



Munich Personal RePEc Archive

## **Postwar Financial Crises and Economic Recoveries in the United States**

Lopez-Salido, David and Nelson, Edward

Federal Reserve Board

8 October 2010

Online at <https://mpra.ub.uni-muenchen.de/98502/>

MPRA Paper No. 98502, posted 10 Feb 2020 16:09 UTC

# Postwar Financial Crises and Economic Recoveries in the United States

David López-Salido  
Federal Reserve Board

Edward Nelson\*  
Federal Reserve Board

October 8, 2010

## Abstract

We reconsider the connection between financial crises and economic recoveries in the postwar United States. We proceed in two steps. First, we provide a chronology of financial crises in the United States. We make the case that the postwar period prior to 2007 should be characterized as featuring three periods of financial crisis: 1973–1975, 1982–1984, and 1988–1991. This implies a substantially different postwar chronology of financial crises from that advanced by Reinhart and Rogoff (2009a, 2009b). The second step in our analysis is to reexamine economic recoveries in the wake of financial crises with this revised chronology. We find that the regularity that recoveries are systematically slower in the aftermath of financial crises does not hold for the postwar United States. Historically, the pace of the expansion after recessions seems to reflect aggregate demand conditions.

*JEL* classification: E32; E52; G21.

Key words: Financial crises, economic recoveries, aggregate demand policy.

---

\*We are indebted to Michael Bordo, Benjamin Friedman, Charles Goodhart, Michael Kiley, Loretta Mester, Gary Richardson, Christina Romer, David Romer, Luis Servén, Angel Ubide, Egon Zakrajšek, and workshop participants at the Federal Reserve Board and the July 2010 NBER Monetary Economics Summer Institute for comments on earlier versions of this paper. We thank Benjamin Brookins and Kathleen Easterbrook for research assistance. The views expressed in this paper are solely the responsibility of the authors, and should not be interpreted as reflecting the views of the Board of Governors of the Federal Reserve System or of any other person associated with the Federal Reserve System. Email addresses: david.lopez-salido@frb.gov, edward.nelson@frb.gov.

# 1 Introduction

*“If you think back to the Great Depression, it’s actually getting the real economy going [that] was the main thing that, that helped. . . bring the banks around.”*

Christina Romer, March 15, 2009

Financial market weakness is widely acknowledged as having played a major part in the recent economic downturn in the United States. This experience has raised the prospect that financial weakness may also prevent a rapid economic recovery. There would surely be wide agreement that a stronger financial sector would contribute to a more robust economic outlook. But there is greater room for doubt on the question of whether financial weakness would likely stand in the way if elements traditionally associated with economic recovery point toward a rapid expansion. Is it the case, for example, that financial recovery is a *precondition* for economic recovery—in other words, that financial strain can be expected to *prevent* a strong recovery? Or should we expect factors normally associated with strong economic rebounds—for example, substantial degrees of monetary and fiscal stimulus—to promote a major upturn in growth even when the financial system is weak?

The study of past episodes of financial distress may cast light on these issues. In this spirit, an influential series of studies by Reinhart and Rogoff (2008a, 2008b, 2009a, 2009b) has turned to the historical experience of a variety of countries. Among the conclusions that Reinhart and Rogoff reach on the basis of a study of postwar experience are: (i) “the aftermath of banking crises is associated with profound declines in output and employment” (2009b, p. 224), and (ii) the aftermath of these crises is systematically associated with weak economic recoveries, so that “growth is sometimes quite modest in the aftermath” of financial crises (2009b, p. 235).

Item (i) of these findings seems to ring true for the United States, and is in keeping with the emphasis put on the relationship between financial crises and severe economic contractions in the United States by Friedman and Schwartz (1963) and others. Item (ii) of the Reinhart-Rogoff findings seems, however, appears to be at variance with evidence for the United States. A number of studies of U.S. business cycle history have found that severe recessions are followed by rapid economic expansion: for example, Friedman (1964, 1993), Neftci (1986), Kim and Nelson (1999), Morley and Piger (2005),

and Sinclair (2009). This seems to be such a well established regularity for the United States that it would be surprising if recoveries from recessions associated with financial crises amounted to exceptions to the rule. Moreover, the experience of the United States during the most severe financial crisis in its history—the Great Depression—would not appear to provide an exception to the pattern of economic recoveries just described. Friedman and Schwartz’s (1963) chapter on the recovery from the Great Contraction opens with the words, “As we have seen, severe contractions tend to be succeeded by vigorous rebounds. *The 1929–33 contraction was no exception.*”<sup>1</sup> Likewise, Romer (1992, p. 757) has emphasized that the 1930s witnessed a “spectacular” recovery that was able to proceed against the backdrop of a weak banking system. Romer argues that aggregate demand stimulus was responsible for the strength of the recovery; the repair of the banking system, while important, was not a precondition for a strong recovery. And, as noted in the quotation from Romer given above, once economic recovery was in process, it was a major factor in restoring the financial system to health.<sup>2</sup>

Reinhart and Rogoff’s (2009b) conclusion about weak recoveries was based overwhelmingly on experiences outside the United States.<sup>3</sup> But the authors have not hesitated to draw implications for the United States from their findings on recoveries from financial crises, both in their discussion in Reinhart and Rogoff (2009a, 2009b) and elsewhere. For example, in a television appearance in November 2009, Kenneth Rogoff said, “Well, when you have a typical recession, a typical U.S. recession, you roar out of it. You grow at double normal, and even more sometimes. This was not a typical recession. This was a financial crisis-amplified recession. And when you look at other countries in other places—I know we’re different, but we’re not—you grow much slower, because the financial system is impaired, it takes lots of times to figure out your regulation, the debt problems that you inherited are always big. . . I mean, the norm

---

<sup>1</sup>Friedman and Schwartz (1963, p. 493; emphasis added).

<sup>2</sup>This quotation is from a *Meet the Press* interview (March 15, 2009). In context, what CEA Chair Romer said was, “I don’t agree with the idea that you—that, that stimulus can’t do anything until the financial rescue is done. I think, in truth, those things go parallel. And if you think back to the Great Depression, it’s actually—getting the real economy going was the main thing that, that helped to make, bring the banks around.”

<sup>3</sup>Likewise, Terrones, Scott, and Kannan (2009), who find that financial crises are associated with systematically slower recoveries, draw their conclusions predominantly from non-U.S. experiences. This is especially the case because these authors follow Reinhart and Rogoff’s (2009a) characterization of the postwar United States as having had only a single pre-2007 postwar financial crisis.

that Carmen Reinhart and I find coming from these financial crises is you grow slow for a while.”<sup>4</sup> Similarly, Reinhart (2009) took the generalizations reached in Reinhart and Rogoff (2009a) as applicable to “the current episode in the U.S.”

We reconsider below the connection between financial crises and economic recoveries in the postwar United States. Throughout, we treat recoveries as referring to upturns in real GDP. This focus reflects the fact that what is at issue is whether the rate of *economic growth* is rapid after a financial crisis. It is not disputed that, even if rapid growth in aggregate output takes place, it may take several years for the level of the output *gap* to be closed after a severe downturn; indeed, that point is acknowledged in discussions that have emphasized the strength of the recovery of output in the Great Depression, such as Friedman and Schwartz (1963) and Romer (1992). Focusing on output growth is also preferable to concentrating on employment or unemployment; these labor-market-based indices of economic activity may not adequately capture cyclical recoveries in aggregate production if employment is a lagging indicator, or if supply-side changes alter the relationship between the labor input and final aggregate output.

We find that the regularity that recoveries are systematically slower in the wake of financial crises does not hold for the postwar United States. We arrive at this conclusion in two steps. The first step is a revision of the chronology of financial crises in the United States. We lay out this revised chronology in Section 2. The reconsideration of the postwar record leads us to a chronology substantially different from that in Reinhart and Rogoff (2009b). Reinhart and Rogoff characterize the United States as having had a single pre-2007 postwar financial crisis, one beginning in 1984. Our examination of the U.S. experience casts doubt on this choice. We question the notion that the United States had no other financial crisis in the postwar period until 2007, and also question the choice of 1984 for the date of the inception of the single pre-2007 crisis that Reinhart and Rogoff acknowledge.<sup>5</sup>

We argue that banking developments in the 1970s justify classifying 1973–1975 as a financial crisis for the United States. Furthermore, while Reinhart and Rogoff date the savings and loan (S&L) crisis to 1984 or to 1984–1991, there is little justification

---

<sup>4</sup> *Charlie Rose Show* (November 10, 2009), pp. 9, 10 of transcript.

<sup>5</sup> Our chronology also necessarily departs from treatments, such as that of Cecchetti, Kohler, and Upper (2009), that deny any pre-2007 financial crisis in the postwar United States.

for dating this crisis as early as 1984. The periods of intense S&L failures were concentrated in the late 1980s and early 1990s, and were not spread over 1984–1991; a more appropriate date for the S&L crisis, and that used in Caprio, Klingebiel, Laeven, and Noguera (2005), is 1988–1991. We argue that, contrary to Reinhart and Rogoff’s chronology, the early 1980s were not free of financial crisis; rather, this period saw the impairment of U.S. banks’ position due to the international debt crisis, and this crisis is appropriately dated to 1982–1984. Thus, our postwar chronology points to three periods of pre-2007 U.S. financial crisis: Crisis I (1973–1975), Crisis II (1982–1984), and Crisis III (1988–1991), in contrast to Reinhart and Rogoff’s (2009a, 2009b) single, protracted 1984–1991 crisis.

The second step in our analysis is to reexamine economic recoveries in the wake of financial crises with this revised chronology. We carry out this reexamination in Sections 3 and 4. We find no basis for the notion that these recoveries are systematically weaker than the norm. The recoveries in output that began in 1975 and after 1982 were vigorous rebounds. The recovery following the 1990–1991 recession was mild, but, as many observers have noted (for example, Taylor, 1998), the downturn in output in 1990–1991 was itself shallow. Rather than reflecting a systematic association between financial crises and weak recoveries, the gentle recovery of the early 1990s may have been the mirror image of a relatively shallow recession, and it is also consistent with the restrained monetary policy of the early 1990s. In addition, an examination of aggregate bank lending behavior in each episode, which we conduct in Section 4, suggests that a weak lending outlook is not an insurmountable obstacle to the operation of stimulative aggregate demand policies. We present econometric evidence in Section 5 that suggests that U.S. economic recoveries in the wake of financial crises are not significantly weaker than other recoveries once the size of the prior contraction is taken into account. We conclude that slow recoveries in the wake of financial crises cannot be said to be an established stylized fact in the case of the United States.

## **2 A chronology of postwar U.S. financial crises**

In this section we make the case postwar U.S. history should be characterized as featuring three financial crises before 2007: those in 1973–1975, 1982–1984, and 1988–1991. We consider each crisis in turn. The first two crises have no counterpart on Reinhart

and Rogoff’s (2008b, 2009b) chronology; accordingly, we highlight several aspects of these crises that meet Reinhart and Rogoff’s (2009b, p. 215) criterion of “bank-centered financial crises.”

## 2.1 Basis for defining a financial crisis

Despite frequent references to financial crises in macroeconomic discussions, no consensus exists on a precise definition. As Benjamin Friedman (1991, p. 19) observes, “It is difficult to specify with precision just what a financial crisis is, but most people in the business and financial world apparently sense that they would recognize one if they experienced it.”

Schwartz (1986) proposes a qualitative characteristic for defining financial crises. Schwartz associates with crises the emergence of traditional bank runs involving the conversion by households *en masse* of their deposits into currency. But because this definition focuses on such *retail* deposit runs, strict adherence to her definition would overlook those banking crises that arise from the drying-up of their wholesale funding. Such episodes of wholesale funding distress can take place even in situations where—thanks largely to deposit insurance—runs on aggregate retail deposits are minor or absent. As we discuss further below, ever since the 1970s it has been *wholesale* funding distress that is seen as the central characteristic of modern bank runs. Hence, as Summers (1991) argues, the Schwartz definition of financial crises seems overly restrictive for the analysis of modern financial systems.

Another option is to appeal to specific data as the criteria for defining a financial crisis. But no single metric for defining or ranking financial crises seems usable. For example, referring to the fiscal cost of governmental assistance to the financial system—e.g., the percentage of GDP absorbed by the rescue or assistance to troubled institutions—does deliver a concrete number, but is a flawed means of judging financial crises. This is brought out by the fact that the fiscal cost of federal assistance for the U.S. S&L crisis was a larger share of GDP than most projections of the U.S. fiscal cost of the post-2007 crisis, yet the post-2007 crisis is widely seen as having larger macroeconomic implications.<sup>6</sup> Indices of financial crises based on commercial banks’ loan write-

---

<sup>6</sup>Treasury Secretary Geithner has noted this comparison (e.g., on *Fareed Zakaria GPS*, April 25, 2010). It is likely, furthermore, that a variable we emphasize in this paper—the form of aggregate demand policy—is an important factor bearing on the relationship between the magnitude of a financial

offs, on the other hand, are distorted by the existence of creditor/borrower/regulator behavior, such as loan rescheduling and regulatory forbearance, which may postpone, or substitute for, write-offs.<sup>7</sup> Write-offs therefore may not indicate the current level of banking distress.

The most promising way forward in constructing indices of financial crises from data is perhaps to aim for a portmanteau variable that combines various aspects of data on financial institutions' condition. Constructing such a portmanteau index is, however, beyond the scope of this paper. In lieu of a widely-agreed index, we proceed instead by applying Reinhart and Rogoff's nonquantitative definition referring to "bank-centered financial crises" (2009b, p. 215) associated with "the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions)..." (2009b, p. 10). We condition our analysis on this definition. In so doing, we stress that our aim is not to challenge this definition, but instead to establish that on its own terms this definition implies for the United States a different chronology from that in Reinhart and Rogoff (2009b). In particular, our analysis establishes that (i) events in 1973–1975, not included in Reinhart-Rogoff's chronology, should be included, and the case is stronger for the United States than the United Kingdom (for which Reinhart and Rogoff do argue a crisis occurred in that period; and (ii) the events of 1982–1984, not included in Reinhart-Rogoff's chronology, should be regarded as a period of financial crisis. We now proceed to now lay out the chronology that underlies these points.

## **2.2 Financial Crisis I: 1973–1975—Commercial Bank Capital Squeeze**

Our first proposal is to augment the list of U.S. financial crises to include one not considered by Reinhart and Rogoff (2009a, 2009b): namely, the period 1973–1975. In what follows, we lay out the key aspects of developments in 1973–1975 that justify considering this a period of a financial crisis in the United States.

U.S. postwar financial developments in the period up to 1973 are well characterized as featuring no banking or systemic financial crisis. In his account of postwar financial

---

crisis and its ultimate fiscal cost.

<sup>7</sup>Reinhart and Rogoff (2009b, p. 10) reject the write-offs metric partly for this reason.



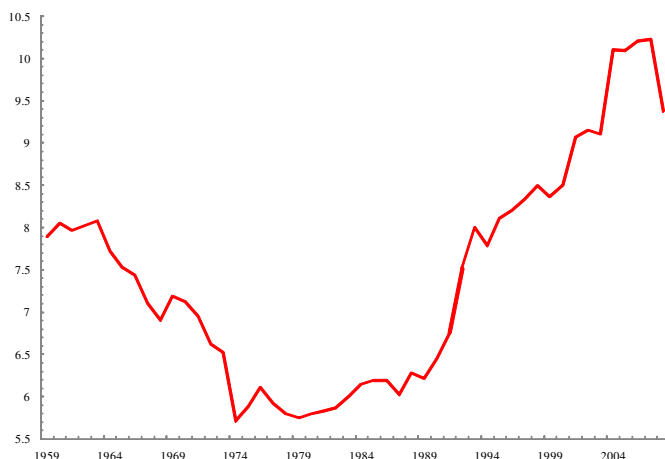


Figure 1: Commercial banks' equity capital (as percentage of total bank assets), 1959–2008. Source: FDIC.

changes, Benjamin Friedman (1980, p. 13) noted, “There have been far fewer bank failures, and—until 1974—essentially no failures at all of large banks.” Friedman’s reference to 1974 here is a significant qualification. The mid-1970s featured major problems for banks reflected in the behavior of the aggregate banking system, greater than those observed in earlier postwar decades. Figure 1 plots the ratio of bank common equity capital to the book value of aggregate commercial bank assets, using the annual Federal Deposit Insurance Corporation (FDIC) Call Report data for FDIC-insured banks.<sup>8</sup> The series closely matches the plot of the ratio of bank equity to assets given in Boyd and Gertler (1994) and the tabulated values in Barth and Litan (1998). Using the series in Figure 1 as the metric, it is apparent that the most serious capital problem for U.S. commercial banks in the *whole* postwar period occurred in the mid-1970s, when the capital ratio reached a postwar trough.<sup>9</sup>

There are further indications that the mid-1970s was a period of financial crisis in the United States. Federal Reserve Chairman Arthur Burns described the environment

<sup>8</sup>The series plotted is the ratio of the “Total Equity Capital” column of the “Liabilities and Equity Capital, FDIC-Insured Commercial Banks” table (<http://www2.fdic.gov/hsob/hsobRpt.asp>) to the “Total Assets” column of the “Assets, FDIC-Insured Commercial Banks” table (<http://www2.fdic.gov/hsob/hsobRpt.asp>).

<sup>9</sup>A similar picture of the deterioration in U.S. commercial banks’ capital position in the mid-1970s is apparent in Berger, Herring, and Szegő’s (1995) capital ratio series.

prevailing in late 1974 as one of “stresses and strains in the financial system” (quoted in Cohn, 1974). One of the strains, alluded to in the passage from Friedman (1980) given above, was the first series of large bank failures witnessed in the U.S. postwar period. Watson (1975, p. 3) noted “several failures of large banks in 1974”; likewise, the *Washington Star* of April 6, 1975, observed, “In the past two years, three big banks have failed or been merged in distress situations” (Holusha, 1975). The banks in question were the United States National Bank of San Diego (declared insolvent in October 1973), the Franklin National Bank (the twentieth largest bank in the United States, declared insolvent in October 1974), and the Security National Bank of New York (the subject of an emergency merger in 1975).<sup>10</sup> Noting these failures as part of a sequence that culminated in 1975, Edwards and Scott (1979, p. 66) observe, “During the last few years, a number of uncommonly large banks have failed.” Table 1 displays data from Edwards and Scott (1979, Table 2.1) and also reports in real terms the dollar amounts they give. The amounts of deposits of closed banks mark 1971–1975 out from prior postwar half-decades; in addition, a breakdown in Edwards and Scott (1979, p. 67) indicates that 24 of the 34 banks that closed in 1971–1975 did so in 1973–1975.<sup>11</sup>

Table 1. Bank Failures and Crisis I

Period	Avg. # of banks closed (per year)	Total deposits of closed banks (avg. per year)	
		Current dollars	2005 dollars
1956–1960	4.0	\$9 m	\$50.0 m
1961–1965	6.6	\$24.4 m	\$126.3 m
1966–1970	6.4	\$46.6 m	\$209.9 m
1971–1975	6.8	\$1,021.2 m	\$3,533.4 m

Source: Edwards and Scott (1975, p. 67); final column, authors’ calculations using annual series on the GDP deflator from the Federal Reserve Bank of St. Louis’ FRED portal.

<sup>10</sup>As part of the liquidation process for both the National Bank of San Diego and Franklin National, the FDIC arranged for the deposit business and some assets of the failed banks to be taken over by other institutions. See Committee on Banking and Currency (1975), Committee on Housing, Banking and Currency (1975), and Schwartz (1986) for details. Franklin National was given as the twentieth largest U.S. bank in Committee on Banking and Currency (1975, p. 152).

<sup>11</sup>The table in Barth, Brumbaugh, Sauerhaft, and Wang (1986, p. 511) indicates that 1973 was the year in which total assets of failed commercial banks surged dramatically, both in nominal and real terms.

In 1980, the Chairman of the Bank of America reflected on the running down of bank capital during the early 1970s and the bank closures of the mid-1970s, and their implications for still larger banks:

*“... the rapid expansion of loans and investments in the early 1970s could not continue for long without proportionate additions to equity capital. Balance sheets of commercial banks soon began showing signs of strain. . . [A]t the end of 1973, equity capital equaled only 6.5 percent of total bank assets, a considerable decline from 9 percent at the end of 1960. The closure of the United States National Bank of San Diego in 1973, followed by the demise of Franklin National and the international reverberations of the Bankhaus Herstatt failure, further escalated concerns over the soundness of the banking system in this country and abroad.*

*“Against this backdrop, Bank of America adopted a policy of self-restraint in the summer of 1974.”*

Carron (1982, p. 398) notes that the problems of Franklin National led, in addition, to a period of elevated market interest rates at which commercial banks borrow, reflecting “doubts about the safety of the banking system.” A further element of financial strain in the mid-1970s was the heightened prospect that the New York City government would default, an uncertainty resolved by the provision of federal financial assistance to the city in late 1975.<sup>12</sup> The mid-1970s also witnessed a heightening of concern about widespread failure in the thrift industry (i.e., the industry then consisting largely of savings and loan institutions). In 1974, Alan Greenspan raised the prospect<sup>13</sup> that the thrift industry might require a rescue in the form of a large-scale infusion of funds from the federal government—an eventuality which was not realized on this occasion.

In their classification of financial crises, Reinhart and Rogoff (2008b, 2009b) do not include any episode from the postwar United States prior to the 1980s, even though they categorize other countries (such as the United Kingdom) as being in a financial crisis during the mid-1970s. We believe however, that the developments outlined above,

---

<sup>12</sup>New York City’s near-default is discussed, in the context of the mid-1970s financial distress, by Schwartz (1986).

<sup>13</sup>As reported in Jensen (1974), and Dale (1974).

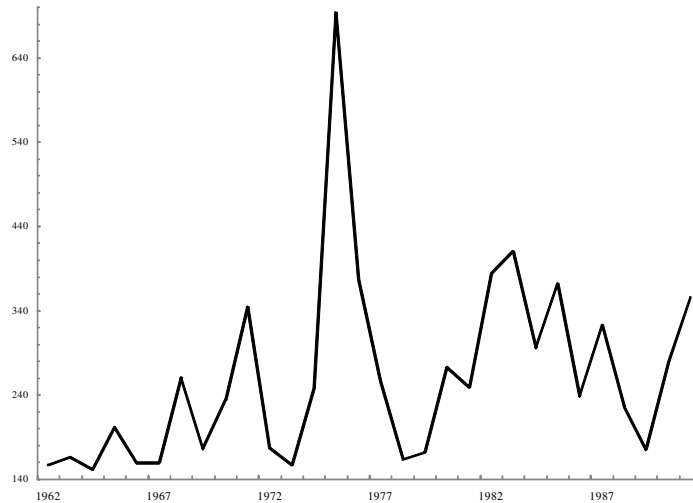


Figure 2: Total uses of the terms “financial crisis” or “banking crisis” in the *Wall Street Journal*, the *Washington Post*, and the *New York Times*, by year. Source: Authors’ calculations from Proquest database.

notably the strain on bank capital, the extent of bank closures or distress mergers, and the risk of default of a leading municipal government, all classify the United States as experiencing a financial crisis during 1973–1975. This crisis saw a liquidation of a major commercial bank, whereas the financial crisis acknowledged for the same period in the United Kingdom in Reinhart and Rogoff’s chronology did not involve liquidations or rescue operations for major commercial banks. The U.K. secondary banking rescue in 1974, which Reinhart and Rogoff do classify as occurring in a financial crisis, pertained to a class of nonbank financial institutions, not to established commercial banks.

Our case for 1973–1975 as a financial crisis period is reinforced by a search of articles in major U.S. newspapers. Figure 2 plots the hits by years of the terms “financial crisis” and “banking crisis,” in the collected electronic archives (in the Proquest database) of the *Wall Street Journal*, the *Washington Post*, and the *New York Times*. The Proquest database covers these newspapers up to 1991, which is why the series in Figure 2 stops in that year. The figure indicates that there was a noticeable peak in the mid-1970s in the number of articles making reference to a banking or financial crisis.

## 2.3 Comparison with the United Kingdom

The United Kingdom is classified in the chronologies of Reinhart and Rogoff (2009a) and Caprio, Klingebiel, Laeven, and Noguera (2005) as having experienced financial crisis in 1974–1976. This reinforces our case for labeling the mid-1970s a financial crisis for the United States. The reason is that the United Kingdom’s problems in the mid-1970s are less recognizable as a bank-centered financial crisis than are those of the United States.

The U.S. financial crisis of 1973–1975 featured liquidation of two large commercial banks. The U.K. financial crisis of 1974–1976 (as designated by Reinhart and Rogoff, 2009b, p. 388) witnessed no closure or liquidation of commercial banks. Rather, the distress was concentrated in nonbank institutions. In the first place, nonfinancial corporations suffered a liquidity crisis, arising from the interaction of strict official price controls with rapid growth in costs. This corporate distress is one reason the term “financial crisis” is associated with the United Kingdom over this period—for example, an *American Banker* report (Mendelsohn, 1974) was headlined, “U.K. Industry Straining to Avoid Financial Crisis”—but, by the same token, that distress clearly did not amount to a bank-centered crisis.

Another reason this episode is frequently treated as one of financial crisis is that certain U.K. nonbank financial institutions entered difficulties in the mid-1970s. Specifically, late 1973 saw the rescue of some members of what were called the “secondary banking” sector. A *Financial Times* analysis of the secondary banking crisis noted the secondary banks had “a good deal less than full banking status,” and noted that they tended to be involved in investment banking (Blanden, 1973). This brings out the fact that the secondary banks—their name notwithstanding—were *not* commercial banks but rather were investment banking-type institutions. Their difficulties arose primarily from the impact of the 1973 crash in U.K. equity and housing prices on their real estate- and equity-related loans and investments. The Governor of the Bank of England at the time of the secondary banking rescue, Gordon Richardson, later testified: “The secondary banks were nonbanks.” (October 27, 1992, testimony, in Treasury and Civil Service Committee, 1993, p. 93.)

To recapitulate: Reinhart and Rogoff (2009b) classify the United Kingdom as having a bank-centered financial crisis in the mid-1970s, while they treat the United States

as crisis-free over the same period. In the mid-1970s some large U.S. commercial banks were formally declared insolvent. By contrast, the United Kingdom witnessed no commercial bank failures over this period; indeed, the commercial banks were strong enough to share the cost with the Bank of England of the rescue of the secondary banks. Using Reinhart and Rogoff’s (2009b, p. 216) criterion of a “bank-centered financial crisis,” the case for treating the United States as having a financial crisis in 1973–1975 is actually stronger than it is for the United Kingdom.

## 2.4 Financial Crisis II: 1982–1984—LDC Debt Threat

Many studies of U.S. banking developments in the 1980s concur on the position that a U.S. banking crisis began in 1982. For example, Litan (1994, p. 535) judges that “the initial bank crisis arose in 1982,” and his table of U.S. banking crises in the 1980s associates 1982 with the “LDC [less developed countries] debt crisis” (1994, p. 527); Boyd and Gertler (1994, p. 1) state that “the greatest crisis in U.S. commercial banking since the Great Depression” started in 1982; and Benati and Goodhart (2010), along with many others, date the commencement of the crisis to August 1982, when the prospect arose of the Mexican government defaulting on borrowings from U.S. commercial banks.

According to Reinhart and Rogoff’s (2008, 2009a) chronology of financial crises, however, the United States has suffered a single financial crisis in the pre-2007 post-war period—the savings-and-loan crisis, which they characterize as beginning in 1984. Reinhart and Rogoff therefore overlook what Benati and Goodhart (2010) label “the second most severe financial crisis”<sup>14</sup> of the 1979–2008 period—one that began *before* 1984, and did *not* originate in the savings and loan industry. As already noted, the key factor associated with this financial crisis was the elevated prospect of a default by several Latin American governments on their borrowings from major U.S. commercial banks. The natural starting date for this U.S. banking crisis is 1982; we argue below that the culmination of the crisis can be viewed as the U.S. government’s rescue of the Continental Illinois Bank in July 1984.

U.S. policymakers described developments from late 1982 in crisis terms, both pub-

---

<sup>14</sup>“Second,” that is, to the crisis beginning in 2007, close to the end of the period considered by Benati and Goodhart (2010).

licly and privately. For example, in the Federal Open Market Committee deliberations of October 5, 1982, Federal Reserve Chairman Paul Volcker observed, “it’s patently obvious that Mexico was going to borrow all it could borrow and all the banks were going to give them and at some point that was going to come to an end. And it was going to be a crisis situation. . . We can’t have a banking system that’s totally loaned up to Mexico, Brazil, Venezuela, Argentina, and Yugoslavia, but that’s the direction they were going in. And some day that had to stop.”<sup>15</sup> Publicly, Chairman Volcker observed in November 1982 said the LDC debt situation implied a threat to financial stability “essentially without precedent in the postwar period.”<sup>16</sup> In 1983, the Chairman of the FDIC testified (Isaac, 1983, p. 115), “overly aggressive lending policies by some U.S. banks have made our banks vulnerable to the performance and policies of foreign governments.”

The assessment of a crisis situation was reflected in much financial commentary, such as the following observation in a *Financial Times* survey of May 24, 1983 (Kaletsky, 1983): “The stability of the international banking system has been directly imperiled by the Third World’s inability to service its debts.” This type of commentary is also manifested in an surge during 1982–1984 in references in key U.S. newspapers to a banking or financial crisis (see Figure 2 above).

Not only the prospect of what *might* happen to vulnerable U.S. banks, but the *reality* of banking failures, point to a U.S. banking crisis being in force during 1982–1984. While, as Bernanke (1983, p. 154) observed, lending to LDCs was “highly concentrated among a relatively few large banks,” the LDC debt threat emerged against a background of distress among smaller banks. Many commercial banks came into difficulties through their energy-related investments and, like the LDCs, found their financial position worsened by the commodity price decline after 1981 (Isaac, 1983). U.S. commercial bank failures exhibit an upward trend during the 1980s, but the most dramatic percentage *increase* in bank failures occurred in 1982: this is clear from Figure 3, which plots the growth rate of Boyd and Gertler’s (1994) series on U.S. bank failures. Consistent with this impression, in 1983 the Chairman of the FDIC further testified (Isaac, 1983, p. 115), “Bank failures have increased during the past decade

---

<sup>15</sup>From Federal Open Market Committee Transcript (1982, p. 21).

<sup>16</sup>Volcker (1982); this portion of Volcker’s remarks was quoted in Bacon (1982).



Figure 3: Percent increase in number of bank failures, 1980–1991. Source: Calculated from Boyd and Gertler (1994, Table 1.2).

and even more dramatically during the past year. In 1982 alone, the FDIC handled 42 bank failures. We expect the failure rate for 1983 to be at least as high. So far this year, fifteen banks have failed... [T]here is a greater sense of bank exposure and risk of failure that exists not just among those who regulate and follow banks but with the general public as well.” This depiction of the situation contrasts with Reinhart and Rogoff’s characterization of 1982 and 1983 as featuring no banking crisis.

The elevated pace of bank failures in 1982 was reflected most visibly in the failure of the Penn Square Bank (based in Ohio) in July 1982. While this bank was not nationally famous prior to its failure, its collapse received wide attention and was the subject of lengthy Congressional hearings (Committee on Banking, Finance, and Urban Affairs, 1982, 1983). The nature of the Penn Square failure was notable because it featured substantial losses for uninsured depositors (Nadler, 1983a) and because a much larger commercial bank, Continental Illinois, had major investments in Penn Square. The losses from Penn Square came on top of the loan problems that Continental, which was the eighth largest commercial bank in the United States in 1984, incurred from the LDC situation.<sup>17</sup>

<sup>17</sup>Continental Illinois suffered about \$220 million in the second quarter of 1982 in losses related to Penn Square (Weiner, 1982). Continental was said to have “something over \$1 billion” in loans to Mexico in August 1982 (Carson, 1982); U.S. banks as a whole held roughly \$25 billion of the Mexican government’s debt by that point (Norton, 1982). References to Continental Illinois’ status as the



The financial crisis of 1982–1984 led to the U.S. government rescue of Continental Illinois Bank in July 1984. This rescue followed earlier stabilization operations by the authorities in May 1984, at which time an article in *American Banker* had observed, “Continental in fact has been suffering a steady decline in financial condition for the last two years” (Forde, 1984).<sup>18</sup>

Large U.S. commercial banks, especially Continental, thus were in a relatively strained position over the years 1982 to 1984, not in 1984 alone. While 1984 should indeed be considered a financial crisis year, the positions that it was the *initial* year of a financial crisis and that the relevant crisis should be labeled the “S&L crisis” seem out of line with the record of banking developments. Rather, 1984 can be thought of as the year that produced the most serious repercussions for commercial banks of the LDC debt threat that emerged in 1982. The institution whose fate was the most prominent feature of that crisis—Continental Illinois—is not mentioned by Reinhart and Rogoff (2009a, 2009b).

The rescue of Continental Illinois in July 1984 can be considered the culmination of the U.S. banking crisis associated with LDC debt problems, and the rescue date accounts for our choice of the years 1982–1984 as the years for this financial crisis. It is true that U.S. commercial bank recapitalization operations in the wake of the LDC loan problems proceeded beyond 1984 (just as the 1973–1975 crisis was followed by years of bank recapitalization); also, of course, concerns about LDC debt did not end in 1984.<sup>19</sup> But 1984 was the year in which a large U.S. commercial bank required a rescue as a result of the LDC debt threat. Bank failures reached their peak rate of increase in 1982–1984. The events in 1985–1987 do not exhibit characteristics typically associated with financial crises. Litan’s (1994) tabulation of financial crises in the 1980s lists, for 1985, thrift deposit runs that were limited to a couple of U.S. states;<sup>20</sup> Litan gives no crises in 1986; and for 1987 Litan lists only the stockmarket crash, which did not lead to a systemic financial crisis or banking crisis in the United

---

eight largest U.S. commercial bank appear in a number of sources, including Bennett (1984).

<sup>18</sup>Likewise, a May 1984 *New York Times* report stated, “Continental has experienced earnings difficulties for almost two years” (Bennett, 1984).

<sup>19</sup>According to Dornbusch (1985), however, the view gained ground over the course of 1984 that the LDC debt problem would be managed without the world economy being set back.

<sup>20</sup>These runs were not indicative of a national S&L crisis because the runs pertained to particular types of thrift that were insured by the Ohio and Maryland governments; see Mester (1990, p. 16) and Litan (1994).

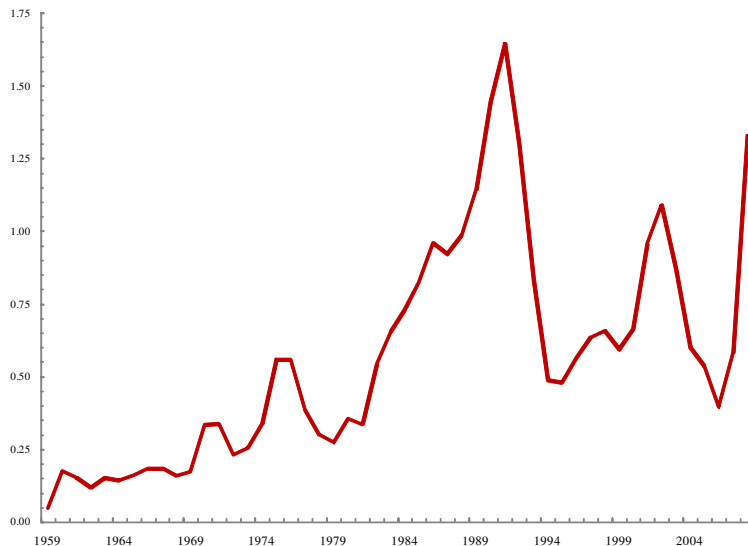


Figure 4: Loan charge-offs as a share of total bank loans, percent, 1959–2008. Source: FDIC.

States.<sup>21</sup> The absence of U.S. banking crises in the middle years of the 1980s is reflected in the fact that loan charge-offs as a ratio to average total loans made by commercial banks actually underwent a period of leveling off and decline during the mid-to-late 1980s (see Figure 4).<sup>22</sup>

Reflecting on the 1982 events in a May 1987 editorial, the *Financial Times* said:

*“Mr. Volcker recognized the need for an abrupt change of stance when Mexico found it was unable to meet its obligations in August 1982. And by any historical standard the Fed’s role in the management of the **resulting financial crisis** was impressive.”* (*Financial Times*, May 26, 1987; emphasis added.)

This editorial explicitly refers to 1982 as witnessing a “financial crisis,” supporting our chronology. Moreover, the editorial clearly puts that financial crisis in the past tense, which supports our treatment of the U.S. financial crisis associated with

<sup>21</sup>It is widely accepted that, as forcefully argued by Friedman and Schwartz (1963), a major stock-market decline does not in and of itself imply a financial crisis.

<sup>22</sup>Figure 4 is calculated by expressing FDIC annual data on commercial banks’ “net loan and lease charge-offs” (<http://www2.fdic.gov/hsob/hsobRpt.asp>) as a percentage of “net loans and leases” of commercial banks (<http://www2.fdic.gov/hsob/hsobRpt.asp>). Figure 4 closely matches the figure, covering a shorter period, plotted in Litan (1994, p. 546).

international debt as ending prior to 1987.

## 2.5 Parallels with other crises

The 1973–1975 and 1982–1984 U.S. financial crises have parallels with both traditional U.S. banking crises and the post-2007 U.S. financial crisis. Crisis I and Crisis II were authentically bank-centered crises, as historical financial crises had been; while they also featured aspects of a modern-day run on a bank of the type that Gorton (2008) and Bernanke (2010) highlight as a key characteristic of the crisis that started in 2007. Let us now consider these parallels.

In important respects, Crisis I and Crisis II actually are more clearly recognizable as traditional *banking* crises than either the subsequent S&L crisis or the recent crisis. In Crisis I and Crisis II, the directly threatened institutions were institutions which served as the intermediary channeling traditional deposit liabilities into loans. By contrast, as late as 1980 S&L deposits were not included in the United States’ official M1 and M2 monetary aggregates; and even after the definitions of these aggregates were widened in 1980 to incorporate the more liquid liabilities of S&Ls, the contraction of the S&L industry had a much more pronounced effect on the behavior of the less widely watched M3 series than on M1 and M2 (see Greenspan, 1990). Thus S&Ls remained predominantly creators of nonbank liabilities rather than of recognized deposit liabilities. The 2007 crisis was in the first instance a crisis for nonbank financial entities whose connection to commercial banks was in large part via counterparty involvement and by off-balance-sheet commitments of the banks. By contrast, Crisis I and Crisis II were associated with more traditional features of banking crises—such as troubled banks incurring deposit runs (notably Franklin National in 1974, and Continental Illinois in 1982–1984), and the prospect of a systemwide deposit contraction in the absence of policy intervention. Crisis I and Crisis II thus fit more closely than subsequent U.S. crises Reinhart and Rogoff’s (2009b, p. 216) criterion of being “bank-centered financial crises.”

Crisis I and Crisis II also exhibit important parallels with the post-2007 crisis. In his testimony to the Financial Crisis Inquiry Commission on September 2, 2010, Federal Reserve Chairman Bernanke included a section entitled “Dependence on Unstable Short-Term Funding” as a cause of the crisis. Chairman Bernanke testified, “Lead-

ing up to the crisis, the shadow banking system, as well as some of the largest global banks, had become dependent on various forms of short-term wholesale funding.” This aspect of bank financing is closely connected to the feature of banking highlighted in a U.S. Senate Banking Committee analysis of the mid-1970s financial crisis. On that occasion, Senator William Proxmire stated (1975, p. III), “In order to support increases in longer-term loans and holdings of riskier securities, banking institutions have shifted their deposit liability base into forms of deposits and borrowings which are more costly and often highly volatile. . . . This massive shift in the composition of the asset and liabilities structures of banking institutions poses certain dangers to the banking system.” Homan (1975) viewed the mid-1970s financial crisis as arising from precisely this danger; noting the three major bank failures that we listed in Section 2.2, Homan (1975, p. 267) stated that “all three banks may have failed prematurely because of a phenomenon which has come to be called ‘a modern run on banks.’” The “modern run”—the loss or running-off of volatile wholesale funds—was discussed for the specific case of Franklin National by Kane (1974, p. 849), who noted that “after the rapid CD and federal-funds runoffs experienced by the Franklin National Bank, the threat of bank failures weighed heavily on the minds of the [Federal Reserve] Board and noticeably depressed the market for bank stocks.”

Likewise, the 1984 difficulties of Continental Illinois which were the peak of Crisis II, took the form of what Goodhart and Schoenmaker (1993) describe as “a run on wholesale deposits.” During Continental’s difficulties, the *Wall Street Journal* reported, on May 11, 1984, “More than most major banks, Continental relies on volatile commercial deposits. . . . [It] must buy most of its deposits from large businesses and financial institutions here and abroad. These companies, industry officials say, are more likely than consumers to move their money to other institutions.” On this occasion, the main deposits affected were certificates of deposit, and Continental Illinois’ difficulties in May 1984 were said in the Journal report to have “cast a pall over the whole (certificate of deposit) market.” (Bailey and Zaslow, 1984.)

The propensity for volatile wholesale bank funding to trigger a modern run on banks is emphasized in the accounts of the post-2007 crisis in Gorton (2008) and Bernanke (2010). The instruments most subject to a run have changed since the 1970s: as we have seen, Crisis I and Crisis II, the wholesale market in which the “modern run” was

concentrated was that for wholesale certificates of deposit, while the 2007 and 2008 runs were concentrated in other short-term wholesale instruments. But the change in the character of systemic bank runs from household deposit runs to their modern form of runs on the wholesale market occurred with Crisis I in the 1970s and continued in Crisis II in the 1980s.

## **2.6 Financial Crisis III: Savings and Loan Crisis—1988–1991 (*not* 1984–1991)**

The one U.S. postwar financial crisis Reinhart and Rogoff allow for in the savings and loan crisis, which they refer to as the “savings and loan crisis beginning in 1984” (Reinhart and Rogoff 2008b, p. 7) or as “the savings and loan crisis of 1984” (2009b, p. 460). The date given for the S&L crisis in Reinhart and Rogoff (2008b, p. 82) is “1984–1991.”<sup>23</sup> We argue that treating this crisis as taking place over the whole 1984–1991 period is to place the start of the crisis much too early. The alternative dating of 1988–1991 has much support in the literature and is reflected in the fact that the intense deterioration in the S&L industry was concentrated in those years.

It is not clear how Reinhart and Rogoff arrived at the 1984 date that they repeatedly use in referring to the S&L crisis. Their tables of crises (2008b, Table A5; 2009b, p. 390) give the 1984–1991 dating and cite Caprio and Klingebiel (1993) and Bordo, Eichengreen, Klingebiel, and Martínez-Pería (2001) as their sources of information on the S&L crisis. Of these references, the study by Bordo, Eichengreen, Klingebiel, and Martínez-Pería (2001) does not treat the United States as having a postwar financial crisis, so the sole apposite reference cited in the (2008b) table is Caprio and Klingebiel (2003). Caprio and Klingebiel (2003) indeed give 1984–1991 as the date of the savings and loan crisis. Another reference to the S&L crisis in Reinhart and Rogoff (2009a) cites a different paper, Caprio, Klingebiel, Laeven, and Noguera (2005), but continues to use the 1984 date for the crisis; Reinhart and Rogoff (2009b, p. 216) also use 1984 as the starting date for the S&L crisis in their table on “Post World War II bank-centered financial crises,” and cite two papers, Caprio and Klingebiel (2003) and

---

<sup>23</sup>In his examination of existing accounts of pre-World War II banking crises, Jalil (2009) notes that there are some variations across the Reinhart-Rogoff studies in their prewar chronology, but that their studies consistently associate the pre-2007 postwar period with a single financial crisis that begins in 1984.

Caprio, Klingebiel, Laeven, and Noguera (2005), that refer to the S&L crisis. Of these, Caprio, Klingebiel, Laeven, and Noguera (2005), in contrast to Caprio and Klingebiel (2003), give *1988–1991* as the date for the crisis, but otherwise provide the same details (i.e., numbers of bank and S&L failures and cost of the federal support to the financial system) as appear in Caprio and Klingebiel’s (2003) detailing of the S&L crisis. It is likely that the treatment in Caprio, Klingebiel, Laeven, and Noguera (2005) should be taken as giving a more authoritative dating of the crisis than the 1984–1991 dating previously used in Caprio and Klingebiel (1996, 2003); this seems consistent with the subsequent use of the 1988–1991 dating by Laeven and Valencia (2008).

Thus, it is not clear that the 1984–1991 dating is justified even in the sources that Reinhart and Rogoff cite. Be that as it may, a strong case against 1984–1991 as the date of the S&L crisis can be made by considering key aspects of the S&L decline.

Problems with the savings-and-loan industry had been apparent well before the 1980s; as Bernanke (1983, p. 150) observed, “The thrift industry has been the ‘problem child’ of the U.S. financial sector for almost twenty years now.” The thrift industry was long recognized as vulnerable because of the contrast between the long-term loan commitments inherent in savings-and-loan lending for house purchase and the short maturity of the industry’s deposit liabilities. In particular, periods of rising interest rates and declining asset values tended to put savings and loan institutions in a precarious position. Samuelson (1967, p. 58) characterized the position of savings and loan institutions as a whole during the 1966 credit crunch as “technically insolvent”; and, as noted above, during the 1973–1975 financial crisis, leading financial commentators raised the prospect of a federal rescue of the thrift industry. It is therefore important to distinguish between long-run weakness and actual crisis periods for the S&Ls. The crunch point for savings and loan did not come until the 1980s, and culminated in a federal rescue and an administered scaling down of the industry. It is not in dispute that the S&L crisis came about sometime in the 1980s. At issue is whether Reinhart and Rogoff (2009b) are correct to date the contraction of the S&L industry and accompanying crisis to the period 1984–1991.

The long-term structural weakness of the savings and loan institutions was recognized in 1960s commentary, as noted above. But this underlying problem did not prevent periods of relative stability or growth in the S&L industry, and it would not be

appropriate to classify these periods as part of the “S&L crisis.” Of particular relevance for our purposes is that the period from 1983 onward actually featured a considerable amount of growth in the industry, in the wake of a squeeze in 1980–1982. Interest-rate levels observed during the monetary tightening of 1980–1982 heightened the pressure on the S&L’s financial position (see Litan, 1994, p. 527). But the decline in interest rates in 1982–1983 and deposit interest rate deregulation were perceived as greatly relieving the S&Ls’ position. One skeptic about the S&Ls’ future acknowledged in 1983 the “enthusiasm that so many institutional investors and analysts have for the thrift industry today” (Nadler, 1983b). Many indices of actual S&L performance between 1983 and 1987 make it problematic to classify the mid-1980s as crisis years. Isaac (1994, p. 560) notes that “S&Ls began a tremendous growth spurt” after 1982.<sup>24</sup> Moreover, failures of thrifts were lower in 1984 than in any other year in 1981–1989 (Litan, 1994, p. 523).<sup>25</sup>

In 1985, although, as noted above, runs occurred on specific thrifts in Ohio and Maryland, the systemic crisis had not begun. Chairman Volcker testified in September 1985, “I think what we’re seeing at the moment, at the current level of interest rates, is that well-managed thrifts, including those that have remained heavily concentrated in the home lending business, are doing quite well. . . [T]hey are potentially on the road to recovery.”<sup>26</sup> In March 1986, George Gould, U.S. Treasury Under Secretary of Finance, argued that it was an opportune time to face the longer-term problems of the savings and loan industry because “interest rates are down and many in the industry are enjoying exceptional profits.”<sup>27</sup>

Thus, while the longer-term problems of the S&L industry did not disappear in 1984–1987, they were known about before 1984 and did not prevent growth in the

---

<sup>24</sup>This growth is evident in the expansion of total assets of the S&L system over 1983-1987 given in Barth (1991, p. 25), while Barth and Litan (1998, p. 144) show that returns on equity and returns on assets in the S&L industry were positive in the years 1983-1986 while they were negative in the years 1981, 1982 and 1987-1990.

<sup>25</sup>A related metric, the number of resolutions of savings and loan institutions, was lower in 1984 than in any other year in 1981–1989 (Barth, 1991, p. 63). In addition, Barth and Litan (1998, p. 144) show that, while the S&L industry’s equity-capital-to-assets ratio shows a downward trend in the 1970s and 1980s, two of only seven years in 1969–1988 during which the ratio increased were 1985 and 1986.

<sup>26</sup>From September 11, 1985, testimony in Committee on Banking, Currency, and Housing (1986a, p. 1333).

<sup>27</sup>From March 4, 1986, written testimony in Committee on Banking, Currency, and Housing (1986b, p. 104).

industry during the mid-1980s alongside much optimism about the industry’s longer-term survival. The explosion of savings and loan failures took place in 1988, with Barth (1991, p. 63) reporting a rise from 47 S&L resolutions in 1987 to 205 in 1988. Thus, 1988–1991, the date used in several sources but not by Reinhart and Rogoff, is the more compelling date for the S&L crisis. A factor intensifying U.S. financial problems over 1988–1991, moreover, was an effort by commercial and savings banks, especially in New England, to rein in asset growth in light of more stringent regulatory capital requirements (Bernanke and Lown, 1991; Syron, 1991).

In following Reinhart and Rogoff’s (2009b) 1984 dating, Schularick and Taylor (2010, p. 32) note the discrepancy with other sources, but defend 1984 as the start of the S&L crisis on the grounds that “the number of bank failures had started to increase rapidly earlier [than 1988].” This, however, is a *non sequitur* when it comes to defending Reinhart and Rogoff’s chronology. The existence of pre-1988 banking failures does not justify putting all pre-2007 U.S. postwar financial crises under the “S&L crisis” rubric. Nor does it justify treating 1984 as the *beginning* of a 1980s banking crisis. A more appropriate procedure seems to consist of distinguishing the late 1980s S&L crisis from other banking crises in the pre-2007 postwar experience.

## 2.7 Summary of the chronology

Table 2 summarizes our chronology of pre-2007 U.S. postwar financial crises. For comparison, Reinhart and Rogoff’s (2008b, 2009a, 2009b) chronology is also provided.

Table 2. Chronologies of postwar U.S. financial crises before 2007

Reinhart-Rogoff (2008b, 2009b) dating		Alternative Chronology	
Crisis	Date	Crisis	Date
		Crisis I: Bank Capital Squeeze	1973–1975
		Crisis II: LDC Debt Threat	1982–1984
Savings and Loan Crisis	1984–1991	Crisis III: Savings and Loan Crisis	1988–1991

Source: Reinhart-Rogoff dating: Reinhart and Rogoff (2008b, esp. p. 7 and Table A5, p. 82; 2009b, esp. pp. 215–216). Alternative chronology: see text.

The table brings out the elements of difference in our chronology. We include a 1970s financial crisis—Crisis I; our chronology recognizes the LDC debt threat to U.S.



banks—Crisis II, beginning in 1982 and culminating in the Continental rescue. Finally, in keeping with a substantial prior literature, we specify a much later start for the S&L crisis than Reinhart and Rogoff’s date of 1984.

### **3 Economic recoveries after U.S. financial crises**

With our revised chronology, we have three financial crises in the postwar United States from which to make a judgment about the pace of economic recovery after the crisis.

#### **3.1 Recovery in the wake of Crisis I**

Crisis I (1973–1975) coincided with a recession in the United States. Commentators in early to mid-1975 predominantly regarded the prospects for a strong recovery as bleak. Reasons for this pessimism were catalogued in a New York *Daily News* report (Cahill, 1975),

*“The sharper the business decline, the sharper the ensuing rebound. That was the lesson of business boom-and-bust cycles of the past.*

*“Today, however, that confidence seems to have been shaken. Consumers... have turned pessimistic again. Interest rates are up... Energy prices also are on the move again... Auto, housing and steel industries see better times, but nothing like the boom times of 1972 and 1973... ”*

*“[T]he odds are growing that the economic recovery will be slow and painful.”*

This assessment of the recovery outlook followed many similar assessments of private sector and government economists that had been made during 1975. For example, a Bankers Trust analysis published in February 1975 stated, “the economic decline is not expected to be followed by a prompt or vigorous recovery in business activity,” and cited a poor outlook for the housing and automobile markets (Bankers Trust, 1975, p. 580). Alice Rivlin of the CBO, in her July 1975 testimony to the Senate Budget Committee, stated that “there is a danger that the recovery will not be very strong... There is no obvious growth sector pushing the economy ahead. Housing doesn’t look

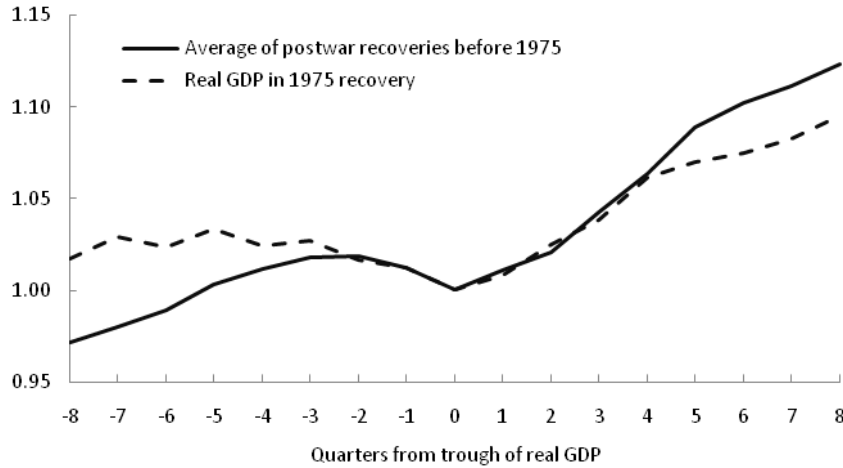


Figure 5: The 1975 recovery compared to pre-1975 postwar recoveries. Source: Federal Reserve Bank of St. Louis’ FRED portal, authors’ calculations.

like it is going to be the bellwether sector, nor does the automobile industry, nor does business investment.”<sup>28</sup>

Despite these reservations, the expansion that began in May 1975 actually produced another instance of a vigorous recovery pattern of U.S. postwar period. Four-quarter growth of real GDP to the first quarter of 1976 was 5.9%.

Some perspective on how well the economy recovered in 1975 is brought out by Figure 5. The figure indexes real GDP to its 1975Q1 trough and also plots the average path of GDP in prior postwar recoveries,<sup>29</sup> when each of these recoveries are expressed relative to the trough of GDP. Instead of being the slow recovery predicted, the early stages of the expansion that began in 1975 were right in line with the prior historical experience, supporting McNees’ (1978, p. 45) judgment (on the basis of a similar graph based on 1977-vintage data) that the expansion was “very typical of the postwar period.”

Two aspects of the 1975 output revival are worth emphasizing. First, although the first year of this recovery featured considerably faster output growth than the recovery from the 1969–1970 recession, the increase in real residential investment was

<sup>28</sup>From July, 15, 1975, testimony, in Committee on the Budget (1975, p. 4).

<sup>29</sup>Recoveries underlying the average in this figure include the 1949 recovery, following McNees (1978). Starting with the 1954 recovery produces a similar average.

slightly smaller. Consequently, the arithmetic contribution of this expenditure category to the recovery's first year of real GDP growth of roughly 6 percent came at under 1 percentage point, whereas it had contributed about 1.25 percentage points to the roughly 4.5 percent GDP growth observed in 1971. The less buoyant housing recovery was thought to reflect a correction of earlier over-lending to the housing sector (Isaac, 1983). Structural adjustment in the housing sector in the mid-1970s proved consistent with robust growth in the aggregate economy.

Second, this recovery occurred in the wake of the post-1973 productivity slowdown, whose dimension policymakers initially did not grasp; this was one reason that the trough in output in 1975 involved much less slack than thought at the time (Orphanides, 2003). A case can be made that the recovery was *too* typical. In retrospect, the initial recovery was perhaps too impressive, and helped push the economy within a couple of years back above potential, reversing the progress made toward price stability. Policymakers, however, believed at the time that an expansion like that observed in the postwar period was consistent with a noninflationary recovery. Their stimulative policies succeeded in delivering the additions to aggregate demand that created such a rapid expansion. The fact that total GDP exhibited a typical-sized recovery testifies to the predominance of the state of aggregate demand in determining output behavior in the short term, even in the face of aggregate supply weakness.

### **3.2 Recovery in the wake of Crisis II**

Whereas Crisis I coincided with a recession, most of Crisis II of 1982–1984 coincided with a U.S. economic expansion. A recovery of the U.S. economy, following the 1981–1982 recession, began in late 1982 despite the emergence of the LDC debt threat, and the early years of this recovery saw a historically strong rebound of GDP.

The leadup to the 1983 recovery provided a further instance, paralleling that in 1975, in which commentators and officials prematurely declared a break with the pattern of past recoveries. In testimony to the Senate Appropriations Committee, CEA Chairman Martin Feldstein said, “real GNP is forecast to rise 3.1% between the fourth quarter of 1982 and the fourth quarter of 1983.”<sup>30</sup> In a submission to the same committee, CBO Director Rivlin stated, “The CBO short-run forecast represents our best

---

<sup>30</sup>From February 16, 1983, testimony, in Committee on Appropriations, U.S. Senate (1983, p. 79).

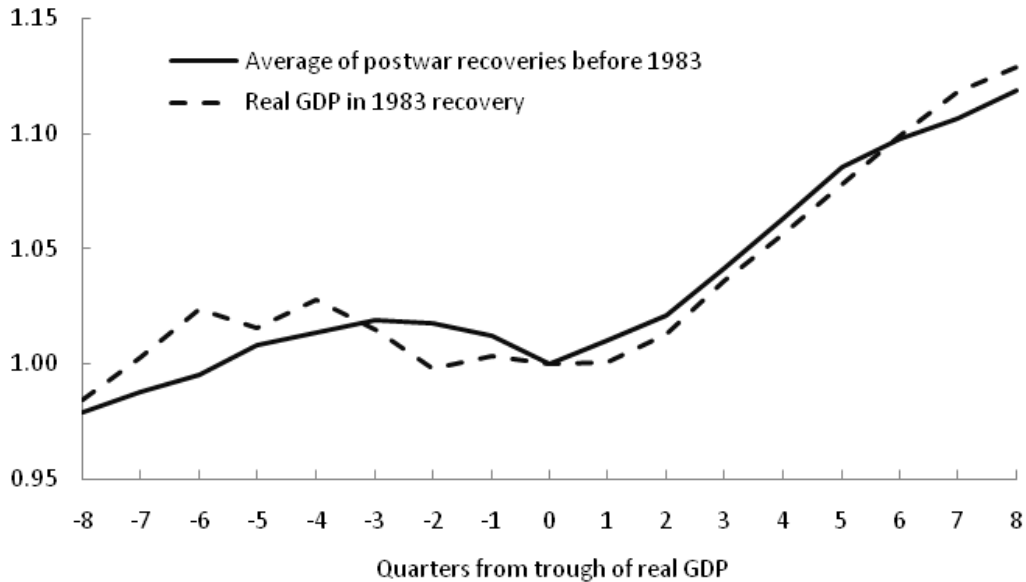


Figure 6: The 1983 recovery and average of pre-1983 postwar recoveries. Source: Federal Reserve Bank of St. Louis’ FRED portal, authors’ calculations.

judgment, and it shows real growth of 4.0 percent from the fourth quarter of 1982 to the fourth quarter of 1983... That would be a mild recovery by comparison with previous recoveries...<sup>31</sup> GDP outcomes in 1983 confounded these expectations. The present vintage of data suggests that four-quarter growth in output to 1983Q4 was 7.4% using the real GDP definition of output, and 7.5% by the criterion of real GNP. The first two years of economic recovery were well above the prior postwar norm (Figure 6). This expansion of aggregate demand likely reflected in large part a reaction to a sequence of monetary policy actions, notably a large reduction in short-term interest rates, accompanied by rapid rates of monetary expansion, over the second half of 1982.

### 3.3 Recovery in the wake of Crisis III

According to our chronology, the S&L crisis took place over 1988–1991. The U.S. economy experienced a slowdown from mid-1989 to mid-1990, followed by a recession in 1990 and 1991. The initial recovery from this recession was indeed slow: the first

<sup>31</sup>In Committee on Appropriations, U.S. Senate (1983, p. 140).

four quarters' growth of real GDP came to 2.6%, compared to an average of 6.3% for recoveries in the four prior decades. On the surface, therefore the S&L crisis' aftermath does appear to be in keeping with the Reinhart and Rogoff (2009a, 2009b) finding that financial crises are associated with slow economic recoveries.

But how plausible is it that financial weakness was important in making this recovery slow? We have argued that *aggregate demand policies*, rather than the fact of a prior financial crisis, became the decisive factor underpinning the previous recoveries in 1975 and 1983. Aggregate demand also seems to have been the decisive factor for the whole slowdown-recession-recovery cycle of 1988–1992. A policy tightening sequence undertaken by the Federal Reserve pointed toward a cooling of the economy after 1988. As Romer and Romer (1994), FOMC decisions in late 1988 are consistent with a deliberate restriction of the economy in light of inflation data, and both Ball (1993, p. 6) and Romer and Romer (1994) list disinflationary monetary policy as a factor behind the 1990–1991 recession. The fact that, notwithstanding the sustained monetary policy restriction of the late 1980s, the 1990–1991 recession was one of the mildest U.S. recessions does not seem to leave much room for amplification of the recession from the S&L crisis.

What about the weakness of the early stages of the subsequent economic expansion? Here the fact that the recession was mild has a bearing on the interpretation of the recovery. As we noted in the introduction, much of the business cycle literature emphasizes the relationship between the strength of the recovery and the severity of the preceding recession: what Friedman (1964, 1993) calls the “plucking” property of output. Figure 7 plots the growth rate in the first year of postwar U.S. recoveries (beginning in 1954) against the growth rate of GDP in the last year of the preceding recession. There is a clear association (correlation =  $-0.70$ ). The 1991 recovery falls in line with the postwar pattern in the sense that, while the initial recovery of GDP was the second weakest in the postwar period, the prior year's decline in GDP was the third smallest.

This statistical property should not, however, be taken as itself providing an explanation for the weakness of the early 1990s recovery. The “plucking” property observed in Figure 7 should not emerge independently of aggregate demand policy. If, as in New Keynesian models, output is demand-determined in the short run, a sufficiently

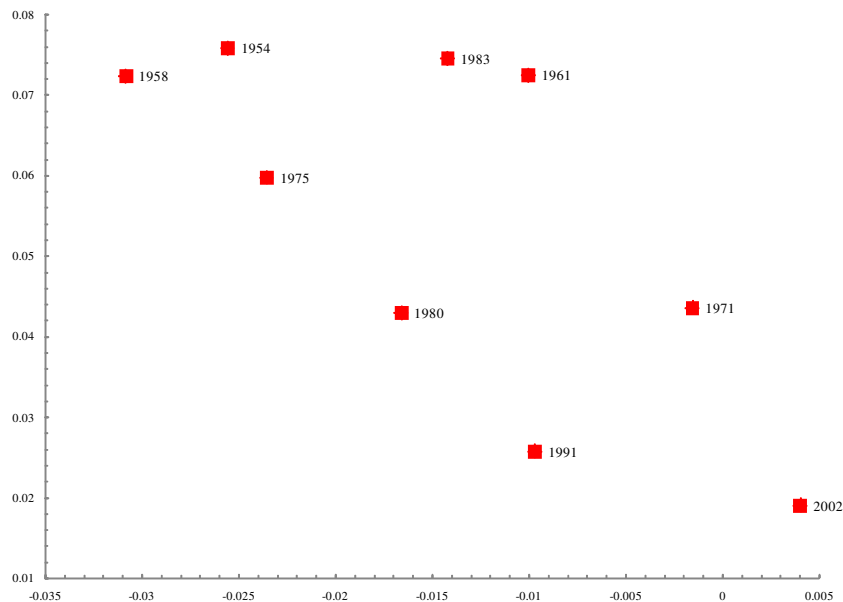


Figure 7: Scatter of growth in first year of recovery ( $y$ -axis) against growth in year to recession trough ( $x$ -axis), U.S. postwar recoveries from 1954 to 2002. Source: Computed from real GDP in Federal Reserve Bank of St. Louis' FRED portal. Growth rates measured as log-differences.

aggressive stimulation of aggregate demand by policymakers should be able to produce a rapid recovery even in the aftermath of a shallow recession. Thus, underlying our argument that the early 1990s recovery was slow is the position that the 1990s policymakers chose not to pursue an aggressive expansion of demand.

The details of policymaking are consistent with the position just outlined. Policymaking during the early 1990s may be contrasted with that in the mid-1970s. As noted above, policymakers in the mid-1970s failed to recognize that the 1973 output peak occurred with output well above potential; furthermore, they did not grasp the post-1973 long-term economic slowdown. Policymakers therefore came out of the 1973–1975 recession believing that there was a great amount of slack in the economy to be taken up. And, as we have seen, their aggregate demand policies delivered an output expansion that was initially right in line with pre-1975 recoveries. By contrast, policymakers in the early 1990s recognized that the years to 1989 had been associated with output above potential (see Orphanides, 2001, p. 969); hence, they were *not* inclined to support an economic expansion that made up for all the below-trend growth observed in

1989–1991. And although data revisions later took away much of the decline in GDP in 1990–1991, it was perceived even at the time as a mild recession. Finally, while in 1975 policymakers had not taken in the post-1973 slowdown in economic growth, by 1991 this long-term slowdown had been incorporated into their estimates of potential GDP. All these considerations meant that policymakers were disinclined to produce aggregate demand conditions conducive to a recovery of the same magnitude as the postwar average.

The mildness of the recovery therefore largely reflected the carrying out of stabilization policy. As Chairman Greenspan put it in January 1991 testimony, “we must take care to avoid a policy that is overly stimulative. The amount of slack in the economy is not great by historical standards, and an overly aggressive monetary easing could end up being counterproductive.”<sup>32</sup> This restrained approach guided the transition from the 1990–1991 recession to the early 1990s recovery, leading Stanley Fischer to comment in 1994, “the Fed disinflated in a particular way in 1989, ’90, ’91, ’92, very successfully. It did it slowly, it did it by cutting rates slowly and inflation came down...”<sup>33</sup>

The fact that the recovery after 1991 was in broad outline consistent with the stabilization goals of monetary policy leaves open the possibility that a significant portion of the weakness may nevertheless have arisen from the fact that the recovery followed a financial crisis. We investigate this possibility in the remainder of this paper.

## 4 Regression evidence

In this section we investigate systematically the link between postwar recoveries and financial crises. We estimate regressions in which the dependent variable, denoted  $G_{y, recovery}$ , is the average growth rate of output (measured as first differences of log real GDP) in the first four quarters of the U.S. economic expansion. There are nine observations on this variable, reflecting the nine economic recoveries from 1954 to 2002. We use as an indicator of financial crises a dummy variable equal to unity for recoveries that are in the wake of financial crises. We consider two such dummy variables: one based on the Reinhart-Rogoff (2009b) chronology of U.S. financial crises, and one based

---

<sup>32</sup>Greenspan (1991, p. 170). In keeping with this observation, the Bank of England’s (1991) commentary on the U.S. economy noted that economic recovery was “likely to be slower than in previous upturns” because of the recession’s “relatively high level of capacity utilization.”

<sup>33</sup>June 9, 1994 remarks, quoted in Capie, Goodhart, Fischer, and Schnadt (1994, p. 326).

on our alternative chronology. According to the Reinhart-Rogoff chronology, there has been only one pre-2007 financial crisis in the postwar United States, and the recovery in its aftermath is the recovery following the 1990–1991 recession. The dummy variable associated with this chronology is accordingly defined as

$$DRR_t = \begin{cases} 1 & \text{for } t = 8 & \text{(i.e., the recovery after 1990 – 1991);} \\ 0 & \text{for } t = 1, \dots, 7 \text{ and } t = 9 & \text{(all the rest).} \end{cases}$$

In our alternative chronology, the 1975 and 1983 recoveries were also recoveries in the wake of financial crises, so the indicator variable associated with our alternative chronology is defined as:

$$DAC_t = \begin{cases} 1 & \text{for } t = 5, t = 7, \text{ and } t = 8; \\ 0 & \text{for } t = 1, \dots, 4 \text{ and } t = 6, \text{ and } t = 9. \end{cases}$$

In Table 4 we initially report simple regressions of the dependent variable on each of these dummy variables. The dummy variable has a negative coefficient (the right sign) but is statistically insignificant. The correlation of this dummy with economic recoveries is  $-0.483$ . When we estimate the same specification with the indicator  $DAC_t$  based on our own chronology of financial crises, the variable has no explanatory power, having an almost precisely zero correlation with economic recoveries (correlation  $-0.023$ ). There is thus no association between the size of recoveries and the existence of financial crises in the United States if an indicator based on our refined chronology is used.

We emphasized in Section 3 the insight of the business cycle literature that the size of expansion and severity of preceding downturn. We suggested that this pattern can be interpreted as reflecting the aggregate demand policies pursued, and that these policies rather than the financial crisis may be primarily responsible for the slow recovery from 1991 onward. We now investigate this matter further by estimating the impact of financial crises on economic recoveries after controlling for the severity of the prior downturn. To do so, we estimate the multiple regression,

$$G_{y|recovery,t} = g_0 + g_1 G_{y|recession,t} + g_2 D_{FC,t},$$

where  $D_{FC,t}$  is the crisis dummy (i.e.,  $DRR_t$  or  $DAC_t$ , depending on the specification estimated), and  $G_{y|recession}$  is the variable plotted in the  $x$ -axis of Figure 7; that is to



say, it is the growth rate of GDP for the four quarters up to and including the trough of the prior recession.<sup>34</sup>

We would expect  $g_1 \leq 0$ . If  $g_1 = 0$ , there is no systematic relation between the size of an economic expansion and the severity of the preceding downturn (holding the financial-crisis indicator variable constant). If  $g_1 < 0$ , then growth is related to the scale of the prior downturn. If  $g_1 = -1.5$ , for example, then the first year of expansion makes up for the loss of output in the final year of the recession and, on top of that, the economy grows by an amount equal to 50% of the recession-year loss. In circumstances where a recession has created a negative output gap and potential output is growing smoothly at rate  $g_0$ , a value of  $g_1 \leq -1.0$  implies that the first year of the recovery witnesses GDP growth relative to potential rapid enough to make inroads into the output gap.

In the multiple regression, the estimated coefficient on the financial-crisis dummy indicates whether a financial crisis affects the extent of the output rebound; a negative coefficient means that the revival in GDP is held back below the recovery path that one would normally expect given the scale of the preceding downturn.

We begin with a simple regression excluding the dummy. This suggests that there is indeed a statistically significant “plucking” property in U.S. postwar recoveries, with a recession tending to produce growth 1.4 times the absolute value of the prior year’s percent output decline. When we add the dummy variable for financial crises that is based on the Reinhart-Rogoff chronology, this dummy is statistically insignificant, while prior growth remains significant. When we use the dummy variable implied on our alternative chronology of financial crises, there is even less evidence of a bracing effect of financial crises on economic recoveries; the dummy’s coefficient estimate and  $t$ -statistic are even lower.

---

<sup>34</sup>Like the dependent variable, however, this variable is expressed in quarterly units in the regressions, while the data in Figure 7 are in annual units, so are simply four times the values entering the regressions. A tabulation of all data used in the regressions is provided in Table A1 in the Appendix.

Table 4. Economic recovery regressions  
 Dependent variable: Real GDP growth in the first year of recovery

All recoveries 1954 – 2002 (# of observations = 9)					
Variable	Simple Regressions			Multiple Regressions	
Constant	0.0149 (0.0020)	0.0136 (0.0024)	0.0087 (0.0023)	0.0098 (0.0022)	0.0090 (0.0026)
Financial crisis dummy– Reinhart-Rogoff ( $DRR_t$ )	–0.00795 (0.0055)	–	–	–0.0064 (0.0041)	–
Financial crisis dummy– alternative chronology ( $DAC_t$ )	–	–0.00025 (0.0042)	–	–	–0.0064 (0.0041)
Average growth in the final four quarters of prior recession	–	–	–1.3606 (0.5213)	–1.2486 (0.4806)	–1.3806 (0.5608)
$R^2$	0.233	0.001	0.493	0.639	0.503
$SEE$	0.0051	0.0059	0.0042	0.0038	0.0045
Excluding Recovery from 1980 Recession (# of observations = 8)					
Constant	0.0149 (0.0020)	0.0142 (0.0028)	0.0089 (0.0024)	0.0102 (0.0021)	0.0096 (0.0027)
Financial crisis dummy– Reinhart-Rogoff ( $DRR_t$ )	–0.0085 (0.0057)	–	–	–0.0069 (0.0039)	–
Financial crisis dummy– alternative chronology ( $DAC_t$ )	–	–0.0008 (0.0045)	–	–	–0.0019 (0.0033)
Average growth in the final four quarters of prior recession	–	–	–1.3979 (0.5303)	–1.2833 (0.4616)	–1.4404 (0.5672)
$R^2$	0.27	0.005	0.537	0.713	0.566
$SEE$	0.0053	0.0062	0.0042	0.0037	0.0045

Memo item: Simple correlations of dummy with dependent variable:

$DDR_t$  : –0.483; excluding 1980 recovery: –0.520.

$DCA_t$  : –0.023; excluding 1980 recovery: –0.074.

Terrones, Scott, and Kannan (2009) argue for treating 1980–1982 as one long recession when studying U.S. economic recoveries. We consider this alternative in the

bottom half of the table by dropping the 1980–1981 recovery from the observations used in the regressions. The resulting estimates are little changed. There is still a systematic relation between the size of recoveries and the severity of the prior recession, and no significant effect of the crisis dummies. In particular, the estimated coefficient on the dummy variable  $DAC_t$ , representing our chronology of financial crises, is low and statistically insignificant. The evidence in Table 4 therefore suggests that, for the postwar United States, economic recoveries are not systematically slower in the wake of financial crises.

## 5 Conclusion

In this paper we have considered the relationship between financial crises and economic recoveries in the pre-2007 postwar record of the United States. Reinhart and Rogoff (2009a, 2009b) emphasize the lessons for the United States that can be drawn from the postwar experience with financial crises outside the United States. While we concur that international experience can be informative, we believe that U.S. postwar record prior to 2007 is more informative on this issue than Reinhart and Rogoff suggest. Reinhart and Rogoff’s (2009b) account of U.S. financial crises is questionable on several counts. They treat the 1970s as free of financial crises in the United States, even though the mid-1970s witnessed banking stresses that saw banks’ equity capital ratio plunge to a postwar low. Reinhart and Rogoff do not treat 1982 and 1983 as years of financial crisis, despite the pressure in those years on U.S. commercial banks induced by the LDC debt position. And the single pre-2007 postwar crisis for the postwar United States acknowledged in their analysis—i.e., the savings and loan crisis—is referred to by Reinhart and Rogoff (2009b) as “the savings and loan crisis of 1984,” even though S&L failures actually were lower in 1984 than in any other year in 1981–1989.

We provided our own alternative chronology of financial crises in the United States, which added crises in 1973–1975 and 1982–1984 and, in keeping with the bulk of the literature, treated the S&L crisis as starting in the late 1980s rather than in 1984. With this revised chronology, we carried out a case-by-case analysis of recoveries after financial crises as well as a statistical analysis of postwar recoveries as a whole. We found that the evidence does not support the notion that financial crises have had a systematic effect in slowing economic recoveries in the United States.

Given the wide acknowledgement of the connections between the financial sector and aggregate economic behavior, why is it that financial crises do not seem to have had a *systematic* connection with the speed of economic recoveries? We suggested that the key factor is aggregate demand policy. If output is demand-determined in the short run, strongly stimulative aggregate demand policies can have their effects felt on output even when the financial sector is weak. And, as suggested in the introduction, a rapid economic expansion could then relieve the positions of banks considerably, further diminishing the effects of the prior financial crisis. These considerations suggest that judgments about the effects of financial crises on output behavior in the United States require an even greater focus on the the factors bearing on aggregate demand.

# Appendix

Table A1. Data used in regressions in Table 3

Observation	Recovery begining	Average real GDP growth, first four quarters of recovery	Average real GDP growth, four quarters prior to recovery	Dummy for financial crises chronology	
		$(G_{y recovery,t})$	$(G_{y recession,t})$	Reinhart- Rogoff $(DRR_t)$	Alternative $(DAC_t)$
1	1954Q3	0.0189614	-0.0063958	0	0
2	1958Q2	0.0180886	-0.0077123	0	0
3	1961Q2	0.0181241	-0.0025089	0	0
4	1971Q1	0.0108962	-0.0003887	0	0
5	1975Q2	0.0149432	-0.0058902	0	1
6	1980Q4	0.0107398	-0.0041511	0	0
7	1983Q1	0.0186439	-0.0035541	0	1
8	1991Q2	0.0064399	-0.0024262	1	1
9	2002Q1	0.0047588	0.0010034	0	0

## References

- [1] Bacon, Kenneth H. (1982). “Volcker Offers Plan to Reduce Strain on Developing Nations, Cut Default Risk,” *Wall Street Journal*, November 17, p. 2.
- [2] Bailey, Jeff, and Jeffrey Zaslow (1984). “Continental Illinois Securities Plummet Amid Rumors Firm’s Plight Is Worsening,” *Wall Street Journal*, May 11, p. 3.
- [3] Ball, Laurence (1993). “What Causes Inflation?,” *Federal Reserve Bank of Philadelphia Business Review*, Vol. 77(1), 3–12.
- [4] Bank of England (1991). “General Assessment,” *Bank of England Quarterly Bulletin*, Vol. 31(4), 451–457.
- [5] Bankers Trust (1975). *Credit and Capital Markets 1975*. February. Reprinted in Committee on the Budget, U.S. House of Representatives, *Fiscal Year 1976 Budget and the Economy*. Washington, DC: GPO. 575–586.
- [6] Barth, James R. (1991). *The Great Savings and Loan Debacle*. Washington, DC: AEI Press.
- [7] Barth, James R., R. Dan Brumbaugh, Jr., Daniel Sauerhaft, and George H.K. Wang (1986). “Insolvency and Risk-Taking in the Thrift Industry: Implications for the Future.” In Committee on Banking, Housing, and Urban Affairs, U.S. Senate, *Deposit Insurance Reform and Related Supervisory Issues: Hearings, Part 1: July 23, 25, 31, September 10 and 11, 1985*. Washington, DC: GPO. 483–518.
- [8] Barth, James R., and Robert E. Litan (1998). “Lessons from Bank Failures in the United States.” In G. Caprio, Jr., W.C. Hunter, G.G. Kaufman, and D.M. Leipziger (eds.), *Preventing Bank Crises: Lessons from Recent Global Bank Failures*. Washington, DC: World Bank. 133–171.
- [9] Benati, Luca, and Charles A.E. Goodhart (2010). “Monetary Policy Regimes and Economic Performance: The Historical Record, 1979–2008.” Manuscript, London School of Economics. In B.M. Friedman and M. Woodford (eds.), *Handbook of Monetary Economics, Volume 1D*. North Holland, forthcoming.
- [10] Bennett, Robert A. (1984). “Continental Fighting Rumors,” *New York Times*, May 11, pp. D1 and D3.

- [11] Berger, Allen N., Richard J. Herring, and Giorgio P. Szegö (1995). “The Role of Capital in Financial Institutions,” *Journal of Banking and Finance*, Vol. 19(34), 393–430.
- [12] Bernanke, Ben S. (1983). “The Real Effects of Financial Crises: Theory and Evidence.” In Federal Reserve Bank of San Francisco, *Proceedings of Sixth West Coast Academic/Federal Reserve Economic Research Seminar November 1982*. San Francisco: Federal Reserve Bank of San Francisco. 134–162.
- [13] Blanden, Michael (1973). “Secondary Banks: An End to Freewheeling,” *Financial Times*, December 24, p. 5.
- [14] Bordo, Michael, Barry Eichengreen, Daniela Klingebiel, and Maria Soledad Martínez-Pería (2001). “Is the Crisis Problem Growing More Severe?,” *Economic Policy*, Vol. 16(32), 51–82.
- [15] Boyd, John H., and Mark Gertler (1994). “The Role of Large Banks in the Recent U.S. Banking Crisis,” *Federal Reserve Bank of Minneapolis Quarterly Review*, Vol. 18(1), 1–21.
- [16] Cahill, Jerome (1975). “The Economy: On Its Feet, But Tottery,” *Daily News* (New York), September 21, p. 73.
- [17] Capie, Forrest, Charles Goodhart, Stanley Fischer, and Norbert Schnadt (1994). *The Future of Central Banking: The Tercentenary Symposium of the Bank of England*. Cambridge, U.K.: Cambridge University Press
- [18] Caprio, Gerard, Jr., and Daniela Klingebiel (2003). “Episodes of Systemic and Borderline Financial Crises.” World Bank, January.
- [19] Caprio, Gerard, Jr., Daniela Klingebiel, Luc Laeven, and Guillermo Noguera (2005). “Banking Crisis Database.” In P. Honohan and L. Laeven (eds.), *Systemic Financial Crises*. Cambridge, U.K.: Cambridge University Press. 307–340.
- [20] Carron, Andrew S. (1982). “Financial Crises: Recent Experience in U.S. and International Markets,” *Brookings Papers on Economic Activity*, Vol. 33(2), 395–418.
- [21] Carson, Teresa (1982). “Mexican Loan Agreement Reached: Debt Will Be Rolled Over; Interest Payments to Continue,” *American Banker*, August 23, pp. 1 and 16.

- [22] Cecchetti, Stephen G., Marion Kohler, and Christian Upper (2009). “Financial Crises and Economic Activity.” NBER Working Paper No. 15379.
- [23] *Charlie Rose Show* (2009). “Kenneth S. Rogoff.” Transcript, November 10. <http://www.charlierose.com/download/transcript/10707>.
- [24] Clausen, A.W. (1980). “The Changing Character of Financial Markets in the Postwar Period: A Personal Perspective.” In M.S. Feldstein (ed.), *The American Economy in Transition*. Chicago: University of Chicago for NBER. 86–94.
- [25] Cohn, Lee M. (1974). “Burns Warns Gold-Buying May Damage Economy,” *Washington Star*, December 5, 1974, pp. A–1 and A–4.
- [26] Committee on Appropriations, U.S. Senate (1983). *Economic Overview, Fiscal Year 1984: Special Hearings*. Washington, DC: GPO.
- [27] Committee on Banking and Currency, U.S. House of Representatives (1974). *Failure of the U.S. National Bank of San Diego: Hearings before the Subcommittee on Bank Supervision and Insurance; November 27, 1973; December 10, 11, and 12, 1974*. Washington, DC: GPO.
- [28] Committee on Banking, Currency, and Housing, U.S. House of Representatives (1975). *Bank Failures, Regulatory Reform, Financial Privacy: Hearings before the Subcommittee on Financial Institutions Supervision, Regulation and Insurance; Part 2—July 16, 17, and 21, 1975*. Washington, DC: GPO.
- [29] Committee on Banking, Finance, and Urban Affairs, U.S. House of Representatives (1982). *Penn Square Bank Failure: Hearings, Part 1: July 15; and August 16, 1982*. Washington, DC: GPO.
- [30] Committee on Banking, Finance, and Urban Affairs, U.S. House of Representatives (1983). *Penn Square Bank Failure: Hearings, Part 2: September 29 and 30, 1982*. Washington, DC: GPO.
- [31] Committee on Banking, Housing, and Urban Affairs, U.S. Senate (1986a). *Deposit Insurance Reform and Related Supervisory issues: Hearings before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, Part 1: July 23, 25, 31, September 10 and 11, 1985*. Washington, DC: GPO.



- [32] Committee on Banking, Housing, and Urban Affairs, U.S. Senate (1986b). *Deposit Insurance Reform and Related Supervisory Issues: Hearings before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, Part 2: January 22 and March 4, 13, 1986*. Washington, DC: GPO.
- [33] Committee on the Budget, U.S. Senate (1975). *Seminar: Economic and Budget Outlook, 1976–1980*. Washington, DC: GPO.
- [34] Dale, Edwin L. (1974). “The Specter of a Saving Hemorrhage,” *New York Times*, September 15, p. 154.
- [35] Dornbusch, Rudiger (1985). “Dealing with Debt in the 1980s,” *Third World Quarterly*, Vol. 7(3), 532–551.
- [36] Edwards, Franklin R., and James Scott (1979). “Regulating the Solvency of Depository Institutions: A Perspective for Deregulation.” In F.R. Edwards (ed.), *Issues in Financial Regulation*. New York: McGraw-Hill. 65–105.
- [37] *Fareed Zakaria GPS* (2010). “Timothy Geithner.” CNN, April 25. <http://transcripts.cnn.com/TRANSCRIPTS/1004/25/fzgps.01.html>
- [38] Federal Open Market Committee Transcript (1982). “Meeting of the Federal Open Market Committee, October 5, 1982.” [www.federalreserve.gov](http://www.federalreserve.gov)
- [39] *Financial Times* (1987). “The Case for Paul Volcker,” *Financial Times*, May 26, p. 22.
- [40] Forde, John P. (1984). “Continental Decline Not Swift: Firm’s Condition Had Been Weakening for Two Years,” *American Banker*, May 21, p. 24.
- [41] Friedman, Benjamin M. (1980). “Postwar Changes in the American Financial Markets.” In M.S. Feldstein (ed.), *The American Economy in Transition*. Chicago: University of Chicago for NBER. 9–78.
- [42] Friedman, Benjamin M. (1991). “Views on the Likelihood of Financial Crisis.” In M. Feldstein (ed.), *The Risk of Economic Crisis*. Chicago: University of Chicago Press for NBER. 19–43.
- [43] Friedman, Milton (1964). “The Monetary Studies of the National Bureau.” In NBER, *The National Bureau Enters Its 45th Year—44th Annual Report*. New

- York: NBER. 7–25. Reprinted in M. Friedman, *The Optimum Quantity of Money and Other Essays*. Chicago: Aldine, 1969. 261–283.
- [44] Friedman, Milton (1993). “The ‘Plucking Model’ of Business Fluctuations Revisited,” *Economic Inquiry*, Vol. 31(2), 171–177.
- [45] Friedman, Milton, and Anna J. Schwartz (1963). *A Monetary History of the United States, 1867–1960*. Princeton, N.J.: Princeton University Press.
- [46] Goodhart, Charles A.E., and Dirk Schoenmaker (1993). “Institutional Separation Between Supervisory and Monetary Agencies.” In F. Bruni (ed.), *Prudential Regulation, Supervision and Monetary Policy*. Centro di Economia Monetaria e Finanziari. 353–439.
- [47] Gorton, Gary B. (2008). “The Panic of 2007.” In Federal Reserve Bank of Kansas City, *Maintaining Stability in a Changing Financial System*. Kansas City, MO: Federal Reserve Bank of Kansas City. 131–262.
- [48] Greenspan, Alan (1990). “Statement by Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System, before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, February 22, 1990,” *Federal Reserve Bulletin*, Vol. 76(4), 215–222.
- [49] Greenspan, Alan (1991). “Statement by Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System, before the Committee on the Budget, U.S. House of Representatives, January 22, 1991,” *Federal Reserve Bulletin*, Vol. 77(2), 168–171.
- [50] Holusha, John (1975). “Q&A: A Banker’s View of U.S. Money Woes,” *Washington Star*, April 6, pp. A–1 and A–4.
- [51] Homan, Paul M. (1975). “Changes in the Composition of Bank Assets and Liabilities, Bank Capital Adequacy, and Bank Failures: Their Effect on the Liquidity and Solvency of American Banks.” In Committee on Banking, Housing and Urban Affairs, U.S. Senate, *Compendium of Major Issues in Bank Regulation*. Washington: GPO. 245–280.
- [52] Isaac, William M. (1983). “Full Statement by William M. Isaac, Chairman, Federal Deposit Insurance Corporation, April 27, 1983.” In Committee on Banking,

- Housing, and Urban Affairs, U.S. Senate, *Financial Services Industry—Oversight: Hearings, Part I*. Washington, DC: GPO. 112–136.
- [53] Isaac, William M. (1994). “Financial Regulation—2.” In M.S. Feldstein (ed.), *American Economic Policy in the 1980s*. Chicago: University of Chicago Press for NBER. 557–562.
- [54] Jalil, Andrew (2009). “A New History of Banking Panics in the United States, 1825–1929: Construction and Implications.” Manuscript, University of California, Berkeley.
- [55] Jensen, Michael C. (1974). “Inflation Termed Near ‘Crisis’ Stage,” *New York Times*, June 7, p. 47.
- [56] Kaletsky, Anatole (1983). “U.S. Finance and Investment Survey: Relief as Interest Rates Stabilise,” *Financial Times*, May 24, p. II.
- [57] Kane, Edward J. (1974). “All for the Best: The Federal Reserve Board’s 60th Annual Report,” *American Economic Review*, Vol. 64(6), 835–850.
- [58] Kim, Chang-Jin, and Charles R. Nelson (1999). “Friedman’s Plucking Model of Business Fluctuations: Tests and Estimates of Permanent and Transitory Components,” *Journal of Money, Credit and Banking*, Vol. 31(3), 317–334.
- [59] Laeven, Luc, and Fabian Valencia (2008). “Systemic Banking Crises: A New Database.” IMF Working Paper 08–224.
- [60] Litan, Robert E. (1994). “Financial Regulation—1: U.S. Financial Markets and Institutions in the 1980s: A Decade of Turbulence.” In M.S. Feldstein (ed.), *American Economic Policy in the 1980s*. Chicago: University of Chicago Press for NBER. 519–557.
- [61] McNees, Stephen K. (1978). “The Current Business Cycle in Historical Perspective,” *New England Economic Review*, Vol. 60(1), 44–59.
- [62] *Meet the Press* (2009). “*Meet the Press* Transcript for March 15, 2009.” <http://www.msnbc.msn.com/id/29705720/>
- [63] Mendelsohn, M.S. (1974). “U.K. Industry Straining to Avoid Financial Crisis,” *American Banker*, February 21, pp. 3 and 14.

- [64] Mester, Loretta J. (1990). “Curing Our Ailing Deposit-Insurance System,” *Federal Reserve Bank of Philadelphia Business Review*, Vol. 74(5), 13–24.
- [65] Morley, James, and Jeremy M. Piger (2005). “The Importance of Nonlinearity in Reproducing Business Cycle Features.” Working Paper, Federal Reserve Bank of St. Louis. May.
- [66] Nadler, Paul S. (1983a). “Penn Square Failure Continues to Have Effect,” *American Banker*, September 12, p. 4.
- [67] Nadler, Paul S. (1983b). “Market Optimism Over Thrifts Unwarranted,” *American Banker*, August 1, p. 4.
- [68] Neftci, Salih N. (1986). “Is there a Cyclical Time Unit?,” *Carnegie-Rochester Conference Series on Public Policy*, Vol. 24(1), 11–48.
- [69] Norton, Robert E. (1982). “Short-Term Aid Sought for Mexico Now Totals More Than \$4.5 Billion; U.S. Banks Said to Hold \$25 Billion of Total Loans,” *American Banker*, August 26, pp. 1 and 15.
- [70] Orphanides, Athanasios (2001). “Monetary Policy Rules Based on Real-Time Data,” *American Economic Review*, Vol. 91(4), 964–985.
- [71] Orphanides, Athanasios (2003). “The Quest for Prosperity Without Inflation,” *Journal of Monetary Economics*, Vol. 50(3), 633–663.
- [72] Proxmire, William (1975). “Foreword.” In Committee on Banking, Housing and Urban Affairs, U.S. Senate, *Compendium of Major Issues in Bank Regulation*. Washington, DC: GPO. III–X.
- [73] Reinhart, Carmen M. (2009). “The Economic and Fiscal Consequences of Financial Crises.” Entry on Vox website, January 26. <http://www.voxeu.org/index.php?q=node/2877>
- [74] Reinhart, Carmen M., and Kenneth S. Rogoff (2008a). “Is the 2007 U.S. Sub-Prime Financial Crisis So Different? An International Historical Comparison,” *American Economic Review (Papers and Proceedings)*, Vol. 98(2), 339–344.
- [75] Reinhart, Carmen M., and Kenneth S. Rogoff (2008b). “Banking Crises: An Equal Opportunity Menace.” NBER Working Paper No. 14587.

- [76] Reinhart, Carmen M., and Kenneth S. Rogoff (2009a). “The Aftermath of Financial Crises,” *American Economic Review (Papers and Proceedings)*, Vol. 99(2), 1–10.
- [77] Reinhart, Carmen M., and Kenneth S. Rogoff (2009b). *This Time Is Different: Eight Centuries of Financial Folly*. Princeton, N.J.: Princeton University Press.
- [78] Romer, Christina D. (1992). “What Ended the Great Depression?,” *Journal of Economic History*, Vol. 52(4), 757–784.
- [79] Romer, Christina D., and David H. Romer (1994). “Monetary Policy Matters,” *Journal of Monetary Economics*, Vol. 34(1), 75–88.
- [80] Samuelson, Paul A. (1967). “Money, Interest Rates and Economic Activity: Their Interrelationship in a Market Economy.” In American Bankers Association (ed.), *Proceedings of a Symposium on Money, Interest Rates and Economic Activity*. New York: American Bankers Association. 40–60.
- [81] Schularick, Moritz, and Alan M. Taylor (2010). “Credit Booms Gone Bust: Monetary Policy, Leverage Cycles and Financial Crises, 1870–2008.” Manuscript, University of California, Davis.
- [82] Schwartz, Anna J. (1986). “Real and Pseudo Financial Crises.” In G.E. Wood (ed.), *Financial Crises and the World Banking System*. New York: Macmillan. 11–31.
- [83] Sinclair, Tara M. (2009). “Asymmetry in the Business Cycle: Friedman’s Plucking Model with Correlated Innovations,” *Studies in Nonlinear Dynamics and Econometrics*, Vol. 14(1), Article 3.
- [84] Summers, Lawrence H. (1991). “Planning for the Next Financial Crisis.” In M. Feldstein (ed.), *The Risk of Economic Crisis*. Chicago: University of Chicago Press for NBER. 135–158.
- [85] Taylor, John B. (1998). “Monetary Policy and the Long Boom,” *Federal Reserve Bank of St. Louis Review*, Vol. 80(5), 3–11.
- [86] Terrones, Marco E., Alasdair Scott, and Prakash Kannan (2009). “From Recession to Recovery: How Soon and How Strong?,” *World Economic Outlook (IMF)*, April, 103–138.

- [87] Treasury and Civil Services Committee, House of Commons (1993). *The Role of the Bank of England, Volume II: Minutes of Evidence and Appendices*. London: HMSO.
- [88] Volcker, Paul A. (1982). “Sustainable Recovery: Setting the Stage.” Remarks before the Forty-Eighth Annual Meeting of the New England Council, Boston, November 16. [http://fraser.stlouisfed.org/historicaldocs/829/download/29542/Volcker\\_19821116.pdf](http://fraser.stlouisfed.org/historicaldocs/829/download/29542/Volcker_19821116.pdf)
- [89] Watson, Ronald D. (1975). “Banking’s Capital Shortage: The Malaise and the Myth,” *Federal Reserve Bank of Philadelphia Business Review*, Vol. 53(1), 3–17.
- [90] Weiner, Lisabeth (1984). “A Chronology of Events at Continental,” *American Banker*, July 27, pp. 11 and 12.