 00 in front.

## 4.1 Deposit-weighted HHI

Both state level and county level of deposit weight can be calculated by using branch level deposits and FIPS codes of branches.State level is easier while county level is more accurate and useful. Steps to get county level weight of deposits for each BHC are below.

The HHI, as a measure of market concentration, is calculated by taking square of the market share of each BHC in the market and then summing up to the state-level or county-level. The county-level HHI tends to be larger and maybe more accurate than the state-level one. The steps to calculate BHC's deposit-weighted HHI are:

[11]FIPS code, or "GEO.id2", is used by United States Census Bureau in American Community Survey to identify the state and the county.

1. For each county, sum up deposits from all the bank branches.

2. For each county, calculate each BHC's market share of deposits in this county.

3. For each county, sum up the squares of each BHC's market share of deposits as the HHI of this county.

4. For each BHC, sum up the branch level deposits in each county and also aggregate the total amount from all counties.

5. For each BHC, calculate the share of its deposits in each operating county out of its total deposits as the county level deposit weight for each BHC.

6. Use the deposit weight to calculate the average HHI for each BHC.

This HHI value can be normalized by using the formula below, but since the difference between normalized and standard HHI is not large, I use standard HHI in this manual.

$$NormalizedHHI = \frac{HHI - \frac{1}{n}}{1 - \frac{1}{n}}$$

## 4.2 Deposit-weighted GDP and Income Per Capita

The annual state-level GDP data can be downloaded from the Bureau of Economic Analysis. Five-year average GDP growth rate is calculated.[12] Applying the state level deposit weight, we can get deposit-weighted GDP growth rate for each BHC.

Since county level GDP data is available only in 2012–2015 at the Bureau of Economic Analysis, I use the county level income per capita data instead which is available from 1969 to 2017. County level five-year average income per capita growth rate can be calculated.[13]

[12]Because a different classification has been used since 1997, I use the sample period 1997 – 2018 and thus for year 2001 the average GDP growth rate is actually a four-year average rate.

[13]Note that the data for 2018 is not available yet, so I use the previous four-year average rate as a proxy for now and I will update it as soon as BEA updates the data online.

Applying the county level deposit weight, we can calculate deposit-weighted income per capita growth rate for each BHC.[14]

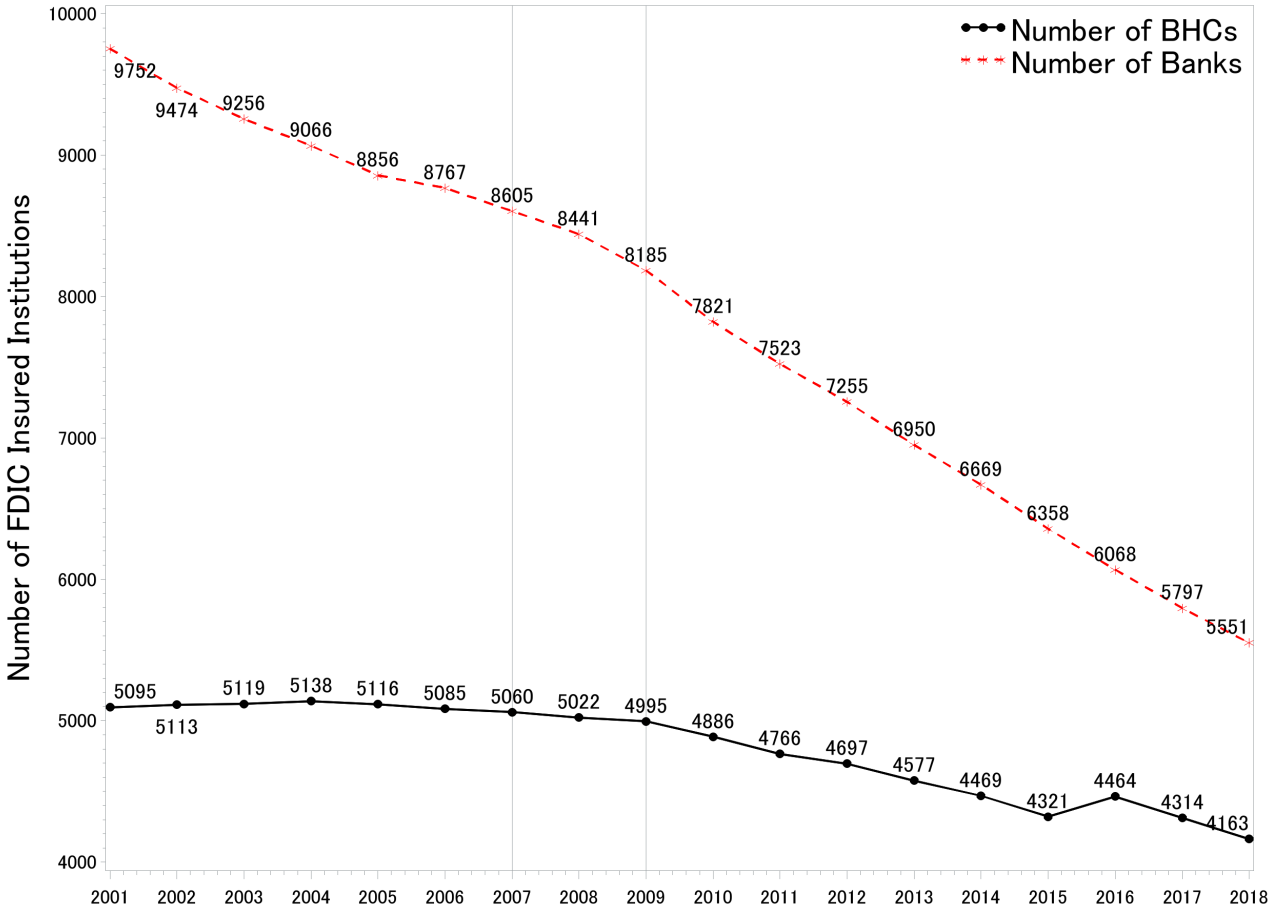
## 4.3 Matching Banks with BHC

Because the bank identifier (RSSDID) and its holding company identifier (RSSDHCR) are both listed in the Summary of Deposits, we can extract the linkage between them from the data and therefore bank-level data can be summed up to top-tier holding company level. The same procedure is applied to other data, such as SBL.

In Graph 1, I plot the total number of FDIC-insured banks and their BHCs which were all required to complete the Summary of Deposits surveys. The number of banks has been decreasing since 2000s and the decline trend accelerated after the 2008 financial crisis. The number of BHCs shows similar trend, yet less rapidly.

[14]Note that the state-county geological code in this data is in the form of characters and starts with a zero when the state code is one digit. We need to delete those zeros in order to merge with the deposit weight.

Figure 1: The Number of FDIC-insured Banks and BHCs during 2001–2017




Data Source: Summary of Deposits in 2001–2018

# 5 SBL from the Call Reports

The Call Report refers to the Consolidated Report of Condition and Income that FDIC-supervised U.S. banks are required to fill out quarterly.[15] In Schedule RC-C Part II, the loans to small business and small farms are defined as the sum of (a) the outstanding commercial and industrial (C&I) loans with origination amount of $1 million or less, (b) the outstanding commercial real estate loans with origination amounts of $1 million or less, and (c) the agricultural production and farmland loans of $500 thousand or less. In most

[15]In December 2014, FFIEC launched the Call Report Burden-Reduction Initiative which created FFIEC 051 Call Reports for small community banks in March 2017 and revised FFIEC 051, 041, and 031 reports in 2017–2018. Details: `https://www.ffiec.gov/pdf/Call_Report_Webinar_20180405.pdf`

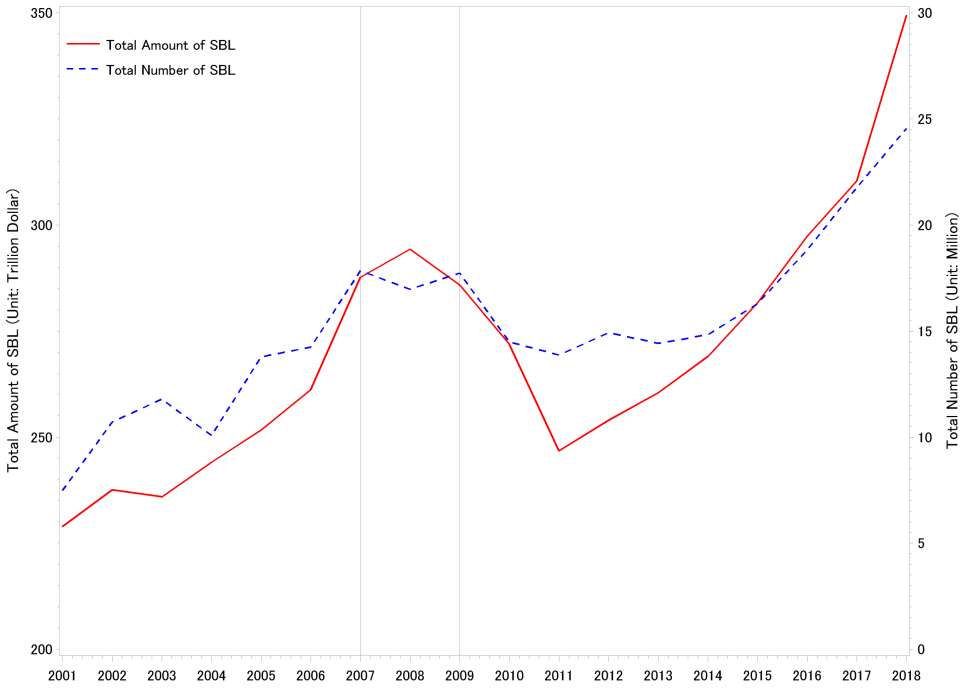
studies, SBL refers to small C&I loans captured in (a).

Table 3: **Number of Observations in Y-9C Reports in Each Year during 2001-2018**

| Variable | Code |
|---|---|
| Number of loans with origination amount less than $100,000 | RCON5570 |
| Outstanding balance for loans with origination amount less than $100,000 | RCON5571 |
| Number of loans with origination amount $100,000 - $250,000 | RCON5572 |
| Outstanding balance for loans with origination amount $100,000 - $250,000 | RCON5573 |
| Number of loans with origination amount $250,000 - $1,000,000 | RCON5574 |
| Outstanding balance for loans with origination amount $250,000 - $1,000,000 | RCON5575 |
| Total commercial and industrial loans | RCON1766 |
| Whether all the commercial and industrial loans have origination amount less than $100,000: | RCON6999 |
| SBL = RCON5571+ RCON5573+ RCON5575 | if =False |
| or SBL= RCON1766 | if =True |

Specifically, banks are required to report the number and amount of outstanding of commercial and industrial loans to U.S. addresses with original amounts of $100,000 or less, more than $100,000 through $250,000, and more than $250,000 through $1,000,000 respectively. This manual uses the total amount of outstanding commercial and industrial loans with original amounts of less than one million dollars as the small business lending amount. In Schedule RC-C Part II, banks are also asked whether all commercial and industrial loans have original amounts of $100,000 or less. If the answer is yes, then the total amount of commercial and industrial loans is counted as small business lending. The definitions and details are summarized in Table 3. Because the SBL data was collected only in June reports not in December ones before 2010, Call Reports in June are included in my dataset. The total amount and the number of originations of SBL are plotted in Graph 2.

Figure 2: Total Amount and Number of SBL from Call Reports during 2001–2018




Data Source: Call Reports in 2001–2018.

Note that FDIC Small Business Lending Survey (2018) criticized this SBL proxy from the Call Report because it failed to capture larger C&I loans with origination amounts of more than $1 million and loans secured by residential real estate that are also extended to small businesses. The limit of $1 million was set by the regulators in the early 1990s and was never adjusted for inflation. If adjusted by CPI, the limit would be over $1.6 million in 2015. Business loans secured by one-to-four-family residential properties in the Call Report are considered as home mortgages rather than business loans because they are recorded by their primary collateral rather than by purpose. According to FDIC's estimation, SBL in the U.S. was understated by at least 12% or $37 billion in 2015.

Nevertheless, C&I loans under $1 million in the Call Report is still the best available measure of SBL in the U.S. First, loan size is highly correlated to business size, therefore the borrowers of small loans are usually businesses that are small. More importantly, all banks tract the size of loans but not all banks track the size of businesses. Many banks, particularly smaller ones, were unable to report loans by size of small businesses without substantial increase of

staff resources.

# 6 SBL from CRA

## 6.1 Background

The Community Reinvestment Act of 1977 (CRA) was enacted to encourage federally insured commercial banks and savings banks and associations to meet the credit demand of local communities. A revision to the CRA in 1995 required commercial banks and savings banks associations with more than approximately $1 billion assets to report the data regarding their lending to small businesses to monitor their performance in reinvesting local community. These records are evaluated regularly and the CRA ratings record is taken into account in considering applications for deposit facilities, including mergers and acquisitions. The CRA has compiled annual county-level small business loans data since 1996.

This manual uses the branch-level Small Business Loans (SBL) data in Disclosure Reports during 2001-2016. The SBL is defined as the loan amount of small business loans originated with loan amount at origination less than $1 million. The branch-level data is summed up to institution-level data by applying ID list in Transmittal Sheets of CRA. The institution-level data is summed up to the holding company level according to the link provided by the Summary of Deposit.

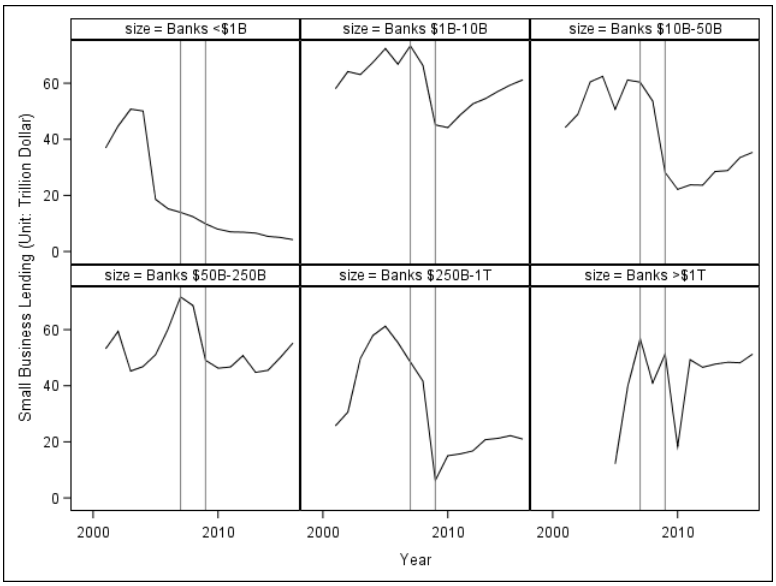
In Graph A.7, I plot the total amount of SBL, the share of SBL on total assets, the total amount of loans to startups with gross annual revenue less than $1 million, and the average size of SBL. Both the total amount and the share of SBL declined substantially during the financial crisis, and started to recover since 2010 but slowly. The average size of SBL was very stable and increased slightly over time.

## 6.2 SBL Performance of Banks in Different Sizes

To check the performance of banks of different sizes, I categorize them by assets. The cut-off points are $1 billion, $10 billion, $50 billion, $250 billion, and $1 trillion. All banks have been slowly recovering their SBL since the recession, except for banks with assets of less than $1 billion, which have decreased 90% amount of SBL since 2005.

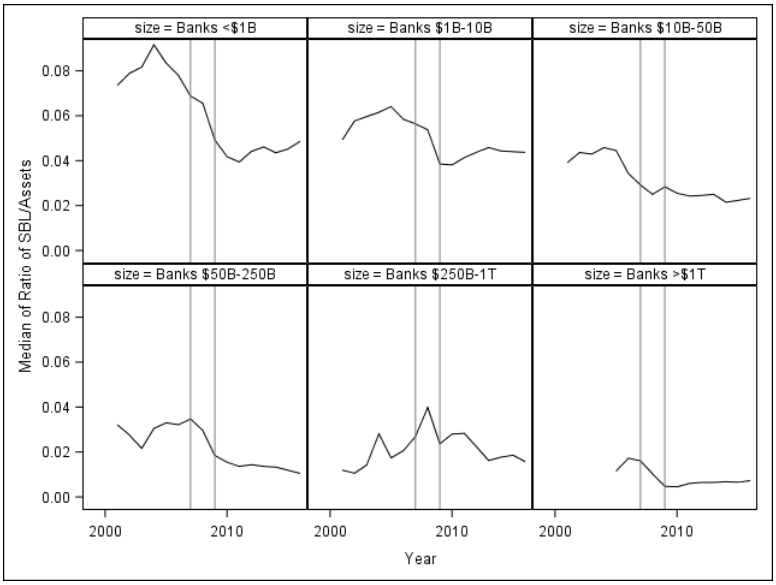
Graph 3 shows the total amount of SBL by banks in different sizes. However, this data is not adjusted by the change of number or the change of assets, so the information is vogue. Therefore, in 4, I plot the amount and the median share of SBL for banks in different sizes. During the post-crisis period, the median ratio of SBL/assets has remained at a level lower than pre-crisis. For banks with assets more than $50 billion, the median ratio of SBL/assets has been stable within 0.1-0.2 throughout the 16 years. For the smaller banks, the ratio has dropped dramatically. The smaller the bank size, the larger the drop of the ratio.

Figure 3: The Amount of SBL by Banks in Different Sizes during 2001-2016




Source: the Community Reinvestment Act. SBL is defined as business loans with originated amounts less than $1 million. The total assets in CRA, which I use to calculate the ratio of SBL to assets, are the values of total assets in Call Reports of the previous year.

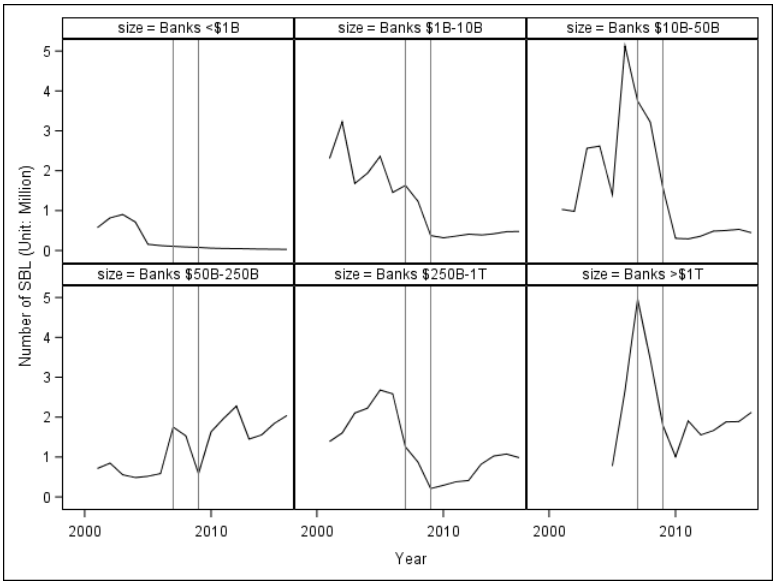
Figure 4: The Median of Ratio of SBL/Assets for Banks in Different Sizes during 2001-2016




Source: the Community Reinvestment Act. SBL is defined as business loans with originated amounts less than $1 million. The total assets in CRA, which I use to calculate the ratio of SBL to assets, are the values of total assets in Call Reports of the previous year.

In Graph 5, I plot the number of banks in different sizes. Banks with assets less than $1 billion decreased 65% in 2005 and has been continuously decreasing since then, while the number of banks in larger size has not changed much. The size of SBL is calculated as the amount of SBL divided by the number of SBL for banks in each size category.

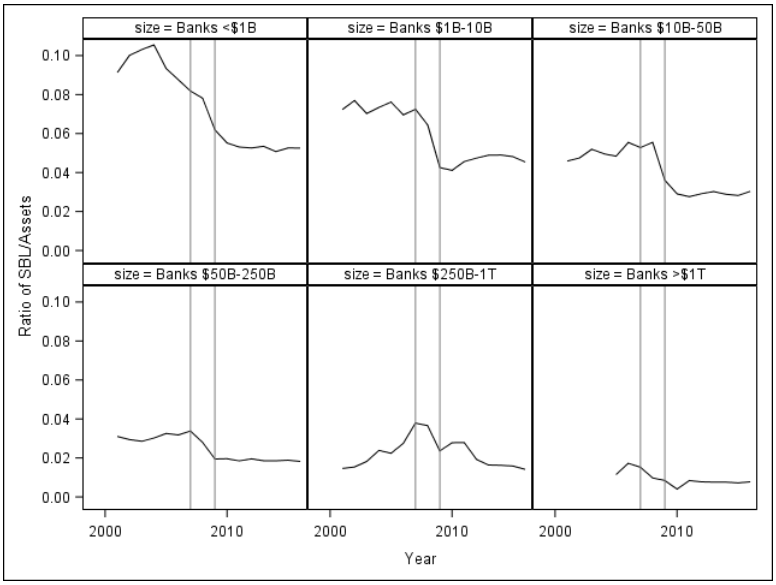
Figure 5: The Number of SBL by Banks in Different Sizes during 2001-2016




Source: the Community Reinvestment Act. SBL is defined as business loans with originated amounts less than $1 million. The total assets in CRA, which I use to calculate the ratio of SBL to assets, are the values of total assets in Call Reports of the previous year.

As in Graph 6, the average amount of loans has been growing steadily over time, not affected by the financial crisis. For banks with assets less than $250 billion, the size of SBL originated is within $150,000 - $200,000, while the largest banks offer average SBL of $25,000. For banks with assets between $250 billion and $1 trillion, the SBL size has been very volatile and increased dramatically after the recession.

Figure 6: The Ratio of Sum(SBL)/Sum(Assets) for Banks in Different Sizes during 2001-2016




Source: the Community Reinvestment Act. SBL is defined as business loans with originated amounts less than $1 million. The total assets in CRA, which I use to calculate the ratio of SBL to assets, are the values of total assets in Call Reports of the previous year.

## 6.3 Comparison between the Call Report and CRA

Comparing the SBL data in the Call Reports to that in CRA, I find that the trending patterns are obviously different in the two datasets, which might be due to several reasons. First, the definition of SBL is different. CRA defines SBL as loans with amount of $ 1 million or less, which can be commercial real estate loans or commercial and industrial loans, while Call Reports only consider small commercial and industrial loans with origination amount less than $1 million. Second, SBL data reported in CRA is loans originated or purchased, which is flow data, while SBL in Call Reports are outstanding balance, which are stock data. Third, not all banks report SBL data to CRA. CRA requires commercial banks and savings institutions with total assets of approximately more than $ 1 billion to collect and report SBL, while all FDIC-insured banks are required to file Call Reports. However, some banks with assets less than the mandatory reporting threshold also reported the SBL data either voluntarily or because they were elected to be evaluated as larger banks. For example, in 2016, there were 726 banks reported SBL data, within which 202 banks with assets below the

threshold, and the SBL data in CRA "account for about 71 percent of small business loans outstanding by dollars".[16] Therefore, SBL reported in CRA data covers a large portion of that in Call Reports.

# 7 Systemically Important Banks

In 2009, as a response to the 2007–08 financial crisis and the "too big to fail" problem, the Dodd-Frank Act imposes enhanced or heightened regulations on systemically important banks (SIBs) with more than $50 billion in assets. Specifically, Title I of Dodd-Frank Act requires that financial companies with more than $10 billion in assets to run stress tests and form risk committees and SIBs are subjected to Fed-run stress tests (DFAST) and capital planning under the Comprehensive Capital Analysis and Review (CCAR). In 2019, the asset threshold has been increased to $100 billion.

Note that although the asset threshold was set to be $50 billion in 2009–2018, some banks without holding companies but passed the asset threshold were not designated as SIBs and thus not under heightened regulations. These banks could be treated as a control group for assessing the impact of regulatory burdens.

## 7.1 The List of SIBs in 2009–2019

In 2009, Federal Reserve conducted the Supervisory Capital Assessment Program (SCAP) and 19 systemically important BHCs participated in it. There was no stress test conducted in 2010. In 2011 and 2012, same 19 SIBs participated CCAR exercises and the results of stress tests were published together with those of CCAR, because the implementing details for DFAST have not been finalized yet. Since 2013, the results of CCAR and DFAST have been published separately. Although SCAP, CCAR, and DFAST all involve assessment of capital under stressed conditions, they are different in three main aspects: (1) CCAR has

[16] See `https://www.fdic.gov/news/news/press/2017/pr17088a.pdf`

broader objectives than DFAST and aims to ensure SIBs have robust internal processes to manage risk and asset capital adequacy; (2) 2009 SCAP focused on identifying the large BHCs which had capital shortfalls in adverse scenario and required and assisted them to raise capital in time, whose results provided insights to the following CCAR; (3) SCAP and FDAST emphasize on independent supervisory estimates by Federal Reserve, while CCAR focuses on SIBs' own analysis of capital planning (*Comprehensive Capital Analysis and Review: Objectives and Overview* 2011).

Based on the list of large BHCs participated in SCAP, CCAR, and DFAST in 2009–2019 in Federal Reserve reports[17] and the list of large holding companies collected by NIC National Information Center,[18] I summarize the list of SIBs below in Table 4 and 5.

MetLife failed the stress test in 2012 and sold its banking unit to GE Capital in the same year to avoid the heightened financial regulations.[19] MetLife was labeled as a nonbank SIFI in December 2014 and won the lawsuit against the label in March 2016, but FSOC appealed and they ended the case in January 2018.[20] GE Capital (4932239) was labeled as a nonbank SIFI from July 2013 to June 2016.[21]

CIT Group[22] was in 2009 SCAP but then strategically decreased its assets to just below the $50 billion threshold to avoid heightened regulations. Afterwards, CIT Group made several acquisitions and crossed the threshold, which might be due to the leadership of John Thain, the former CEO of Merrill Lynch.[23] In 2017, it was subject to the stress test again and sold its assets sequentially, namely, its aircraft lease business in April 2017, Financial Freedom and reverse mortgage portfolio in October 2017, and its European rail leasing business in October 2018. Comerica[24] also got rid of the SIB status in 2018. Both cases are believed to

[17] The list of CCAR reports: `https://www.federalreserve.gov/publications/comprehensive-capital-analysis-and-review-publications.htm`; the list of DFAST reports: `https://www.federalreserve.gov/publications/dodd-frank-act-stress-test-publications.htm`

[18] `https://www.ffiec.gov/npw/Institution/TopHoldings`

[19] Although MetLife appeared in the list of stress test in 2012, the year-end bank data for MetLife in 2012 does not exist and I exclude this data point from my list of SIBs.

[20] `https://www.pionline.com/article/20180119/ONLINE/180119843/metlife-fsoc-end-legal-case-over-sifi-d`

[21] `https://www.treasury.gov/initiatives/fsoc/designations/Pages/default.aspx`

[22] `https://www.ffiec.gov/npw/Institution/Profile/1036967?dt=20180801`

[23] `https://www.brookings.edu/opinions/the-heavy-burden-of-being-labelled-systemically-important/`

[24] `https://www.ffiec.gov/npw/Institution/Profile/1199844?dt=20141231`

Table 4: **The List of 19 SIBs in 2009 SCAP**

| **SIBs** | **2009*** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
|---|---|---|---|---|---|---|---|---|---|---|
| Ally Financial | Y | Y | Y | Y | Y | Y | Y | Y | Y | **N** |
| American Express | Y | Y | Y | Y | Y | Y | Y | Y | Y | **N** |
| Bank of America | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Bank of NY Mellon | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| BB&T | Y | Y | Y | Y | Y | Y | Y | Y | Y | **N** |
| Capital One | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Citigroup | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Fifth Third | Y | Y | Y | Y | Y | Y | Y | Y | Y | **N** |
| Goldman Sachs | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| JPMorgan Chase | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Keycorp | Y | Y | Y | Y | Y | Y | Y | Y | Y | **N** |
| MetLife* | Y | Y | Y | - | - | - | - | - | - | - |
| Morgan Stanley | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| PNC Financial | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Regions Financial | Y | Y | Y | Y | Y | Y | Y | Y | Y | **N** |
| State Street | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| SunTrust | Y | Y | Y | Y | Y | Y | Y | Y | Y | **N** |
| U.S. Bancorp | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Wells Fargo | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Number of Y | 19 | 19 | 19 | 18 | 18 | 18 | 18 | 18 | 18 | 11 |

[1] The list contains 19 banks which participated in 2009 SCAP and most of them have remained under heightened regulations. There was no FDAST or CCAR in 2010. In 2011 and 2012, SIBs only participated in CCAR because the implementing rules for FDAST have not been developed yet. Since 2013, SIBs have been subject to both FDAST and CCAR.

[2] Y represents participating in Federal Reserve annual stress test and CCAR in that year. N represents not under stress test and the asset data is not available.

[3] MetLife failed the stress test in 2012 and sold the banking unit to GE Capital in the same year to avoid the heightened financial regulations. Although MetLife appeared in the list of stress test in 2012, the year-end bank data for MetLife in 2012 does not exist and I exclude this data point from my list of SIBs.

[4] In 2019, the asset threshold was increased from $50 billion to $100 billion and therefore several BHCs did not participate in the FDAST and CCAR in 2019.

Table 5: **The List of SIBs Joined in 2014 or Later**

| **SIBs** | **2009*** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
|---|---|---|---|---|---|---|---|---|---|---|
| BNP Paribas* | C | C | C | C | C | C | **Y** | **Y** | **Y** | N |
| BBVA Compass* | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | N |
| BMO Financial* | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | N |
| Barclays* | - | - | - | - | - | - | C | C | **Y** | **Y** |
| CIT Group | C | N | N | N | N | C | C | **Y** | C | N |
| Comerica | C | C | C | C | **Y** | **Y** | **Y** | **Y** | C | N |
| Credit Suisse* | - | - | - | - | - | - | C | C | **Y** | **Y** |
| Deutsche Bank* | C | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** |
| Discover | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | N |
| HSBC* | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| Huntington | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | N |
| M&T | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | N |
| Northern Trust | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| Citizens | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | N |
| RBC* | C | C | - | - | - | C | C | C | **Y** | N |
| Santander* | - | - | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | N |
| TD Group | C | C | C | C | C | C | **Y** | **Y** | **Y** | **Y** |
| UBS* | - | - | - | - | - | - | C | C | **Y** | **Y** |
| MUFG* | C | C | C | C | **Y** | **Y** | **Y** | **Y** | **Y** | N |
| Zions | C | C | C | C | **Y** | **Y** | **Y** | **Y** | - | - |
| Number of Y | 0 | 0 | 0 | 0 | 12 | 13 | 15 | 16 | 17 | 7 |

[1] The list contains 19 banks which participated in 2009 SCAP and most of them have remained under heightened regulations. There was no FDAST or CCAR in 2010. In 2011 and 2012, SIBs only participated in CCAR because the implementing rules for FDAST have not been developed yet. Since 2013, SIBs have been subject to both FDAST and CCAR.

[2] Y represents participating in Federal Reserve annual stress test and CCAR in that year. N represents not under stress test and the asset data not available or less than the threshold. C represents not under stress test and with more than $50 billion in assets.

[3] In 2019, the asset threshold was increased from $50 billion to $100 billion and therefore several BHCs did not participate in the FDAST and CCAR in 2019.

[4] Banks with * are foreign banks operating in the U.S. and some of them did not file Y9C or Call reports for several years.

[5] Zions bank left the list after 2018 by shedding its BHC structure. CIT has also not been designated as a SIB since 2017 as it strategically sold its assets. Comerica also left the list in the same year.

be driven by activist investors, such as hedge fund Hudson Executive Capital, who would strategically push banks to reduce assets below $50 billion to avoid the regulatory burden. [25] Zions bank[26] also avoided the SIB status after 2018 by shedding its BHC structure.

There is a group of banks which have more than $50 billion in assets but have never submitted to the annual stress test: SVB Financial (1031449), E Trade (3412583), Charles Schwab (1026632), and Synchrony (4504654).

## 7.2 Foreign SIBs Operating in the U.S.

There are 12 large foreign banks operating in the U.S. and submitted to CCAR and DFAST. In Dodd-Frank enhanced prudential standards, Federal Reserve requires foreign banks with more than $50 billion in assets to put their U.S. subsidiaries under a top-tier U.S. intermediate holding company (IHC), which will be subject to U.S. Basel III, DFAST, and other capital and risk requirements. [27] Foreign banks would either shrink the assets of subsidiaries to avoid the regulations altogether, or convert previous BHCs into IHCs, or set up new IHCs. [28] Within 12 large foreign banks in the U.S., 5 of them (BNP Paribas, Deutsche Bank, Barclays, Credit Suisse, UBS) have set up new IHCs and the remaining 7 banks (BBVA, BMO, HSBC, Santander, TD, MUFG, RBC) simply changed the institution type from BHC to IHC.

Due to the changes of institution type and other reasons, these foreign SIBs often use different RSSD ID in Call reports and Y9C reports and they also constantly change ID. What is worse, the ID matching list by NY Fed which I use to link market value with bank information does not include foreign banks. Therefore, I have to manually fix their ID changes and match their market values with their bank information. The table below contains the relevant processes.

[25] https://www.brookings.edu/opinions/the-heavy-burden-of-being-labelled-systemically-important/
[26] https://www.ffiec.gov/npw/Institution/Profile/1027004?dt=20151231
[27] https://corpgov.law.harvard.edu/2014/04/14/us-intermediate-holding-company-structuring-and-regulat
[28] https://www.bis.org/publ/qtrpdf/r_qt1803u.htm)

Table 6: **RSSD ID of Foreign Banks in Y9C and Call Reports**

| Bank | Y9C ID | Period | Name | Call ID | Period | Name | ID Revised* |
|---|---|---|---|---|---|---|---|
| BNP PARIBAS | 1025608 | 2001–15 | BancWest | 1231968 | 2001–18 | | 1575569 |
| | 1575569 | 2016–18 | BNP Paribas USA | | | | |
| BBVA | 1078529 | 2001–18 | | 1078529 | 2001–07 | COMPASS BANCSHARES | 1078529 |
| | | | | 1391237 | 2005–18 | BBVA | |
| BMO | 1245415 | 2001–18 | | 1231333 | 2001–18 | BANK OF MONTREAL | 1245415 |
| BARCLAYS | 2938451 | 2001–15 | | 1231418 | 2005–17 | | 5006575 |
| | 5006575 | 2016–18 | | | | | |
| CREDIT SUISSE | 1574834 | 2016–18 | | - | - | - | 1574834 |
| DEUTSCHE BANK | 2816906 | 2002–04, 2008–11, 2016–18 | TAUNUS CORP; DB USA CORP | 1242423 | 2002–18 | | 2816906 |
| | 1032473 | 2012–15 | DEUTSCHE BK TR | | | | |
| HSBC | 2872407 | 2001–03 | | 1857108 | 2001–18 | | 3232316 |
| | 3232316 | 2004–18 | | | | | |
| RBC | 3226762 | 2010–18 | | 1232497 | 2001–18 | | 3226762 |
| SANTANDER | 3981856 | 2012–18 | | 1239254 | 2012–18 | | 3981856 |
| TD BANK | 1249196 | 2001–14 | | 1238565 | 2001–18 | | 3606542 |
| | 3606542 | 2015–18 | | | | | |
| UBS | 4846998 | 2016–18 | | 1243206 | 2004–14 | | 4846998 |
| | | | | 4795461 | 2015–18 | | |
| MUFG | 1378434 | 2001–18 | | 2961897 | 2001–18 | | 1378434 |

[1] ID Revised refers to the ID number which I adopt to unify the RSSD ID for one bank so as to merge different datasets.

Bank of the West (BancWest) has been fully owned by BNP Paribas since 2001. BNP Paribas USA[29] was created as a IHC in 2016 to replace the original BHC BancWest[30]. [31] Although the bank assets have been above $50 billion since 2005, BancWest was under CCAR and Fed stress test in 2016-17 and BNP Paribas in 2018.

BBVA[32] acquired Compass Bancshares[33] in 2007 and changed the institution type from BHC to IHC in 2016 (keeping using the RSSD ID of Compass). It changed the name to BBVA USA in June 2019 and the current profile as of 2019 became inactive.

Bank of Montreal (BANKMONT) acquired First National Bancorp in 2001 and changed the name to Harris Financial in 2004. It bought Marshall & Ilsley (with ID of 3594612 in Y9C during 2007-10 and had more than $50 billion in assets in 2009-10 but is never labeled as a SIB) in 2011 and changed the name again to BMO Financial.[34] It converted the institution

[29] https://www.ffiec.gov/npw/Institution/Profile/1575569?dt=20190201)

[30] https://www.ffiec.gov/npw/Institution/Profile/1025608?dt=20120101)

[31] https://www.bizjournals.com/pacific/news/2016/03/21/could-bnp-paribas-sell-bank-of-the-west-along-
html)

[32] https://www.ffiec.gov/npw/Institution/Profile/1078529?dt=20170801

[33] https://www.bbvausa.com/our-story/our-company/history.html

[34] https://www.ffiec.gov/npw/Institution/Profile/1245415?dt=20170217

type from FHC to IHC in 2016.

The BHC of Deutsche bank is Taunus corporation which changed the name to DB USA in 2014 and changed the institution type to IHC in 2016.

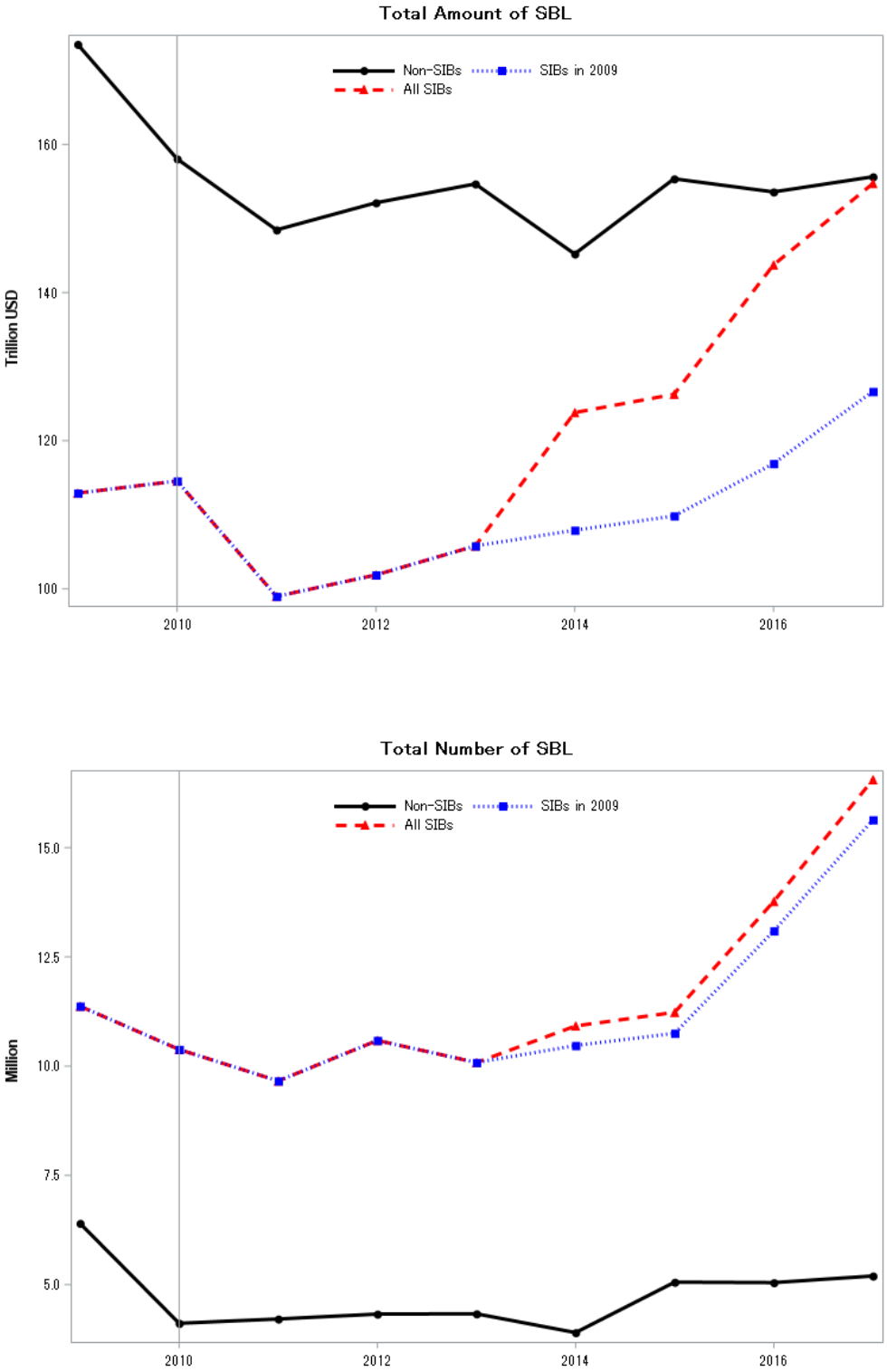
MUFG was named as UnionBancal Corporation before July 2014 and changed the institution type to IHC in July 2016.

Between 1988 and its 2014 initial public offering, Citizens was a wholly owned subsidiary of The Royal Bank of Scotland Group (RBS).

## 7.3 SBL: SIBs vs. Non-SIBs

At aggregate level, SIBs contributed to the recovery of SBL more than non-SIBs did, especially after 2015, as shown in Graph 7. Although more than half of the total SBL was made by smaller banks, SIBs have been increasing loans to small businesses since 2011. SIBs have contributed to half of the total SBL in the U.S., within which the additional $13 trillion of SBL were made by the 19 SIBs which participated in the 2009 SCAP ("old SIBs") and $28 trillion of SBL were made by the BHCs newly labeled as systemically important after 2014 ("new SIBs"). In 2009–2015, about 10 million outstanding SBLs were originated by SIBs, twice of the number by small BHCs. In 2017, SIBs made about 5 million more SBL, in which 1 million were made by "new" SIBs and 4 million were contributed by "old" SIBs. This implies that "old" SIBs mainly originated SBL of smaller amount than "new" SIBs did.

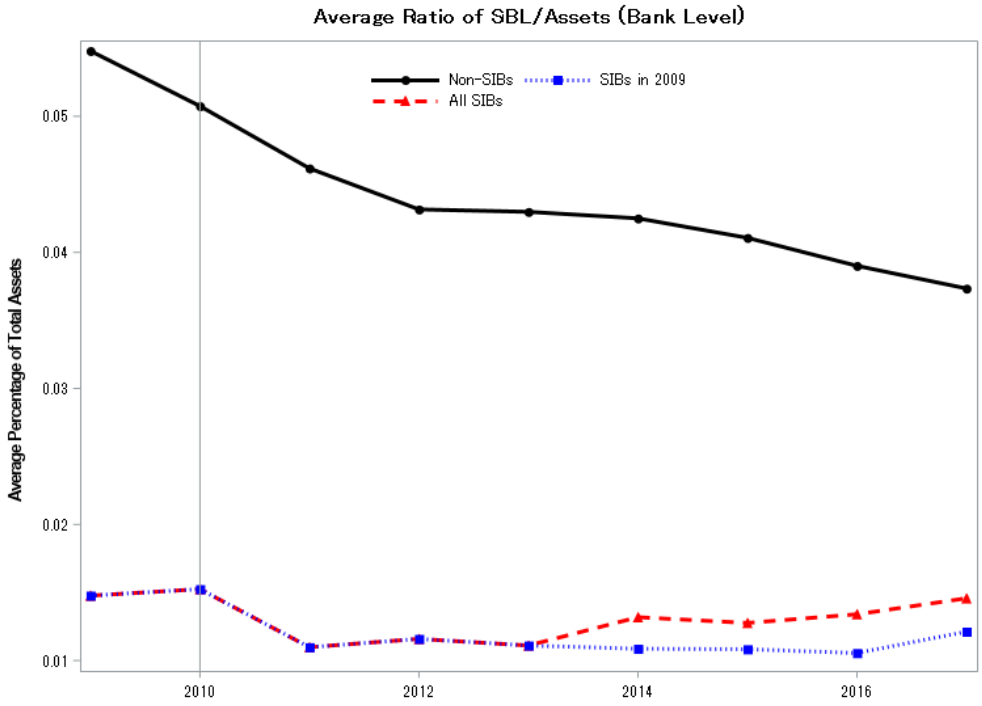
Figure 7: Aggregate SBL: SIBs vs. non-SIBs in 2009-2017

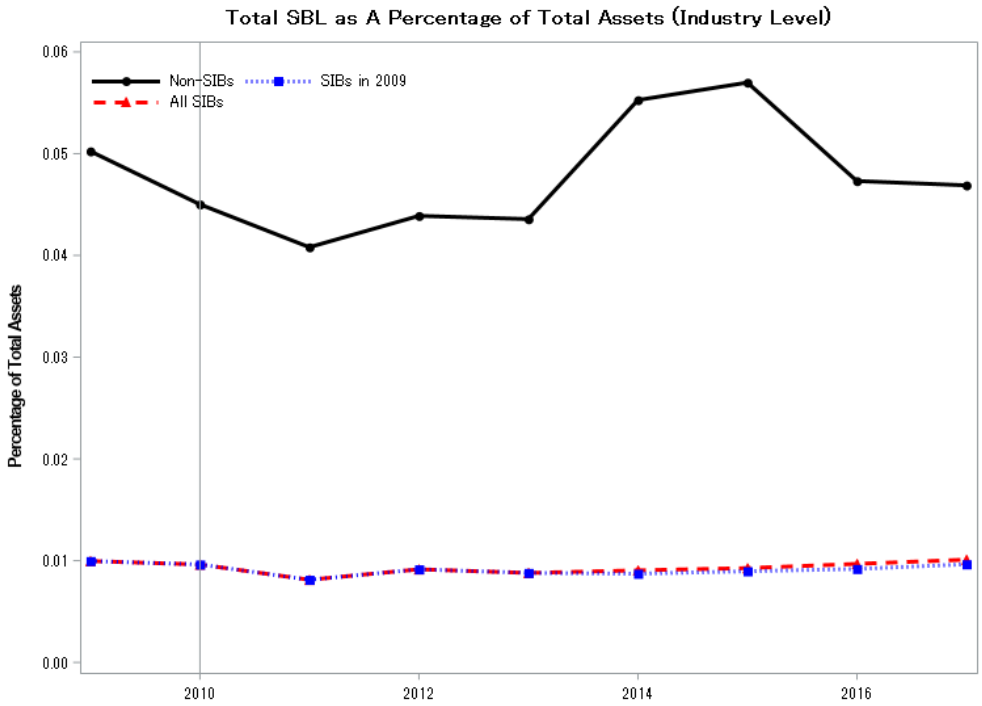



Source: Call reports; Y9-C reports; Federal Reserve Board. SIBs in 2009 refers to the 19 "old" SIBs participated in the 2009 SCAP. Since 2014, about 15 more "new" BHCs have been added to the list of SIBs and submitted to heightened supervision. Non-SIBs refers to smaller BHCs which filed Call reports and Y9-C reports.

After scaled by total assets, SBL by SIBs and non-SIBs both remained relatively stable at levels of 1% and 4-5% respectively, as shown in Graph 8. At bank level, the average ratio of SBL/assets for non-SIBs declined from more than 5% in 2009 to below 4% in 2017 and, similarly, "old" SIBs decreased their SBL shares from 1.5% in 2009 and 2010 to slightly above 1% in recent years. "New" SIBs have been maintaining the average ratio of SBL/assets at more than 1.5%, pushing up the average ratio for all SIBs to 1.45% in 2017. But at industry level, SIBs have been holding 1% of their portfolio as SBL since 2009 without much variations, while the SBL shares of smaller BHCs have varied between 4% and 5.5%. These constant ratios of SBL/assets, combined with the consolidation of smaller banks and the increase in assets of SIBs, contributed to the trends shown in Graph 7.

Figure 8: Average SBL Scaled by Assets: SIBs vs. non-SIBs in 2009-2017




Source: Call reports; Y9-C reports; Federal Reserve Board. SIBs in 2009 refers to the 19 "old" SIBs participated in the 2009 SCAP. Since 2014, about 15 more "new" BHCs have been added to the list of SIBs and submitted to heightened supervision. Non-SIBs refers to smaller BHCs which filed Call reports and Y9-C reports. The bank-level average ration of SBL/Assets is calculated as the arithmetic mean of individual bank's SBL scaled by its total assets. The industry level average refers to the aggregate amount of SBL in the banking industry scaled by the total assets of the industry.