

Banking Industry Consolidation: What's a Small Business to Do?

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It seems not a week goes by without our reading about another proposed bank merger. Relaxation of the rules governing where banks can expand and new technologies for providing banking services have contributed to rapid consolidation in the industry. Consider just a few statistics: Since 1979, there have been well over 3500 mergers in which two or more banks were consolidated under a single bank charter and more than 5800 acquisitions in which banks retained their charters but were bought by a different bank holding company. Over the first half of

the 1990s, bank mergers involved about 20 percent of the industry's assets in each year.¹ And the number of insured commercial banks in the United States has fallen from over 14,000 in 1985 to around 9000 today.² At the same time, assets held by banks have been growing and banks have been getting larger. Assets are being redistributed from smaller banks to larger ones (Figure 1). Now, over 60 percent of industry assets

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¹See the article by Allen Berger, Joseph Scalise, Anthony Saunders, and Greg Udell.

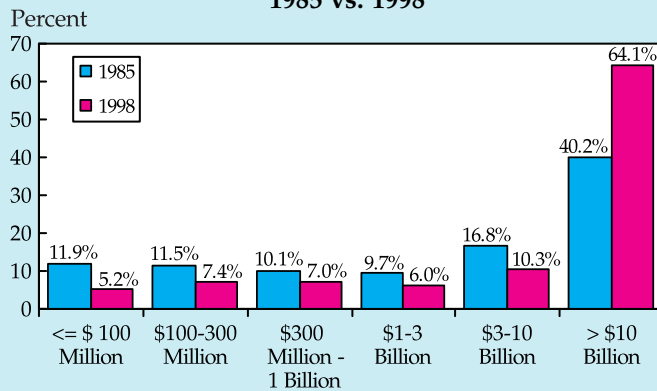
²These are net figures, so they understate bank closures. Since the beginning of 1985, over 2000 new institutions have opened.

are in banks with more than \$10 billion in assets, compared with 40 percent in 1985. In inflation-adjusted dollars, the average asset size of U.S. banks has doubled since 1985 and is currently about \$550 million. Consolidation is even more striking at the holding company level. The share of assets in bank holding companies with over \$100 billion in assets has tripled since 1985; these institutions now hold over 40 percent of industry assets (Figure 2).

Consolidation in the banking industry has many benefits, including increased efficiency and better diversification as banks are able to branch throughout the United States. But small businesses have traditionally relied on banks for credit, especially smaller banks based in their own communities, which have the ability to closely monitor these businesses. (See Leonard Nakamura's article.) Should we be worried that consolidation will lead to a contraction of credit to small businesses? *No*. First it should be noted that to the extent that consolidation leads banks to make better decisions in allocating credit, a decline in small-business lending need not be harmful to the economy—it might merely indicate that funds are being funneled to more productive businesses. But recent empirical work suggests that such a decline is not a foregone

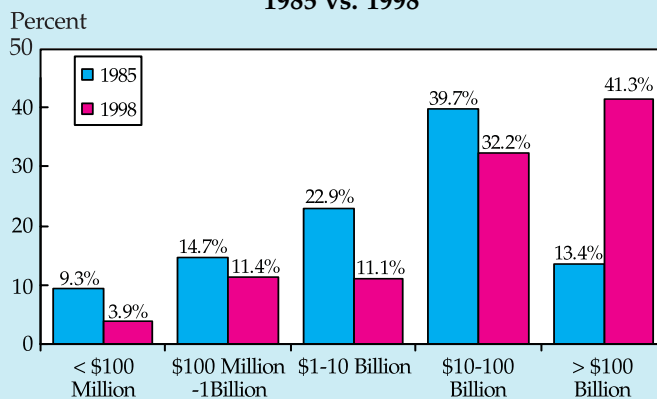
conclusion. The studies discussed below suggest that small businesses will retain access to bank lending and that recent advances in technology may even increase the volume of loans extended to small businesses. The positive aspects of consolidation are, therefore, expected to

FIGURE 1
Asset Distribution of Banks in the U.S.
1985 vs. 1998



Size categories are based on total assets (domestic and foreign) and are in 1998 dollars.
Excludes credit card banks.

FIGURE 2
Asset Distribution of Banking Organizations in the U.S.
1985 vs. 1998



Size categories are based on total assets (domestic and foreign) and are in 1998 dollars.

outweigh any potential negative effect on small businesses' access to credit.

WHAT'S THE WORRY?

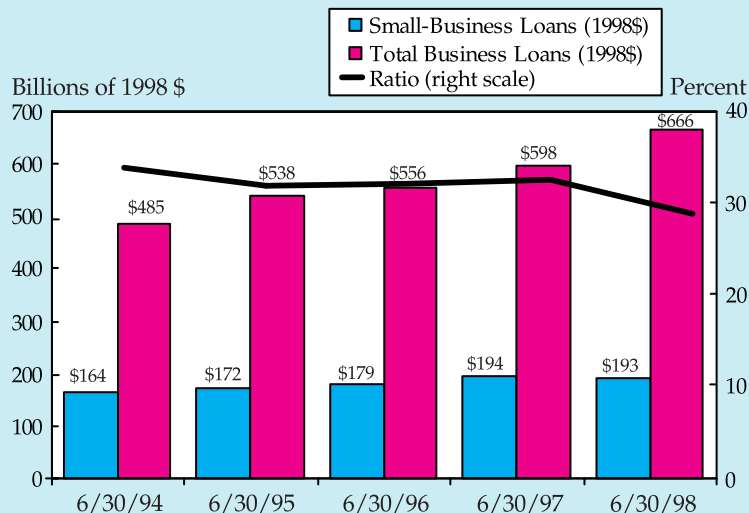
Small-business loans account for around one-third of banks' total business loans, and this ratio has been fairly constant over the past five years (Figure 3).³ But these aggregate figures obscure how the volume of small-business lending varies with bank

³The data on small-business loans used here are small commercial and industrial loans to U.S. addresses, collected on "Schedule RC-C, Part II, Loans to Small Businesses and Small Farms" of the June Reports of Condition and Income (the so-called Call Report) filed by banks. In my figures I compare 1994 with 1998, since some have questioned the accuracy of the 1993 data, the first year banks were required to report this information.

The reader should note that what the Call Report labels as "loans to small businesses" are actually small loans. That is, the Call Report asks banks to report whether substantially all of their domestic loans to businesses have original amounts of \$100,000 or less. If so, they are asked to report the total number and volume of business loans. (I included all of these banks' business loans in the tallies of small-business loans.) If not, they are asked to report the number and volume of loans to businesses with original amounts of \$100,000 or less, with amounts over \$100,000 through \$250,000, and with amounts over \$250,000 through \$1 million.

The research that uses these data assumes that loans of \$1 million or less are small-business loans, and while some small loans are extended to large businesses, this is

FIGURE 3
Small-Business and Total Domestic Business Loans at Banks in the U.S.



Small-business loans are commercial and industrial loans of \$1 million or less. Data are from the Call Reports. Excludes credit card banks.

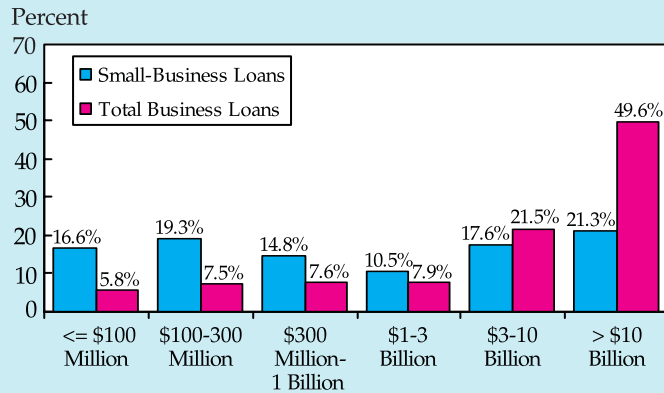
a fairly good assumption. First, loan size is correlated with borrower size (see Leonard Nakamura's article). Second, the Call Report data do account for lines of credit and loan syndications. For loans extended under lines of credit, original amount is the larger of the most recently approved line of credit or the amount outstanding, and similarly for loans extended under loan commitments. For loan participations and syndications, original amount is the entire amount of the credit originated by the lead lender. In 1996, regulators began to collect small-business loan data under the Community Reinvestment Act (see Raphael Bostic and Glenn Canner's article). These data contain information on whether the borrower had revenues of \$1 million or less, but the data likely understate the reporting banks' loans to small businesses, since firms with higher revenues are often considered to be small businesses (see, for example, Nakamura, who states that small businesses can have revenues up to \$10 million), and banks are not required to report borrower revenues if they did not consider revenues in making their credit decision.

size. The catch phrase “small-business lending is the business of small banks” sometimes makes it easy to forget that larger banks do a substantial amount of lending to small businesses. For example, in 1994, banks with assets over \$10 billion made over a fifth of the industry’s small-business loans (while making nearly half of all business loans); in 1998, the large banks made an even greater share—over a third—of the industry’s small-business loans, partly reflecting the industry’s shift toward larger banks (Figure 4).

But small-business lending makes up a *smaller share* of a large bank’s business lending than that of a small bank—just in terms of lending capacity, the smallest banks will be unable to make many large loans. For example, in 1998, while banks with assets under \$10 billion made about a third of the industry’s total business loans, these banks made almost two-thirds of *small-business* loans. The ratio of small-business loans to total loans—which we’ll call the propensity to lend to small businesses—falls from over 96 percent for the smallest banks to less than 20 percent for the largest banks (Figure 5).

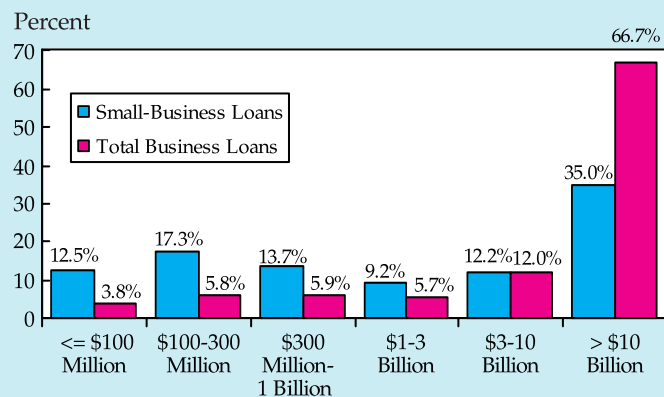
This fact has led some

FIGURE 4
Distribution of Small-Business Loans and Total Business Loans, by Bank Size
Banks in the U.S., 1994



Size categories are based on total assets (domestic and foreign) and are in 1998 dollars.
 Excludes credit card banks.

Distribution of Small-Business Loans and Total Business Loans, by Bank Size
Banks in the U.S., 1998

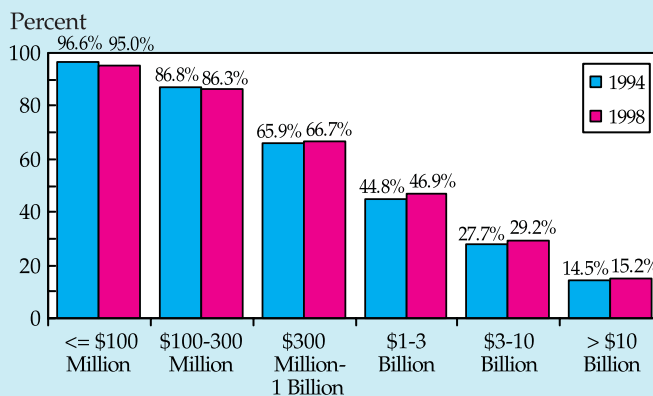


Size categories are based on total assets (domestic and foreign) and are in 1998 dollars.
 Excludes credit card banks.

people to worry that consolidation will lead to a sharp reduction in the availability of credit to small businesses. They do the following thought experiment: Suppose all small banks (those with assets *under* \$10 billion) were suddenly reorganized into large banks (those with assets *over* \$10 billion). Assume that the newly merged banks' propensity to lend to small businesses dropped to the average for large banks today. That is, currently about 56 percent of small banks' business loans are to small businesses. But suppose that after the reorganization, this proportion fell to 15.2 percent, the current percentage for large banks. This would imply a 47 percent reduction in the level of small-business loans—we'll call this the "size effect" (Figure 6).

But this thought experiment is misleading. Industry consolidation is much more complex. The strategies followed by banks and their competitors are likely to change as consolidation takes place. The *total* effect of consolidation on small-business lending will depend on how changes in size, organizational form, efficiency, and competition that result from consolidation affect the propensity of banks to make small-business loans.

FIGURE 5
Ratio of Small-Business Loans to Total Business Loans, by Bank Size
 Banks in the U.S., 1994 vs. 1998



Size categories are based on total assets (domestic and foreign) and are in 1998 dollars.

Excludes credit card banks.

FIGURE 6
Hypothetical Example
To Illustrate the Size Effect

Total business loans by banks with assets < \$10 billion in 1998Q2	= \$ 222 billion
Small-business loans at these banks in 1998Q2	= \$ 125 billion
Small-business loans at these banks if equal to 15.2% of their total business loans (same percentage as at larger banks)	= \$ 34 billion
Reduction in dollars of small-business loans	= \$ 91 billion
Total small-business loans at all size banks in 1998Q2	= \$ 193 billion
Reduction as a percent of small-business loans	= 47%

WHAT'S THE EVIDENCE?⁴

Banking industry consolidation is a dynamic process and its likely effect on small-business lending cannot be discerned by mere introspection—it's an empirical question. For example, consolidation is likely to lead to improved efficiency in the industry. Two studies by Jith Jayaratne and Philip Strahan (1996 and 1997) found that relaxation of geographic barriers to entry was associated with better quality loans and increased profitability of the banks making the loans. And my recent work with coauthors (Joseph Hughes, William Lang, Loretta Mester, and Choon Geol-Moon, 1996 and forthcoming) has also shown that bank holding companies that are more geographically diversified, especially ones that have diversified their exposure to regional macroeconomic risk, tend to be more efficient and more profitable than less diversified bank holding companies. If some of the small-business loans currently being made by inefficient banks are unprofitable, improved efficiency might lead to fewer small-business loans. Such a decline would not be harmful to the economy, since it would mean funds were being shifted to more productive firms. On the other hand, a more efficient banking system could result in more loans being made, to the extent that banks become more efficient at locating and evaluating potential borrowers and to the extent that banks are able to diversify their portfolios more easily and therefore shift more of their assets toward loans and away from more liquid assets.

Similarly, increased competition could either increase or decrease the amount of small-business lending. It could decrease lending to small businesses by undermining the long-term rela-

⁴Given the large volume of recent work on small-business lending, I am unable to cite it all here. Nice reviews of the literature with additional citations are included in the study by Allen Berger, Anthony Saunders, Joseph Scalise, and Greg Udell and the one by James Kolari and Asghar Zardkoohi.

tionship-type of lending offered to small borrowers, in contrast to the transactions-type of lending offered to large borrowers.⁵ But competition could increase small-business lending because it forces banks to search for additional profit opportunities. Competitors are likely to react to a merger or acquisition in their market. If they pick up any small-business loans dropped by a merged institution, there would be no change in the supply of credit to small borrowers. However, there might be some transition problems while this shuffling occurred.

Recent studies have begun to investigate the various aspects of consolidation. The general conclusion of these studies is that consolidation is certainly not going to be as negative for small-business lending as suggested by the simple size effect. Two potentially important considerations are the type of merger and the organizational form of the institutions involved.

Type of Consolidation. The total effect of merger and acquisition (M&A) activity on small-business lending may vary with the *size* of the banks involved and whether the consolidation was a merger or an acquisition.⁶ Several studies

⁵Banks have traditionally been able to offer small borrowers "relationship" loans that are supported by the fact that the bank expects to have a relationship with the small borrower over the long term. These relationship loans have flexible terms—a long-term relationship allows the bank to offer concessionary rates to a borrower facing temporary credit problems, which the bank can later make up for when the firm returns to health. Research has shown that banks need some type of market power to sustain this type of lending (see, for example, Petersen and Rajan, and Berlin and Mester). Borrowers that have sources of credit in addition to banks, as most large borrowers do, receive loans that are more like other credit transactions, with rates set to maximize a bank's profits period by period rather than over the life of a relationship.

⁶In a *merger*, the target loses its charter and becomes part of an existing bank. In an *acquisition*, the target retains its charter but becomes a subsidiary of a different bank holding company.

found that M&As involving *small* banks led to an increased propensity to lend to small businesses. Peek and Rosengren (1998a) compared the propensity for small-business lending of banks that acquired others over the period June 1993 to June 1996 with that of nonacquirers and found that small acquirers (less than \$100 million in assets) showed a greater increase over the three years than nonacquirers.⁷ Using similar data, Nicholas Walraven confirmed this result.

Using data on 180 bank mergers between June 1993 and June 1994, Strahan and Weston (1996) examined the change in the ratio of small-business lending to assets of the merged institutions, pre- and post-merger, and compared it with that of a control group of banks not involved in mergers. They found a significant increase in the ratio of small-business lending to assets after small-bank mergers: for the 102 mergers involving banks with combined assets less than \$300 million, the ratio increased from 9.12 percent to 10.12 percent. For the control group, the ratio was relatively stable, increasing from 8.15 percent to 8.20 percent.⁸

In a study discussed more fully below, Berger and coauthors examined over 6000 M&As that occurred over the period 1980-95 and also found an increased propensity to lend to small businesses three years after a merger involving small

or medium-size banks (i.e., those with gross total assets less than \$1 billion).

In contrast, two other studies did not find that small-bank M&As had positive effects on small-business lending. (But they didn't find much in the way of negative effects either.) Rather than using data on banks, Jith Jayaratne and John Wolken (1998) used data on small-business borrowers from the 1993 National Survey of Small Business Finances. They determined that the probability that a small business had a line of credit from a bank did not decline when there were fewer small banks in an area. And small businesses in these areas did not appear to be more credit constrained than firms in areas with many small banks.⁹ A study by Ben Craig and João Cabral dos Santos found no definitive effect of M&As on the level of small-business lending.

The results concerning M&As of larger banks are more mixed. Peek and Rosengren and Berger and coauthors found a decline in small-business lending after large-bank M&As, while Strahan and Weston, and Craig and dos Santos found no effect.

Hence, the bulk of evidence suggests that while small banks can become more effective lenders to small business via M&As, this doesn't seem to be true for large banks.

Two papers have found that the effect of consolidation on small-business lending differed depending on whether the consolidation involved a *merger* or an *acquisition*. Contrary to their results for mergers, Berger and coauthors found that acquisitions involving small and medium-size institutions had a generally negative impact on the propensity to lend to small businesses. But using data from June 1993-96 for banks in one-bank holding companies, James Kolari and Asghar Zardkoohi found results opposite to those of Berger and coauthors: com-

⁷They measured a bank's propensity to lend to small businesses as the ratio of its small-business loans to assets. They also found that in the 912 acquisitions studied (some involving large acquirers and some involving small acquirers), the post-acquisition ratio of small-business loans to assets tended toward that of the acquirer. Since acquirers were about equally likely to have higher as lower ratios compared to their targets, the authors concluded that M&As need not reduce the propensity for small-business lending and that many will raise it.

⁸In a subsequent study using a larger sample of 563 banking organizations (i.e., the aggregate of all banks up to the highest holding company level) involved in M&A activity between July 1993 and June 1996, the authors obtained similar results.

⁹The firms were not any more likely to be late in repaying their trade creditors.

pared with banks not involved in M&A activity, banks involved in mergers had lower ratios of small-business loans to assets post-merger, but little difference was found for banks involved in acquisitions. The authors suggest that mergers involve a greater change in organizational structure than do acquisitions and, thus, a potentially greater loss of important private information the bank has about its small-business borrowers. But studies on organizational form offer no strong evidence to support this hypothesis.

Organizational Form. Organizational form refers to whether the bank is part of a bank holding company, whether there are several layers of holding companies over the bank, whether the top-tier holding company is located out-of-state, and so forth. Traditionally, lenders have obtained information on hard-to-value small businesses by having a presence in the community in which the businesses operate. A potential concern is that as institutions consolidate, their organizational structure might become more complex. And as a result, lending decisions may be made at corporate headquarters located many miles from the businesses' activities and this distance could deter local lending. But again, there is no strong agreement among empirical investigations that this is the case.

For example, a 1998 study by Strahan and Weston that used 1993-96 data on banking organizations found that once the size of the bank subsidiaries within a holding company was taken into account, the organizational complexity of the company, measured by the number of banks within the company and the number of states in which the company operates, was not significantly related to a company's propensity to lend to small business.¹⁰ But a study by Robert DeYoung, Lawrence Goldberg, and Lawrence White, which used data on banks 25 years old or younger with assets under \$500 million over 1993-96, found that banks that were part of multibank holding companies had a lower propensity to lend to small businesses than did other banks.

Other researchers have focused on the location of the bank's owner. Gary Whalen used 1993 data on 1377 banks in Illinois, Kentucky, and Montana and found that banks with assets under \$300 million that are subsidiaries of out-of-state bank holding companies invested about the same share of their asset portfolios in small-business loans as similar-size subsidiaries of in-state bank holding companies or banks not owned by a holding company.¹¹ Whalen's study also examined the pricing of small-business loans and found that out-of-state holding company subsidiaries tended to charge lower rates for small-business loans than either in-state holding company subsidiaries or independent banks.¹²

Two studies by William Keeton, however, have gotten contrary results. In a study using June 1994 data on banks in states in the Kansas City Federal Reserve District, Keeton found that banks owned by out-of-state multibank holding

¹⁰A banking organization is the aggregation of all banks up to the highest holding company level. Banks within multiple-bank holding companies tend to be smaller than banks in one-bank holding companies. Thus, when the size of the bank subsidiaries is not controlled for, the propensity to lend to small businesses is found to increase with organizational complexity.

¹¹For banks with assets between \$300 million and \$1 billion, subsidiaries of in-state holding companies were found to have a higher propensity to lend to small businesses than out-of-state holding company subsidiaries, but the difference wasn't found to be statistically significant in most cases. For the largest banks, with assets above \$1 billion, the situation was reversed, with out-of-state holding company subsidiaries having a significantly higher propensity for small-business lending than in-state holding company subsidiaries.

¹²Whalen found that the marginal costs of making a loan were highest for out-of-state holding company subsidiaries, which is consistent with the view that having a presence in the local market might make it easier to lend to local businesses. This, together with their lower pricing, means they operated with lower margins on their small-business lending.

companies lent a smaller percentage of their deposits to small businesses than did comparable independent banks.¹³ In a 1996 study of bank acquisitions over 1986-95 in the Kansas City Federal Reserve District, Keeton found that when ownership shifted to a distant location, there tended to be a decline in the volume of total business loans at those banks during the first three years after the acquisition. However, this decline was statistically significant only when the previous owner had been located in an urban area.

The conflicting results among the various studies show that the relationship between organizational form and small-business lending is not yet a settled issue. But having an out-of-state owner does not necessarily mean less local lending.

The Chosen Path. It is far from clear that consolidated banks will limit the amount of credit given to small businesses. But even if this were so, it is important to consider the path the industry as a whole follows during restructuring to determine the full impact on the availability of credit to small businesses. At the same time that consolidation has been taking place at a swift pace, new bank charters have also been issued; more than 2000 new banks have opened since the beginning of 1985. These *de novo* banks

would seem to be a fertile source of lending for small businesses. Indeed, a 1998 study by Lawrence Goldberg and Lawrence White found that *de novo* banks tend to lend more to small businesses as a percentage of assets than other banks of comparable size.¹⁴ Hence, new banks can provide a source of additional credit for small businesses to counteract any negative effect from consolidating institutions.

Full Effect. But new entrants aren't the only ones that can pick up the slack, should consolidated banks shift their focus from small-business lending. Other competitors in a merging bank's market can step in to meet demand. The study by Berger and coauthors is perhaps the most comprehensive study to date that attempts to account for the full effect of industry consolidation on bank lending. It categorizes four effects of M&As on bank lending.

The first, which they call the *static effect*, is the simple size effect discussed above. The simple size effect is expected to result in decreased small-business lending, since larger banks have a lower propensity to lend to small business. The second is the *restructuring effect*, which reflects the fact that a consolidated bank is not just the sum of its parts—it can change its size, financial condition, or competitive position after the merger or acquisition and this change can affect its propensity to lend to small businesses. Third is the *direct effect*, which reflects a direct refocusing of the bank either toward or away from small-business lending. The direct effect is the difference between the bank's small-business lending after consolidation and the lending of another bank of comparable size, financial condition, competitive position, and economic environment that hasn't been involved in a merger or acquisition. Finally, the *external effect* measures the reactions of competitors in the market after a merger or acquisition.¹⁵ These competi-

¹³The states included were Colorado, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, and Wyoming. The comparable independent banks were similar to the holding company banks in terms of deposit size, location, and number of branches. Keeton also found that banks with a relatively large number of branches tended to lend less than comparable banks with a relatively small number of branches.

¹⁴The study considered three-year old banks, to allow for a period when the banks gain operational experience. The authors considered banks with assets between \$5 million and \$100 million from 1984-95 and assumed that all business loans at such banks were to small businesses, since there are regulatory limits on the amount banks can lend to any one borrower.

¹⁵Although these competitors might be other banks or nonbank lenders, the study's empirical work measures only the reaction of other bank lenders.

tors may more than make up for any decrease in lending by the bank that has merged or been acquired, or their reaction could be similar to that of the consolidated bank. The external effect has not been accounted for in previous studies.

To quantify these four effects, Berger and coauthors used data from the Survey of Terms of Bank Lending, in addition to Call Report data. The survey's quarterly data give detailed contract information on the loans made by about 300 banks and are available beginning in 1979. The authors used the survey data over 1980-95 to estimate behavioral equations relating the proportion of a bank's assets invested in loans to borrowers in three different size categories to various measures characterizing the bank's size, financial condition, competitive position, economic environment, and other aspects that might affect its lending.¹⁶ These behavioral equations were then used to predict the lending behavior three years after a merger or acquisition of a much more inclusive set of banks, not just those that responded to the survey, and over a longer period, which included both economic expansions and contractions. This set included nearly every bank involved in a merger or acquisition over the period 1977-92: over 6000 banks that merged to form about 2500 surviving banks and over 4000 banks that were acquired.¹⁷

¹⁶The size of the borrower is proxied by an estimate of bank credit available to the borrower given by the size of the loan, the total commitment under which the loan was drawn, or the total size of the participation by all banks if the loan was part of a participation, whichever is largest. Small-business borrowers were then assumed to be those with under \$1 million in bank credit. Medium-size borrowers were those with bank credit between \$1 million and \$25 million, and large borrowers were those with more than \$25 million in bank credit.

¹⁷Since respondents to the Survey of Terms of Bank Lending tend to be larger banks, there is some question about whether the estimated behavioral equations are predictive of the behavior of banks of all sizes (even allowing for the fact that the authors include bank size in

The study's results confirm that if you consider only the size effect of M&As (their static effect), the amount of small-business lending would be considerably reduced three years after a merger or acquisition. Berger and coauthors estimated that the static effect of all the mergers reduced small-business loans by about \$25.8 billion (measured in 1994 dollars), or 16 percent of small-business lending in 1995.¹⁸ Both the restructuring and direct effects for mergers were found to increase small-business loans by only slight amounts—by \$3.5 billion and \$2.6 billion, respectively.¹⁹ But the external effect, which accounts for changes in the lending of all banks in a local market in response to changes in business conditions after a merger, was found to be large and positive, inducing an increase in small-business lending of about \$48.6 billion.²⁰ The authors caution that the external effect is less accurately measured than the other effects, but on the basis of their results, they are able to conclude that the *full effect* of M&A activity for small-business lending is *positive* or at the very least not negative.

WHAT'S THE FUTURE?

One impetus for the consolidation of the bank-

their regression equations). But this caveat has to be weighed against the fact that by using the survey data, the researchers were able to consider the reactions of lending behavior to M&As over a longer period than would be permitted by the small-business loan data only recently added to the bank Call Reports. In particular, the study covers periods when the economy was expanding and periods when it was contracting, whereas the studies that relied on the Call Report data could examine only an expansionary phase of the business cycle.

¹⁸The static effect of acquisitions over the period was a \$7-billion reduction in small-business loans.

¹⁹The restructuring and direct effects for acquisitions were estimated to increase small-business loans by \$0.4 billion and \$7.8 billion, respectively.

²⁰The external effect for acquisitions was a \$22.6-billion increase in small-business loans.

ing industry has been the easing of geographic restrictions on U.S. banking. But the Riegle-Neal Interstate Banking and Branching Efficiency Act allowed virtually nationwide branching (via acquisition) as of June 1, 1997, suggesting that this spur to industry restructuring may be winding down. However, another impetus toward consolidation is likely to remain important: changes in technology have made it more efficient for banks to grow larger and consolidate their operations. And this technological change is also changing banks' propensity to lend to small businesses.

As I discussed in a previous *Business Review* article, large banks are using credit scoring to make small-business loans and are processing applications using automated and centralized systems.²¹ These banks are able to generate large volumes of small-business loans at low cost even in areas where they do not have extensive branch networks. Applications are being accepted over the phone, and some banks are soliciting customers via direct mail, as credit card lenders do. Technology is also helping nonbanks become larger players in the small-business loan market. For example, American Express is one of the top granters of credit lines to small businesses in the Philadelphia Federal Reserve District, especially lines with face values under \$100,000.

The smallest loans are the most likely to benefit from new technologies. Indeed, the very modest increase in the propensity of banks with assets over \$10 billion to lend to small businesses (see Figure 5) is completely accounted for by loans with face values under \$100,000. Similarly, a study by Mark Levonian indicates that the 14 companies that control the 20 largest banks in the San Francisco Federal Reserve District increased their holdings of small-business loans with original amounts under \$100,000 over 26 percent from June 1995 to June 1996 while other

banks increased their holdings only about 3 percent. At the same time, the largest banks decreased their holdings of small-business loans with face values between \$100,000 and \$1 million about 5 percent while other banks increased their holdings over 7 percent. Similar results were obtained by Peek and Rosengren (1998b) when they looked at small-business loan growth between 1993 and 1997: only large banks (with assets over \$1 billion) that had been acquirers increased their holding of the smallest small-business loans (with face values under \$100,000). While all categories of banks increased their holdings of small-business loans between \$100,000 and \$1 million, the smaller banks did so much more than the larger banks.

While technology is opening the small-business lending market to new sources of credit—namely, larger banks and nonbank lenders—the types of loans being made by these lenders are different from the loans traditionally made by small banks to small businesses. A recent study by Rebel Cole, Lawrence Goldberg, and Lawrence White of over 1200 loan applications made by small businesses indicates that large and small banks do differ in the way they handle applications from small businesses: large banks rely more on easily verified, interpreted, and quantifiable financial data while smaller banks use more subjective criteria characteristic of “character,” or relationship, lending.²²

The scale economies in automation available to large banks allow them to produce the transactions-type small-business loans more cheaply than a small bank can. These types of small-business loans are like credit card loans, which do not require much in the way of information-

²¹Credit scoring is a statistical method used to predict the probability that a loan applicant or existing borrower will default or become delinquent.

²²The study used data from the 1993 National Survey of Small Business Finances, which includes a nationally representative sample of over 4500 small businesses that operated in the United States as of year-end 1992 (a small business is defined as a nonfinancial, nonfarm enterprise employing fewer than 500 full-time equivalent employees). Bank Call Report data were also used.

intensive credit evaluation beyond what is done in a credit scoring model. Credit scoring will tend to standardize these loans and make default risk more predictable. These steps should make it more feasible to securitize the loans, that is, to form pools of loans and then use the cash flows of the loan pools to back publicly traded securities. This ability to securitize would bring a new set of investors into the small-business loan market, a positive effect that has not been measured in any of the studies we've discussed.²³

Borrowers who have credit histories good enough to receive a passing grade from a credit scoring model will find it cheaper to obtain credit from larger banks.²⁴ Small banks will need to serve the small borrowers who do not have the financials to qualify for a passing credit score, but who, upon further credit evaluation, are good risks. Small banks will continue to offer the traditional relationship-driven lending, which requires the bank to be in contact with the borrower over time to gain information about the borrower and also requires the bank to be a specialist in evaluating the creditworthiness of borrowers for which there is little public information. The more complicated organizational structure of large banks may put them at a disadvantage in making these relationship-type loans.

CONCLUSION

When examining the effect of industry consolidation on small-business lending, it is important to take into account more than just bank size. Consolidated banks may change their own lending strategies, and the competitors of newly

merged banks may change their small-business lending strategies in response to mergers and acquisitions in their markets. Some recent empirical work suggests that the full effect of merger and acquisition activity for small-business lending is positive.

Although the proportion of loans going to small businesses is less for large banks than for small banks, large banks do make a substantial share of small-business loans. But the ones they make and are likely to continue to make are those in which they can take advantage of scale economies offered by new technologies, such as automated loan applications and credit scoring. These loans are transaction-driven rather than relationship-driven. Small banks should retain their niche in relationship lending. But that niche is likely to be smaller than it is today.

So, what's a small business to do? First, not be too concerned that bank credit will become unavailable as the industry restructures. Next, decide whether it values a traditional relationship loan over a transactions-type loan. A small business whose prospects are quite variable over the business cycle or whose financial condition is harder to evaluate would probably value the more flexible credit terms afforded by a relationship loan. With this type of loan, a bank can offer better terms to a firm facing temporary problems, then make up for these concessionary rates when the firm turns around. The firm should expect to pay something for this kind of insurance. A small business whose financial condition is easier to evaluate, that is more insulated from economic downturns or temporary problems, and that, therefore, does not want to pay for such insurance might opt for a transactions-type loan offered by a larger bank. In either case, banks are expected to remain a significant source of small-business credit.

²³For more on the relationship between credit scoring and securitization, see my earlier *Business Review* article and the articles by Ron Feldman.

²⁴Even these borrowers, however, will need to take into account that transactions-type loans have less flexible terms. Thus, there is some risk that the loan will not be renewed should the borrower's credit conditions head south.

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Real Business Cycles: A Legacy of Countercyclical Policies?

*Satyajit Chatterjee**

Business cycles have troubled market-oriented economies since the dawn of the industrial age. The upward march of living standards in capitalistic countries has been repeatedly punctuated by periods of markedly high unemployment rates and slow growth or an outright decline in the living standard of the average person. This alternating pattern of boom and bust is what the term business cycle means.

In an article published in 1986, Edward

Prescott forcefully argued that during the post-World-War II period, business cycles in the United States mostly resulted from random changes in the growth rate of business-sector productivity.¹ He showed that upswings in economic activity occurred when productivity grew at an above-average rate and downswings oc-

¹Edward Prescott is a professor of Economics at the University of Chicago and a long-time research consultant to the Federal Reserve Bank of Minneapolis. The antecedents of his views appear in an article he wrote with Finn Kydland in 1982 and in a 1983 article by John Long and Charles Plosser.

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curred when productivity grew at a below-average rate.

Prescott challenged the dominant view that business cycles are caused by monetary and financial disturbances. According to that view, upswings in economic activity result from unexpectedly rapid increases in the supply of money, while downswings result from slow growth or a fall in the money supply. In contrast, Prescott and his collaborators presented evidence that business cycles of the sort seen during the postwar era would occur even if there were no monetary or financial disturbances.

John Long and Charles Plosser coined the term real business cycles to describe business cycles whose proximate causes are random changes in productivity.² Without a doubt, the most controversial aspect of real-business-cycle theory is its implications for countercyclical monetary and fiscal policies. Real-business-cycle theory appears to ascribe no importance to existing countercyclical policies. Moreover, it implies that some policies aimed at reducing the severity of business cycles are likely to entail more costs than benefits.

Both implications contradict long-held views. Indeed, these policy implications strike many economists as so outrageous that they simply dismiss real-business-cycle theory as false. Yet, the theory has successfully countered the many objections leveled against it.³ As a result, macroeconomists are beginning to take it more seriously.

Of course, countercyclical policies are of paramount importance to the Federal Reserve System. As real-business-cycle theory gains increas-

²In this context, the term real means that the business cycle is caused by factors not related to changes in the money supply.

³See my 1995 *Business Review* article for a more detailed discussion of real-business-cycle theory and an account of how well the theory has rebutted the criticisms brought against it.

ing acceptance among economists, an understanding of its policy implications becomes crucial. Consequently, this article briefly describes real-business-cycle theory, then turns to a discussion of its implications for countercyclical policies.

The policy lessons of real-business-cycle theory are more subtle than they appear at first blush. Although the theory ascribes no ostensible role to postwar countercyclical policies, its success in accounting for U.S. business cycles may be the clearest indication yet of the effectiveness of these policies. At the same time, though, the doubts raised by the theory about the wisdom of some policy initiatives to control business cycles may be well founded.

A PRIMER ON REAL-BUSINESS-CYCLE THEORY

Real-business-cycle theory uses changes in productivity to explain the cyclical ups and downs in economic activity. To understand the theory, we need to know what productivity means and how changes in it can cause booms and recessions.

The total output of an economy can be measured by the sum of *value-added* in all firms. The value-added in a firm during a quarter is the value of goods and services produced by the firm in that quarter less the value of goods and services purchased from other firms and used up in production in that quarter.⁴ Clearly, total output is related to the total time people spend working in these firms and the quantity of producers'

⁴Goods and services purchased from firms and used up in production in the same quarter are called intermediate inputs. When value-added is summed over all firms, purchases of intermediate inputs cancel out, and all that remains are goods and services sold to consumers and governments plus goods and services sold to firms but not used up in production during that quarter. Hence, total output could also be calculated as the value of final goods and services (i.e., goods and services that are not intermediate inputs) sold by firms during a quarter plus additions to inventory.

goods (such as machinery or buildings) that assist in production.

However, total output could also change if the effectiveness of the workers and equipment used in production changes. For instance, suppose a manufacturer of plastic products figures out some mechanical modification that reduces wastage of plastic, i.e., the modification allows the same quantity of products to be manufactured using less plastic. In that case, value-added at any given level of hours worked and equipment used will be higher. Economists refer to this change in the effectiveness with which workers and machinery generate value-added as a change in *total factor productivity (TFP)*.

The most important reasons TFP changes over time are improvements in the technology for producing goods and services (as in the example above) and improvements in workers' skills. However, TFP could also change for other reasons. For example, TFP rises when new products are invented and sold by firms or when the price of an imported input (such as oil) falls. TFP may fall when the government imposes stiffer environmental protection laws or when a drought reduces crop yields.⁵

According to real-business-cycle theory, an above-average rate of growth of TFP means that more than the usual opportunities exist for the gainful employment of labor and machinery. To exploit this bonanza, firms invest more than usual in buildings and equipment and hire more than the usual number of workers. The additional income generated by above-average TFP growth and by the increased production of buildings and equipment leads to an increase in consumption. Thus, macroeconomic variables such as total output, consumption, investment, and hours worked simultaneously rise above their respective long-term trends. Furthermore, a quarter of above-average TFP growth tends to be fol-

lowed by more quarters of above-average TFP growth, so that the increase in macroeconomic variables tends to persist for some time. That is how real-business-cycle theory explains a boom. In an analogous fashion, real-business-cycle theory explains recessions as the result of several quarters of below-average TFP growth.

How well does this theory work? Charles Plosser calculated the values of several key macroeconomic variables predicted by the theory for the years 1954 through 1985 (Figures 1 and 2).⁶ As is evident, the match between theory and facts is not perfect, but it is remarkably close. In a 1991 article, Finn Kydland and Edward Prescott calculated that real-business-cycle theory can account for about 70 percent of postwar business-cycle fluctuations in U.S. output.

To summarize, real-business-cycle theory uses fluctuations in the growth rate of TFP to explain business cycles. The theory gives a good account of the cyclical behavior of major U.S. macroeconomic variables during the postwar period. Still, since the theory leaves about 30 percent of the cyclical fluctuations in U.S. output unexplained, it doesn't offer a complete explanation of business cycles.

LESSONS FOR COUNTERCYCLICAL POLICY

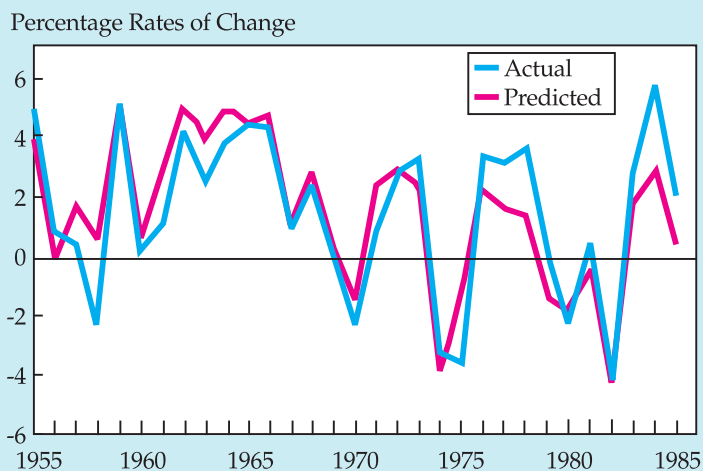
What lessons concerning countercyclical macroeconomic policies can be drawn from real-business-cycle theory? Many economists think that real-business-cycle theory implies that existing countercyclical policies aren't necessary. But is that really true?

Real-business-cycle theory simply calculates the optimal response to random variations in TFP growth for an economic model that resembles

⁵For a fuller discussion of factors affecting TFP, see my 1995 *Business Review* article.

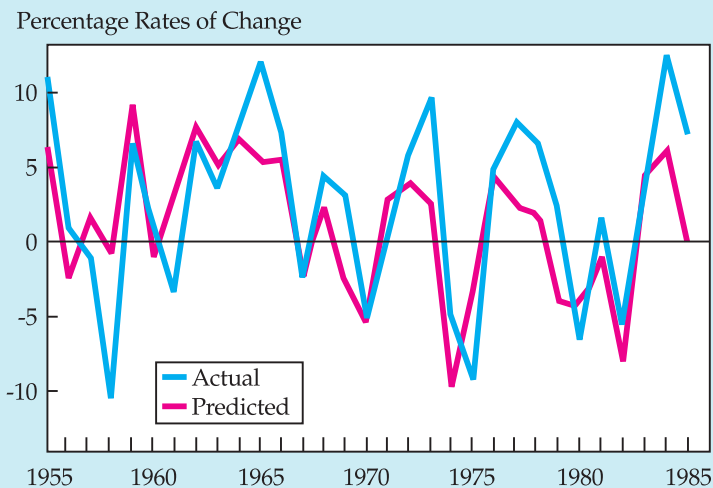
⁶These plots were taken from Charles Plosser's 1989 article, Figure 2 (p. 64) and Figure 4 (p. 65). To conserve space, the figures for consumption and hours worked were omitted. The reader may consult Plosser's 1989 article for the omitted figures and more detail about real-business-cycle theory.

FIGURE 1
Annual Growth Rate
Of Real Output



Reprinted, with permission, from Plosser, Charles I., "Understanding Real Business Cycles," *Journal of Economic Perspectives* 3, 1989, p. 64.

FIGURE 2
Annual Growth Rate
Of Real Investment



Reprinted, with permission, from Plosser, Charles I., "Understanding Real Business Cycles," *Journal of Economic Perspectives* 3, 1989, p. 65.

the U.S. economy in important respects. Prescott presented these calculations as a prediction of how the U.S. economy would *actually* behave when faced with erratic TFP growth. He made this connection by invoking a general principle of economics, namely, that competition tends to produce economically optimal outcomes.⁷

In other words, Prescott proceeded on the assumption that for the purposes of business-cycle analysis, the actual workings of the U.S. economy are well approximated by a model economy with *perfect markets*, that is, a model economy in which all markets are highly competitive and all markets function smoothly without any need for government regulation. Since, according to economic theory, a perfect-markets economy will generate optimal economic outcomes, Prescott simply calculated the optimal response of his model economy to fluctuations in TFP growth and took

⁷The principle dates back, in the guise of Adam Smith's famous "invisible hand," to the origin of modern economics. Smith was one of the first social philosophers to argue that intrusive regulation of commerce and industry is economically harmful. He argued that the freedom to form mutually advantageous contracts (unregulated markets) is the best guarantor of efficient economic outcomes.

these responses to be a prediction of how the *actual* U.S. economy would behave with respect to those same fluctuations. The close match between predictions and fact means that his assumption was not far off the mark; somehow, the U.S. economy manages to mimic a perfect-markets economy.

Real-business-cycle theorists' oft-repeated claim that the U.S. economy behaves like a perfect-markets economy has fostered the impression that the theory means the economy doesn't need countercyclical policies. However, the perfect markets of economic theory do not exist in the real world. The economic outcomes against which the predictions of real-business-cycle theory are compared have resulted from an interplay of *imperfect* markets and a vast array of laws, regulations, policies, and customs that help or hinder the workings of these markets. Thus, the important policy question raised by real-business-cycle theory is: Did postwar countercyclical policies *help* the U.S. economy attain its near-optimal business-cycle behavior or did they *hinder* it?

A question like this cannot lie too long without eliciting some response. And one came in a 30th anniversary review of Milton Friedman and Anna Schwartz's *A Monetary History of the United States, 1867-1960*.⁸ The reviewer was Robert E. Lucas, Jr., a leading proponent of the monetary view of business cycles and a recent recipient of the Nobel Prize in Economics. Lucas used the review as an opportunity to trace the book's significance for subsequent developments in mac-

roeconomics. Toward the end of his review, he appraised real-business-cycle theory in the light of *A Monetary History*.

Unlike other critics of real-business-cycle theory, Lucas accepts the theory's central finding, namely, that TFP shocks can lead to "output variability of about the same magnitude as observed in the U.S. in the postwar period" and can realistically explain the behavior of other variables. Most important, he reconciles this finding with the lessons of *A Monetary History* by noting that one may think of real-business-cycle theory as "providing a good approximation to events when monetary policy is conducted well and a bad approximation when it is not." He then goes on to say, "Viewed in this way, the theory's relative success in accounting for postwar experience can be interpreted simply as evidence that postwar monetary policy has resulted in near-efficient behavior, not as evidence that money doesn't matter." Simply put, Lucas's point is that since real-business-cycle theory shows it's not necessary to invoke monetary and financial disturbances to explain postwar business cycles, monetary policy during the postwar period must have been better than in the prewar period studied by Friedman and Schwartz.

Lucas's reconciliation of real-business-cycle theory with U.S. monetary history suggests an answer to the question posed earlier about whether postwar countercyclical policies helped or hindered the U.S. economy: The postwar U.S. economy may mimic a perfect-markets economy in part *because* postwar monetary policy and other countercyclical policies have prevented monetary and financial instabilities from dominating business fluctuations. Still, it is possible that instead of guiding the U.S. economy toward optimal behavior, these policies may have caused the discrepancy between actual and optimal behavior (Figures 1 and 2). Thus, to argue convincingly that postwar countercyclical policies were beneficial, we should also explain how these policies improved the economy's cyclical per-

⁸For those not in the know, *A Monetary History*, published in 1963, is the definitive statement of the view that monetary instability is a major factor in business cycles. In the words of the authors, the objective of the book is to give an account of "the stock of money in the United States" and of the "reflex influence that the stock of money exerted on the course of events." It is still the book to read for obtaining the factual basis of the view that business cycles result from monetary and financial disturbances.

formance and provide some evidence that they, in fact, did so.

FINANCIAL MARKETS AND THE BENEFITS OF COUNTERCYCLICAL POLICIES

The legal and regulatory framework that shaped U.S. countercyclical policies in the post-war era was established in the years following the Great Depression, the disaster that spurred the adoption of policies to regulate many sectors of the U.S. economy. The policies most relevant for counteracting business cycles are those aimed at banks and financial markets.

Historically, financial markets have displayed a tendency to overreact to a deterioration in business conditions. During a downturn, it's normal practice for financial intermediaries to raise their credit standards and for risk-averse investors to shift out of stocks and bonds into cash and government securities. These actions reduce the amount of credit extended to the private nonfinancial sector and raise interest rates charged on loans. Usually, the cutback in credit does not lead to widespread financial distress, although some firms (and households) go bankrupt. But if the cutback is severe, many firms may fail. Widespread business failures, in turn, may cause the failure of financial intermediaries and lead to further cutbacks in credit and more bankruptcies. This self-propelled cycle of credit cutbacks and bankruptcies leads to a *financial crisis* that results in low output, high unemployment, and very low investment.

Why a business downturn becomes a full-blown financial crisis is not fully understood, but investor pessimism plays an important role. If enough people think that a business contraction is about to degenerate into a financial crisis and act accordingly, the crisis will, in fact, materialize: investors, fearing a financial crisis, may withdraw so much cash from banks and other depository institutions that they may force even sound financial institutions to run out of cash and fail. Furthermore, an economy that suffers

one financial crisis becomes prone to suffering more crises because investors begin to view every downturn with alarm, and their pessimism and fear cause downturns to degenerate into crises more often. In such a situation, countercyclical policies can restore investor confidence in the ability of financial markets to weather downturns.

In the United States, three financial-market countercyclical policies serve this purpose. The first is the federal insurance through which each account at a bank or other depository financial institution is insured up to \$100,000.⁹ This insurance protects small depositors from bank failures and removes their incentive to withdraw deposits during downturns or at any other time, thus blocking one channel through which large-scale cutbacks in credit occur.

The second policy is a commitment by the Federal Reserve to act as "lender of last resort" when some event threatens to precipitate a crisis. Generally, these are events that have the potential to inflict serious losses on loans made by the banking system. In such a situation, the Fed acts as "lender of last resort" by arranging loans that permit illiquid but solvent financial institutions to honor their obligations. For instance, during the 1987 stock-market crash, the Fed made more credit available to the banking system until the crisis had passed. The policy prevents a "run" on uninsured deposits in banks and thus blocks a second channel through which large-scale cutbacks in credit occur.

Finally, the Fed's countercyclical interest rate policy also helps keep financial crises at bay. By raising interest rates and slowing down the growth of debt in booms, the policy makes it less necessary for banks and investors to cut back drastically on credit during the next contractionary phase. And by reducing interest

⁹Although the FDIC insures each account, there are restrictions on the amount of insurance a single individual with multiple accounts at the same institution can get.

rates during contractions, the Fed makes it easier for businesses and households to service their debts, reducing the number of bankruptcies.

In summary, post-WWII monetary and banking policies were aimed at preventing financial markets from amplifying the effects of both business downturns and the financial disturbances (such as a stock-market crash) that often precede business downturns. But how well did these policies do? Real-business-cycle theory suggests they did well because the theory holds that it's not necessary to invoke monetary and financial disturbances in order to explain postwar business cycles. However, we also have more direct evidence of their benefits: business cycles from the prewar era exhibit greater financial instability and sharper fluctuations in output than those from the postwar era.

A COMPARISON OF PRE- AND POST-WORLD-WAR-II BUSINESS CYCLES

Scholars who have examined the evolution of U.S. business cycles document important differences between post-WWII cycles and those from the prewar era. First, financial crises were more common during business downturns in the pre-WWII era. In his 1992 book on business cycles, Victor Zarnowitz records that a financial crisis occurred during the contractionary phase of four out of the 15 business cycles between 1870 and 1927, and two financial crises occurred during the contractionary phase of the business cycle that began in November 1927 and ended in March 1933. Generally speaking, the prewar downturns in which financial crises occurred were more severe than those in which no crisis occurred. In contrast, in the 66 years since 1933, the United States has not suffered a single prewar-style financial crisis.¹⁰

Second, during downturns, depositors tend to increase their holdings of cash and banks tend to increase their cash reserves while making fewer loans. This shift toward greater liquidity on the part of depositors and banks is reflected in the fall in the ratio of bank loans to the monetary

base (the sum of currency held by the public and bank reserves) during downturns. Clearly, this ratio should be much more volatile when the financial system is prone to crises than when it is not: the fear of a crisis and the passing of such fear should cause the ratio to plunge and soar over time. Indeed, it appears that the cyclical volatility in the ratio of bank credit to the monetary base was much more marked in the pre-WWII era (Figure 3).¹¹ The same is true for the U.S. money supply, of which the ratio of bank loans to the monetary base is an important determinant (Figure 4).¹² Overall, cyclical monetary control has been far better in the postwar period compared with the prewar era.¹³

Did a fall in the volatility of economic activity accompany the fall in the volatility of the U.S. money supply? Apparently it did. Business-cycle fluctuations in the gross national product (GNP) of the United States also show a dramatic reduction of volatility in the postwar period (Figure 5).¹⁴ Furthermore, there is a strong association between up-and-down movements in the money

¹⁰This is not to say that there were no financial disorders in the postwar period. For instance, the S&L industry faced a serious crisis in the 1980s. However, there were no major runs on banks associated with this crisis.

¹¹The proxy measure of bank credit used in Figure 3 is the difference between the M2 measure of money supply and the monetary base.

¹²The volatility of the ratio of bank loans to the monetary base, as measured by the standard deviation, fell from 5.4 percent in the prewar period (1875-1941) to 2.1 percent in the postwar period (1946-1997). The standard deviation of the money supply fell from 4.7 percent in the prewar period to 1.7 percent in the postwar period.

¹³Of course, in another important sense, it has not been. As is well known, the postwar era has witnessed the worst inflation in U.S. history. The rapid increase in the money supply that fed the inflation of the 1960s and the 1970s caused the trend path of the money supply to shoot up. Nevertheless, fluctuations around this rapidly rising trend line were small compared with similar fluctuations in the prewar era.

FIGURE 3
Cyclical Changes in the Ratio
Of Bank Loans to Monetary Base
 1875-1997

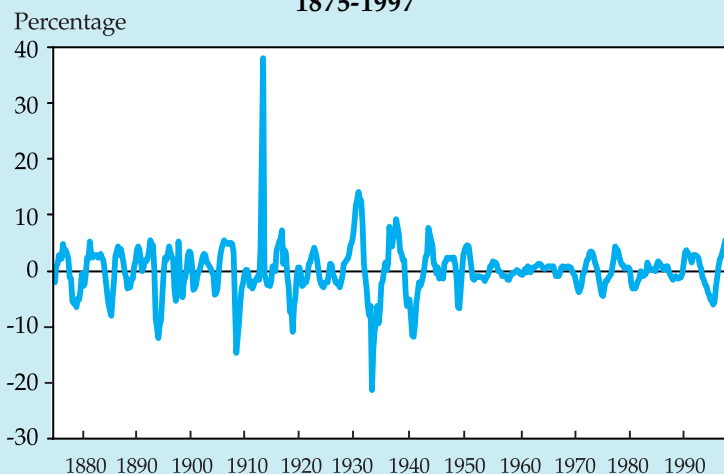


Figure shows percentage deviations from trend. In this figure, as in the following ones, the trend is calculated using a procedure described by Robert Hodrick and Edward Prescott. The percentage deviation from trend is simply 100 times the ratio of the difference between the actual and trend value of a variable to its trend. The historical data on which this figure and the following ones are based are taken from Appendix B of the *The American Business Cycle*, Robert J. Gordon, ed., Chicago: University of Chicago Press, 1986.

FIGURE 4
Cyclical Changes in the Money Supply
 1875-1997

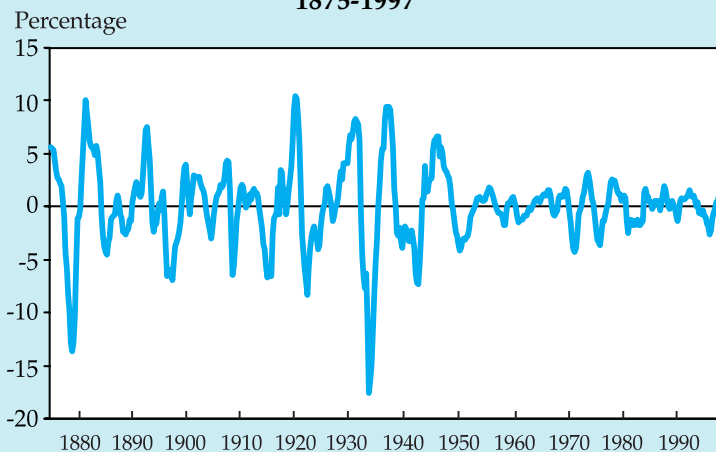


Figure shows percentage deviations from trend of the M2 measure of the money supply.

supply during the prewar period and the up-and-down movements in prewar GNP.¹⁵ This lends credence to the view that better monetary control was a key factor in the decline in volatility of postwar GNP in the United States.

Although Lucas and others are right to stress the importance of better monetary policies, we should not think that the entire drop in the GNP's volatility is a result of better monetary control. Other elements of postwar countercyclical policies, particularly various "income-

¹⁴The standard deviation of fluctuations around trend in prewar GNP is 4.8 percent, as compared to 2.3 percent in the postwar period. However, because of the fragmentary nature of information on prewar GNP, there is controversy about how volatile prewar GNP really was. Some scholars have suggested that for the period preceding the Great Depression, U.S. GNP was only slightly more volatile than in the postwar period. For details, consult the 1989 articles by Christina Romer and by Nathan Balke and Robert Gordon.

¹⁵The correlation coefficient between the fluctuations around trend in money supply and real GNP, a measure of how closely two data series move together, is +0.56 in the prewar period, but -0.02 in the postwar period.

FIGURE 5
Cyclical Changes in Real GNP
 1875-1997

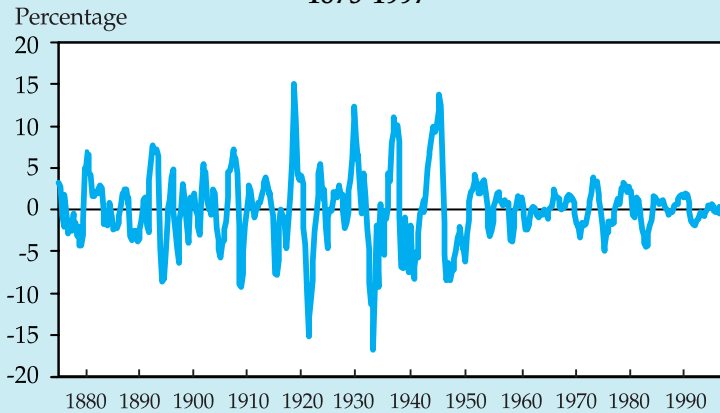


Figure shows percentage deviations from trend of real GNP measured in 1972 prices.

maintenance” programs, probably contributed to the decline as well. For instance, unemployment insurance (which didn’t exist in most states before 1930, but covered more than half the civilian workforce by the late 1940s) and progressive taxation (which reduces the income-tax rate for households that experience a decline in income) probably helped reduce output volatility by shoring up demand for goods and services during business downturns.¹⁶

ARE ADDITIONAL COUNTERCYCLICAL POLICIES DESIRABLE?

Because fluctuations in the growth rate of TFP are a major source of business cycles, the most

¹⁶Another factor to keep in mind is that the structure of the U.S. economy has changed over time and some of these changes may have reduced business-cycle volatility. For instance, the rising share of service-sector income and employment, a sector that’s not very cyclical, must have reduced the cyclical volatility of postwar GNP. Thus, economists must assess the contribution of these types of structural changes to gain a keener appreciation of the beneficial role of postwar countercyclical policies.

effective countercyclical policy is one that eliminates—or at least reduces—the random movements in TFP growth. Because people generally like stable economic environments, such a policy would make them better off.

Unfortunately, economists and policymakers do not know a sure-fire way to eliminate random fluctuations in TFP growth. However, what policymakers can do is adopt policies to buffer people against the consequences of fluctuations in TFP growth. But a surprising

implication of real-business-cycle theory is that such buffering may make people worse off.

To see why, suppose that policymakers enact a plan that dissuades businesses from increasing the rate of investment during periods of above-average TFP growth and encourages them to keep up their rate of investment during periods of below-average TFP growth. By forcing businesses to invest at a steadier rate, the policy will reduce random fluctuations in consumption, hours worked, and output. However, by discouraging investments when the growth rate of TFP is above average and encouraging investments when it’s below average, the policy also entails a loss in output.¹⁷ Thus, the policy would make people better off only if the benefits of

¹⁷The expected return on new investment is above average when the growth rate of TFP is above average and it is below average when the growth rate of TFP is below average. Therefore, the loss in future output from curtailing new investments during periods of above-average TFP growth will exceed the gain in future output from expanding new investments during periods of below-average TFP growth.

greater stability outweighed the value of lost output.

However, recall that according to real-business-cycle theory, people and firms adjust investment spending and hours worked so that the value of output foregone by not responding more aggressively to fluctuations in TFP is balanced by the benefits of the resulting stability in the levels of income, consumption, and hours worked. In other words, according to the theory, the “predicted” paths for output and investment shown in Figures 1 and 2 are the U.S. economy’s optimal responses to TFP shocks. Because the optimal response calls for large fluctuations in real investment, a policy that attempts to smooth away these fluctuations will make people worse off: the value of lost output will outweigh the benefits of greater stability.

More generally, the resemblance between actual and optimal business cycles implies that further progress in reducing the ill effects of business cycles can come only from reducing random fluctuations in the rate of TFP growth. Merely buffering the economy against these random changes is unlikely to make people better off because people and businesses seem to be responding to these random changes in an almost optimal way.

However, it’s possible that other countercyclical policies could reduce fluctuations in TFP growth. For instance, some researchers have argued that the bank failures during the Great Depression may have caused TFP to fall by making it more difficult for businesses to carry out production. Thus, the conduct of monetary policy could have direct effects on fluctuations in TFP. However, no one has yet created an economic model that convincingly demonstrates this possibility. Until we have such a model, Prescott’s questioning of the need for additional countercyclical policies deserves to be heeded.

SUMMARY

Real-business-cycle theory cites changes in business-sector productivity as a proximate cause of booms and recessions. The theory succeeds in accounting for a large fraction of the cyclical fluctuations in postwar U.S. output and gives a good account of the cyclical behavior of key macroeconomic variables.

This article has discussed the theory’s implications for existing and prospective countercyclical policies. The theory suggests that policy initiatives to buffer the effects of business cycles may not be necessary; postwar business cycles are close to what we would ideally expect as a result of random fluctuations in the growth rate of business-sector productivity. Unless we can devise policies that reduce the fluctuations in business-sector productivity itself, there may be little to be gained by shaping the U.S. economy’s response to these fluctuations.

However, the theory’s implications for existing countercyclical policies remains a matter of debate. One possibility is that the success of real-business-cycle theory reflects better post-WWII countercyclical policies. In particular, federal deposit insurance and lender-of-last-resort facilities, along with superior cyclical control of the money supply and income-maintenance programs such as unemployment insurance and progressive taxation, reduced some of the instabilities that characterized pre-WWII business cycles. As a result, the volatility of output over the course of business cycles fell after World War II, and fluctuations in the growth rate of business-sector productivity (rather than monetary and financial disturbances) surfaced as the dominant source of business cycles. In this sense, real business cycles may be the legacy of countercyclical policies.

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