Volume Title: Risk Topography: Systemic Risk and Macro Modeling

Volume Author/Editor: Markus Brunnermeier and Arvind Krishnamurthy, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-07773-X (cloth); 978-0-226-07773-4 (cloth); 978-0-226-09264-5 (eISBN)

Volume URL: http://www.nber.org/books/brun11-1

Conference Date: April 28, 2011

Publication Date: August 2014

Chapter Title: Improving Our Ability to Monitor Bank Lending

Chapter Author(s): William F. Bassett, Simon Gilchrist, Gretchen C. Weinbach, Egon Zakrajšek

Chapter URL: http://www.nber.org/chapters/c12554

Chapter pages in book: (p. 149 - 161)

Improving Our Ability to Monitor Bank Lending

William F. Bassett, Simon Gilchrist,
Gretchen C. Weinbach, and Egon Zakrajšek

Bank lending to households and businesses over the past several years was affected substantially by the turmoil that raged in the global financial markets during the 2007 to 2009 period. The successive waves of turbulence that ripped through the financial system during that period—especially the intensification of stresses that followed the bankruptcy of Lehman Brothers in the early autumn of 2008—exerted substantial pressure on both the asset and liability sides of banks' balance sheets. During the height of the crisis in the latter part of 2008, banks faced funding markets that were largely illiquid and secondary markets that were essentially closed to sales of certain types of loans and securities. Together with the slowdown in economic activity that set in at the end of 2007 and accelerated appreciably in late 2008, these financial disruptions caused banks to become significantly more cautious in the extension of credit and to take steps to bolster their capital and liquidity positions.

Throughout this period of financial market turmoil, policymakers were

greatly concerned about the availability of bank-intermediated credit to both households and businesses, as large reductions in the supply of bank loans had the potential to exacerbate the ongoing contraction in spending and production.[1] In addition to the usual problem of trying to disentangle the effects on bank lending of supply versus demand, the ability to measure the provision of credit by banks was greatly complicated by the lack of sufficient data on credit flows through the banking sector. In particular, the most widely used and comprehensive US data sources on banks' lending activities provide detailed information only on the *stock* of loans on banks' books at the end of the reporting period, along, in some instances, with the cumulative year-to-date amounts charged off.[2]

Importantly, changes in the outstanding stock of bank loans are a very noisy signal of banks' underlying loan origination activity, because such changes also capture other intermediation activities, including loan purchases, loan sales, and securitizations. Indeed, there is virtually no information available on the *flow of loan originations*, or factors other than charge-offs that affect the amount of outstanding loans. Moreover, because the banking system provides credit to households and businesses in two important ways—by originating new loans (on-balance sheet) and by providing lines of credit (off-balance sheet)—information on drawdowns, credit line expirations, and bank- or borrower-induced reductions or cancellations of

1. Empirical studies documenting the real side effects of adverse shocks to bank loan supply include, among others, Bernanke and Lown (1991), Peek and Rosengren (1997, 2000), Calomiris and Mason (2003), Ashcraft (2005), Lown and Morgan (2006), and Bassett, Chosak, Driscoll, and Zakrajšek (2014). Gilchrist and Zakrajšek (2011, 2012b), in contrast, employ secondary market prices on individual corporate bond issues to derive a broader measure of disruptions in the credit intermediation process—the so-called excess bond premium—and show that their measure of financial distress has significant effects on economic activity and asset prices; Gilchrist and Zakrajšek (2012a) show that shocks to the excess bond premium have a significant effect on bank lending.

2. By far the most comprehensive publicly available data on bank lending come from the quarterly Consolidated Reports of Condition and Income (Call Reports), which are submitted by insured US commercial banks and by US branches and agencies of foreign banks to the Federal Financial Institutions Examination Council (FFIEC). The Call Reports collect information on outstanding loan balances for a wide variety of loan categories, along with the flow of gross charge-offs and recoveries. The Call Reports do contain some information on loan originations and on the amount of loans purchased, but this information is limited to a few narrow loan categories, is available over a limited period of time, and is insufficient to track accurately the flow of credit through the banking sector. The Federal Reserve's weekly H.8 Statistical Release, "Assets and Liabilities of Commercial Banks in the United States," provides an estimated aggregate balance sheet for all commercial banks in the United States; the release also includes separate balance sheet aggregations for several bank-size groups. Based on items that are derived from the Call Reports, the H.8 release includes only the amount of loans outstanding for the major categories of loans to households and businesses—it does not, for example, include data on charge-offs. Similarly, the Flow of Funds Accounts of the United States, which are also based largely on Call Reports, include information on the aggregate amount of bank loans outstanding at quarter-end for the major categories of loans to households and businesses.

credit lines is also crucial to any effort that attempts to monitor banks' lending capacity during a cyclical downturn. The existing data sources, however, provide only limited information on the stock of banks' off-balance sheet—that is, unused—commitments to fund loans.

In this chapter, we highlight some of the difficulties that arise in measuring accurately the provision of credit by the banking sector during an economic downturn, such as the one experienced during the recent financial crisis. Specifically, we argue that existing bank regulatory reports provide insufficient detail to monitor banks' lending activities accurately.[3] We then outline a conceptual framework for measuring bank lending that could be used to improve the existing information on banks' on-balance sheet lending activities and the equally important information on banks' off-balance sheet credit line provision activities. The improved data would help address the following questions of concern to both economic researchers and policymakers, questions that cannot be readily answered with the existing data sources:

- Are banks making loans? If so, how much and to whom are they lending?
- Can the broad research community provide timely quantitative analysis about the relative contributions of the supply of, and demand for, credit that drive changes in banks' outstanding loan balances and unused commitments to fund loans?
- What adjustments to credit provision are banking organizations making in response to the enhanced regulatory capital and liquidity requirements that are pending as a result of the Dodd-Frank Act and the Basel III agreement?

We recognize that the literal adoption of our framework would increase banks' reporting burden. Our aim, rather, is to provide a detailed description of the kind of data that would significantly inform the analysis of credit flows and greatly enhance our ability to assess the availability of bank-intermediated credit. In practice, of course, discussions among all the members of the Federal Financial Institutions Examination Council (FFIEC), consideration of how the proposed new data items are stored in banks' reporting systems—if they are stored at all—and the costs associated with reporting new items on a regular basis would have to be carefully weighed to ensure that the marginal benefits of the additional information exceeded the associated reporting burden.

---

3. The existing data sources also made it difficult to assess the effectiveness of certain policies implemented by government agencies during the recent financial crisis; see, for example, testimony of Paul Atkins, member, Congressional Oversight Panel, before the House Financial Services Committee on May 18, 2010, available at http://www.house.gov.apps/list/hearing/financialsvcs_dem/atkins_5-18-10.pdf.

### 10.1   Bank Lending during the 2007–2009 Financial Crisis

To help frame our discussion, we use the quarterly Flow of Funds Accounts to examine the cyclical dynamics of bank lending to households and businesses, with a particular aim of providing some historical context for the 2007 to 2009 financial crisis. We consider the following four major categories of bank loans: home mortgages, commercial mortgages, consumer credit (i.e., credit card, auto, and other consumer loans), and nonfinancial business credit (i.e., commercial and industrial [C&I] loans extended to nonfinancial businesses).

We first converted each category of nominal loans outstanding to real terms by deflating it with the gross domestic product (GDP) price deflator. Because our focus is on cyclical fluctuations in bank lending, we detrended the resulting series by regressing the logarithm of each real loan aggregate on constant and linear and quadratic time trends over the 1952:Q1–2010:Q4 period. For each NBER-dated recession since 1952, we normalized the detrended series to equal zero at its respective business cycle peak. The thin black line in each panel of figure 10.1 depicts the average behavior of each bank loan category around NBER-dated business cycle peaks, calculated using data for all recessions since 1953 (excluding the 2007 to 2009 downturn), while the shaded band represents the corresponding range of outcomes. The thick black line in each panel shows the behavior of each series during the 2007 to 2009 financial crisis.

As shown in the top left panel, the collapse in housing market activity and a widespread drop in home prices—two distinct features of the 2007 to 2009 downturn—have left a significant imprint on home mortgage lending by commercial banks. Over the three years following the business cycle peak in 2007:Q4, (real) home mortgage debt on banks' books has fallen almost 30 percent relative to its trend growth, and the runoff in this loan category shows no sign of abating. The remaining three major loan categories, in contrast, share a similar, though noticeably different, pattern. Bank credit extended to consumers and bank loans to businesses (both C&I and loans secured by commercial real estate) increased relative to trend in the early stages of the 2007 to 2009 recession, peaking at the end of 2008, around the time of the bankruptcy of Lehman Brothers. A large part of this surge in lending to businesses and households undoubtedly reflects loans that were drawn down under previous commitments, though the magnitude of this important effect cannot be ascertained with the existing data sources.[4]

The emergence of the destructive feedback loop between the turmoil in

---

4. Ivashina and Scharfstein (2010) provide detailed corroborative evidence of this phenomenon using Reuters's DealScan database on syndicated lending. Unlike Call Reports, DealScan contains data on new loan originations, though the scope of the data is limited to large syndicated business loans, and the data fall well short of providing a comprehensive picture of banks' credit intermediation activities.
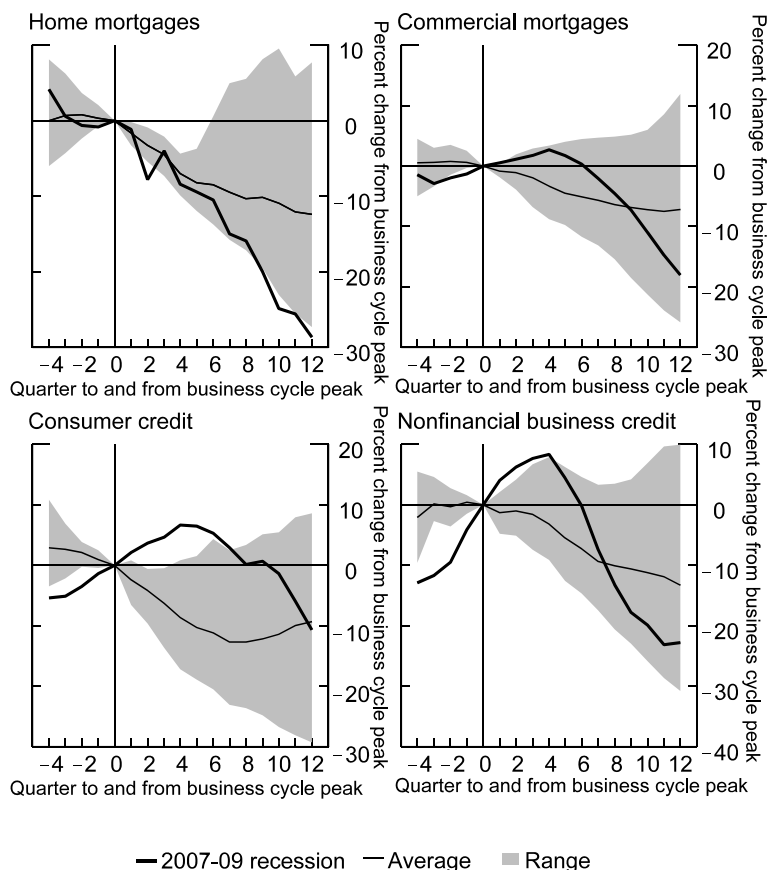
Fig. 10.1   Cyclical dynamics of household and business lending at commercial banks

Source: Authors' calculations using US Flow of Funds data.

Notes: The panels of the figure depict the behavior of the major categories of loans to households and nonfinancial businesses around NBER-dated business cycle peaks. Each category of loans outstanding is deflated by the GDP price deflator (2005 = 100). The logarithm of each real loan aggregate was detrended using linear and quadratic time trends. For each loan category, the average cyclical component (the black lines) and the range of cyclical components (the shaded bands) are based on data for recessions designated by the NBER since 1953, excluding the 2007–2009 downturn.

financial markets and the downturn in economic activity sparked by the collapse of Lehman exerted substantial pressure on both sides of banks' balance sheets. As a result, banks became significantly more cautious in the extension of credit, saw massive losses deplete capital, and relied more on the Federal Reserve—and less on the market—as a source of funding. Starting in late 2008, these factors, in combination with the reduced demand for credit, caused a significant contraction in commercial mortgages, con-
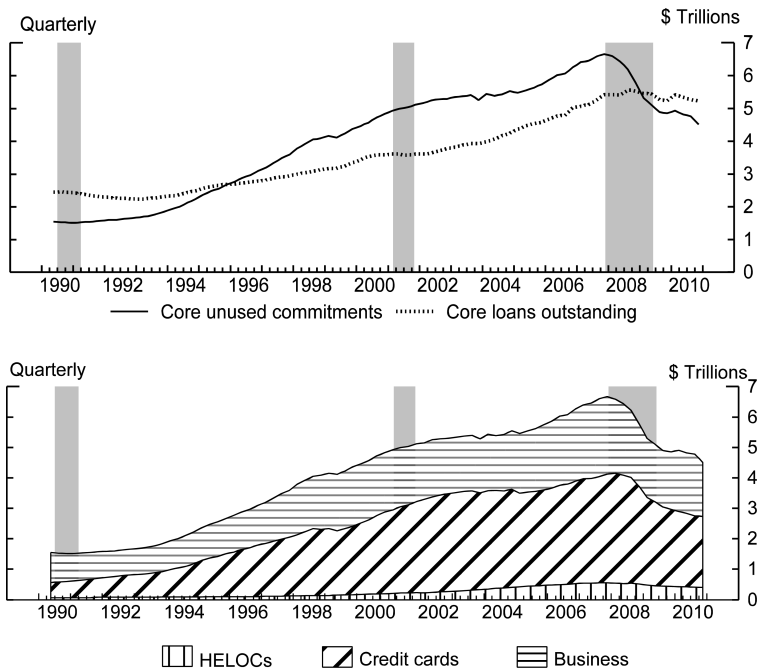
Fig. 10.2   Core loans and unused commitments at commercial banks

Source: Call Reports.

Notes: The solid line in the top panel depicts the dollar amount of core unused commitments, and the dotted line depicts the dollar amount of core loans outstanding at US commercial banks. Core loan categories include C&I, real estate, and consumer loans. The bottom panel depicts the composition of unused commitments. All series are deflated by the GDP price deflator (2005 = 100). Shaded vertical bars represent NBER-dated recessions.

sumer credit, and C&I loans on banks' books. Indeed, the runoff in both types of business loans outstanding during the 2007 to 2009 recession was considerably more severe and persistent compared with an average postwar recession.[5]

   The fact that changes in bank loans outstanding—especially of C&I loans—are typically a lagging business cycle indicator reflects importantly the banks' unique role as a provider of credit in the form of credit lines. According to the top panel of figure 10.2, the dollar amount of unused commitments to fund loans to households and businesses—that is, core unused commitments—has, on average, exceeded the amount of core loans outstanding by a significant margin over the past two decades.[6] As shown

5. Although our analysis is focused on the commercial banking sector, we note that the general cyclical patterns of these four loan categories at banks are very similar to those at all depository institutions.

6. These data were added to Call Reports in 1990:Q2.

in the bottom panel, credit card commitments account for the majority of this off-balance sheet exposure, followed closely by business credit lines.[7]

Another distinct feature of the 2007 to 2009 economic downturn is the fact that core unused commitments contracted much earlier and by a substantially greater amount than core loans outstanding on banks' books. A portion of this decline, of course, reflects drawdowns on the existing lines by households and businesses, which mechanically boosts the amount of loans outstanding. A significant portion, however, also represents a reduction in the supply of bank credit lines, as banks, in response to capital and liquidity pressures, reduced their off-balance sheet credit exposures by reducing their customers' existing lines of credit.

Given the relative importance of banks' commitments to fund loans, we can define a broader measure of credit intermediation by commercial banks: *core lending capacity*, which attempts to capture the full potential of households and businesses to borrow from the banking sector over time, as measured by the sum of core loans outstanding (i.e., loans already extended) and corresponding commitments to fund such loans (i.e., promised extensions). The black line in figure 10.3 depicts the (annualized) quarterly growth rate of core lending capacity, while the shaded portions of the vertical bars represent the quarterly growth contributions of core loans outstanding and core unused commitments.

According to the figure, cyclical fluctuations in core lending capacity are driven importantly by changes in unused commitments, a pattern that was especially pronounced during the most recent crisis. Although the available data cover only the past three recessions, the dynamics in figure 10.3 indicate that changes in unused commitments are likely to provide a more timely signal regarding cyclical changes in credit availability, compared with changes in loans outstanding.

10.2   Information Needed to Measure Credit Flows

The analysis presented earlier highlights the inherent limitations faced by researchers and policymakers when assessing the availability of bank-intermediated credit during a cyclical downturn based on changes in outstanding loans and commitments. In particular, to help distinguish the relative contributions of supply and demand factors in driving changes in outstanding balances held on banks' books, considerably more detailed information about banks' lending and credit line provision activities would need to be collected. This information falls into the following four broad

7. It is important to note that what we label as "business lines" is recorded in Call Reports prior to 2010 as "other" unused commitments. More detailed data available since 2010 suggest that credit lines to businesses—both financial and nonfinancial—account for the vast majority of this category, which indicates that these data provide a useful proxy for unused credit lines to businesses.
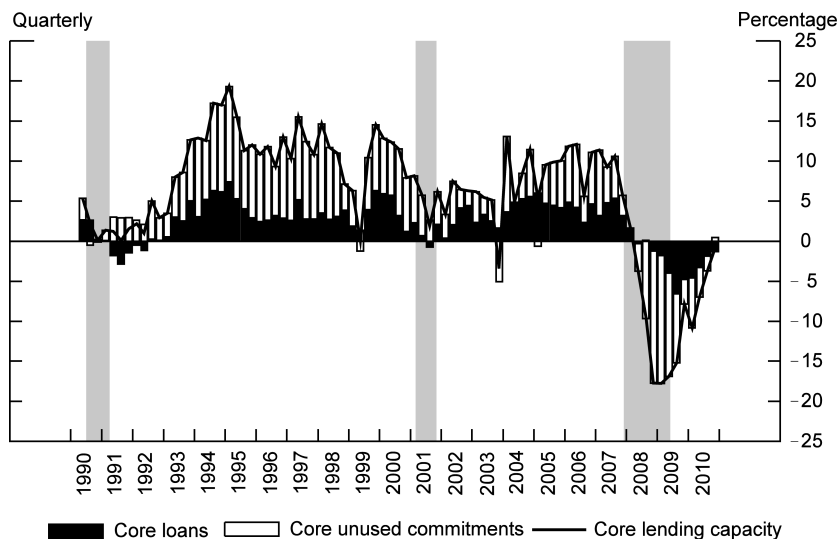
Fig. 10.3   Growth in core lending capacity at commercial banks

Source: Authors' calculations using Call Report data.

Notes: The thick solid line depicts the seasonally adjusted (annualized) quarterly growth rate of core lending capacity at US commercial banks; core lending capacity is defined as the sum of core loans outstanding and corresponding unused commitments. All series are deflated by the GDP price deflator (2005 = 100). Shaded vertical bars represent NBER-dated recessions.

categories: (a) credit extended under commitment versus credit extended not under commitment; (b) credit provided to new customers versus credit provided to existing customers;[8] (c) changes in credit flows owing to decisions by the bank versus changes in credit flows owing to decisions by the borrower; and (d) purchases and sales of credit products by the bank.

Separating loan originations made under commitment from originations not made under commitment, and more accurately measuring lending to new customers compared with existing customers, would likely yield significant insights into the relative contributions of supply and demand factors to lending flows. Because loans not extended under previous commitment typically embody the most recent lending standards and terms being applied by the bank, an expansion or contraction in such loans should be indicative of both current supply and demand conditions.[9] Likewise, newly established

8. By banks' new customers, we mean those that currently have no loans outstanding with a particular institution—that is, the bank currently has no credit exposure to that customer. If, as we argue later, data on new loan originations were to be collected by expanding the existing Call Report schedules, the "new customer" concept would be assessed at the bank level and not at the holding company level.

9. Indeed, as shown by Morgan (1998), changes in loans outstanding not made under commitment are more sensitive to changes in the stance of monetary policy than changes in loans made under commitment.

credit lines, or increases in existing credit lines, also reflect the confluence of supply and demand as embodied in the current economic landscape. In contrast, loans drawn down under previous commitment largely reflect lending policies that prevailed at the time the agreement was reached. As a result, changes in outstanding loan balances under existing credit lines may be most indicative of the demand for credit from firms with such credit lines.

The sources of loan growth—whether under commitment or not under commitment and whether from existing customers or new customers—can also contain important information for monitoring financial stability and can, therefore, inform macroprudential regulatory policies and responses (see Schularick and Taylor 2012). Growth in loans outstanding that is driven primarily by existing customers drawing down funds under standing lending commitments can be a sign of stress in credit markets and a signal that loan supply effects may be exerting a drag on economic growth. In contrast, strong growth in credit extended to new customers could signal an increase in demand for credit—and hence a pickup in economic activity—or it could suggest that banks have eased their lending standards.[10] The extent to which a step-up in credit growth is accounted for by increased lending to existing customers—whose risks are better known to the bank—or lending to new customers could provide supervisory authorities with potentially useful information regarding the safety and soundness of individual banking institutions.

In order to fully decompose lending flows, it is not only necessary to track credit extensions, but also credit that has been extinguished—for example, because it has been paid down or off, or because credit lines were reduced or cancelled, either at the request of the borrower or by the bank. In addition, information on purchases and sales of loans would greatly improve the ability of researchers and policymakers to better understand the creation of credit by the banking sector, as well as help monitor the buildup of risk and the web of interconnectedness among banks and nonbank financial intermediaries. As demonstrated by the recent financial crisis, a number of financial institutions purchased or sold certain types of loans without properly vetting borrowers or securing the appropriate documentation, a practice that contributed importantly to financial instability during the 2007 to 2009 period (see Shin 2009). Detailed data on purchases and sales of loans would allow supervisory authorities to monitor changes in the volumes of such transactions by particular institutions and help identify institutions with greater interconnectedness in those markets; such data would also facilitate

10. For example, Keeton (1999) and Igan and Pinheiro (2010) present evidence showing that rapid loan growth leads to higher-than-average subsequent losses. This result is consistent with the notion that rapid loan growth at an institution—relative to its peer group—is an indication that such an institution may have eased lending standards and terms, perhaps by more than is warranted by prevailing economic conditions.

rigorous analysis of the potential costs and benefits of those operations, which could enhance efficiency of rule making in this area.[11]

To measure accurately the provision of underlying credit over time, a substantial upgrade to currently available information would be required. Specifically, letting L(t) denote the amount of loans outstanding at the end of a reporting period t, equation (1) describes the possible ways that loans outstanding can change between periods t −1 and t:

(1)
$$L(t) = L(t-1) - M(t) - P_1(t) - P_2(t) - S(t) - W(t)$$
$$+ E_1(t) + E_2(t) + D(t) + N_1(t) + N_2(t) + A(t),$$

where

- $M(t)$ = loans (or portions of loans) that matured and were not rolled over or extended during period t;
- $P_1(t)$ = loans (or portions of loans) paid off in advance of maturity during period t;
- $P_2(t)$ = loans (or portions of loans) paid off at maturity during period t;
- $S(t)$ = loans sold or securitized, with or without further obligation during period t;[12]
- $W(t)$ = loans charged off during period t;
- $E_1(t)$ = unpaid loans (or portions of loans) that matured and were rolled over or extended during period t;
- $E_2(t)$ = unpaid loans (or portions of loans) that became newly past due;
- $D(t)$ = amount of previously existing loan commitments newly drawn during period t;
- $N_1(t)$ = draws on new loan commitments that were finalized during period t;
- $N_2(t)$ = new loans that were not made under commitment during period t; and
- $A(t)$ = loans that were purchased or otherwise acquired during period t.

Of these items, only loans outstanding ($L(t)$) and loans charged off ($W(t)$) are systematically collected on Call Reports.

As discussed earlier, accurate monitoring of banks' capacity for credit intermediation over time requires a similar decomposition for unused com-

11. Detailed data on purchases of loans would serve an additional practical purpose. In the National Information Center (NIC) database—a central repository of data about banks and other institutions for which the Federal Reserve has a supervisory, regulatory, or research interest—a bank can purchase up to 95 percent of the assets of another institution before the transaction is recorded as a merger. When a transfer of assets involving less than 95 percent of the assets of the institutions occurs, it is recorded in the NIC database, but no information is recorded on the type or amount of assets acquired; and when less than 40 percent of an institution transfers ownership, no entry is made in the NIC database at all. The lack of data on these types of transactions results in substantial outliers when using changes in loans outstanding to analyze credit growth.

12. Further obligation includes the retention of servicing rights, recourse obligations, or other ongoing credit or liquidity enhancements.

mitments to fund loans. Specifically, letting $LC(t)$ denote the amount of unused commitments outstanding at the end of the reporting period t, equation (2) describes the evolution of this important off-balance sheet item over time:

$$(2) \quad LC(t) = LC(t-1) - MC_1(t) - MC_2(t) - MC_3(t) - SC(t) - D(t)$$
$$+ EC(t) + NC(t) + AC(t),$$

where

- $MC_1(t)$ = unused loan commitments that expired or matured during period t;
- $MC_2(t)$ = unused loan commitments reduced or canceled by the bank in advance of maturity during period t;
- $MC_3(t)$ = unused loan commitments reduced or canceled by the customer in advance of maturity during period t;
- $SC(t)$ = unused loan commitments sold or securitized during period t;
- $D(t)$ = amount of previously existing loan commitments newly drawn during period t (same as in equation [1]);
- $EC(t)$ = extensions of expired or matured unused loan commitments during period t;
- $NC(t)$ = unused portion of new loan commitments finalized during period t (i.e., new commitments during period t net of draws on those commitments); and
- $AC(t)$ = unused loan commitments purchased or otherwise acquired during period t.

Again, of the above-mentioned items, only the amount of unused commitments ($LC(t)$) is systematically collected on Call Reports.

From an operational perspective, the expansion of the FFIEC reporting forms 031, 041, and 002—the reporting forms that underlie the existing Call Report data for commercial banks—would provide the most natural way to collect quarterly information on the full scope of banks' lending activities.[13] The loan categories for which these data would ideally be collected would include, at a minimum, all of the major categories of lending to businesses and households that are currently being monitored via Call Reports. Data on the full spectrum of loan categories is important because, as discussed earlier and as evident from existing Call Report data, loan categories can behave quite differently over time, as conditions in relevant sectors of the economy and of various borrowers differ widely at times.

The pronounced and prolonged contraction in business loans on banks'

---

13. For consistency with the loan schedules in the Call Reports, each new flow item could be reported as the portion of the outstanding stock of loans on the Call Report date that owed to the given activity over the quarter that ended on the Call Report date. To reduce the reporting burden, an asset-based size test could possibly be used to exempt the smallest banks from having to report the additional items.

books over the past several years has also underscored the limited ability of researchers and policymakers to assess and analyze the availability of credit for small businesses, which are an important engine of economic growth.[14] In order to provide a window into the functioning of this important market, it would be most useful to obtain business loan originations (both C&I and commercial real estate) by the size of borrower. Specifically, the new data items listed previously, in combination with the existing Call Report schedules for outstanding loan balances and credit quality, could be disaggregated by firm size, using either the number of employees or revenues as the size criterion.[15] And lastly, there is a case for collecting all of this information from other depository institutions as well (e.g., savings banks, savings and loan associations, and credit unions), in order to obtain a comprehensive overview of credit intermediation in the US economy.

10.3   Conclusion

The recent financial crisis and its aftermath has highlighted the limited ability of policymakers and researchers to track and monitor accurately the provision of credit by the commercial banking sector. The data currently available are inadequate to monitor and analyze credit flows for the most important categories of lending to both businesses and households. This chapter outlined the type of data that would be needed to provide a more complete picture of banks' lending and credit line provision activities, information that would significantly improve our understanding of the credit intermediation process.

Even if such data were available, any analysis of the behavior of credit flows over the course of a business cycle is complicated by the fact that lending dynamics are determined by fluctuations in both the demand for and the supply of credit. While the proposed new data items would be helpful in disentangling the relative importance of demand and supply factors, fundamental identification problems are likely to remain. Accordingly, collecting information on borrower characteristics—for example, their income and balance sheet information—along with a more detailed and systematic information on lending standards and loan terms would also likely provide

14. See the Federal Reserve Board's Report to the Congress on the Availability of Credit to Small Businesses, available at http://www.federalreserve.gov/boarddocs/rptcongress/small businesscredit/sbfreport2007.pdf.

15. Small businesses are often classified as such on the basis of the number of employees, though there is no universally accepted employee threshold that defines a small business. For example, the US Small Business Administration's Office of Advocacy defines a small business as "an independent business having fewer than 500 employees." The Congress, in contrast, has in past legislation frequently defined small businesses as those that have no more than fifty employees. Institutions that lend to small businesses, however, are more likely to collect—for underwriting purposes—information on firms' revenues. As a result, a definition of a small business based on the firm's revenues may be more appropriate when collecting information on small business lending from banking institutions.

considerable insights regarding the role of bank-intermediated credit in the macroeconomy.

References

Ashcraft, A. B. 2005. "Are Banks Really Special? New Evidence from the FDIC-Induced Failure of Healthy Banks." *American Economic Review* 95 (5): 1712–30.

Bassett, W. F., M. B. Chosak, J. C. Driscoll, and E. Zakrajšek. 2014. "Changes in Bank Lending Standards and the Macroeconomy." *Journal of Monetary Economics* 62:23–40.

Bernanke, B. S., and C. S. Lown. 1991. "The Credit Crunch." *Brookings Papers on Economic Activity* 2 (2): 205–39.

Calomiris, C. W., and J. R. Mason. 2003. "Consequences of Bank Distress during the Great Depression." *American Economic Review* 93 (3): 937–47.

Gilchrist, S., and E. Zakrajšek. 2011. "Monetary Policy and Credit Supply Shocks." *IMF Economic Review* 59 (2): 194–232.

_____. 2012a. "Bank Lending and Credit Supply Shocks." In *The Global Macro Economy and Finance*, edited by F. Allen, M. Aoki, N. Kiyotaki, R. Gordon, J. E. Stiglitz, and J.-P. Fitoussi, 154–76. New York: Palgrave Macmillan.

_____. 2012b. "Credit Spreads and Business Cycle Fluctuations." *American Economic Review* 102 (4): 1692–720.

Igan, D., and M. Pinheiro. 2010. "Exposure to Real Estate in Bank Portfolios." *Journal of Real Estate Research* 32 (1): 47–74.

Ivashina, V., and D. S. Scharfstein. 2010. "Bank Lending During the Financial Crisis of 2008." *Journal of Financial Economics* 97 (3): 319–38.

Keeton, W. R. 1999. "Does Faster Loan Growth Lead to Higher Loan Losses?" *Federal Reserve Bank of Kansas City Economic Review* 84 (QII): 57–75.

Lown, C. S., and D. P. Morgan. 2006. "The Credit Cycle and the Business Cycle: New Findings from the Loan Officer Opinion Survey." *Journal of Money, Credit, and Banking* 38 (6): 1575–97.

Morgan, D. P. 1998. "The Credit Effects of Monetary Policy: Evidence From Using Loan Commitments." *Journal of Money, Credit, and Banking* 30 (1): 102–18.

Peek, J., and E. S. Rosengren. 1997. "The International Transmission of Financial Shocks." *American Economic Review* 87 (4): 625–38.

_____. 2000. "Collateral Damage: Effects of the Japanese Bank Crisis on Real Activity in the United States." *American Economic Review* 90 (1): 30–45.

Schularick, M., and A. M. Taylor. 2012. "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870–2008." *American Economic Review* 102 (2): 1029–61.

Shin, H. S. 2009. "Securitisation and Financial Stability." *Economic Journal* 119 (536): 309–32.