New Evidence on the Aftermath of Financial Crises in Advanced Countries

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Online Appendix B
Additional Narrative Evidence on Financial Distress in Key Episodes

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This appendix provides additional real-time narrative evidence on the presence and timing of financial distress in key episodes. In particular, for the period before 2007, it focuses on the six episodes where our new measure reaches a value of 7 (Finland, Norway, Sweden, Japan, and the United States in the 1990s, and Turkey in the early 2000s), as well as the two episodes where our new series shows no financial distress, but both the Reinhart and Rogoff and IMF chronologies identify a systemic crisis (Spain in the late 1970s and Turkey in the 1980s). For 2007 and after, it focuses on the one case where our new measure reaches a 7, but the alternative chronologies do not identify a crisis of any sort (Norway), and the one case where the alternative chronologies both identify a systemic crisis, but our new measure shows only a relatively modest increase in financial distress (the Netherlands).

A. Additional Narrative Sources

The three additional sources we consider are central bank annual reports, the staff reports from the IMF's Article IV consultations, and press accounts. The central bank reports typically provide detailed information on credit conditions, bank health, and central bank operations. For all but one of the countries in question, the relevant central bank provides an extensive annual report in English.[1] For Spain in the years that the IMF identifies a crisis, the Banco de España annual report is only available in Spanish. We hired a Spanish-speaking graduate student to identify and summarize the relevant sections of those reports, and to translate key

[1] The full title of the relevant central bank annual report is given in the country-by-country descriptions.

passages.

The IMF's Article IV staff reports are typically broader than the central bank reports, providing information on the economic outlook, fiscal conditions, and trade policy, as well as on the health of the financial system and related issues.[2] The Article IV reports are based on consultations with numerous government officials of the country in question, as well as reports of private sector analysts and the IMF's own research. Because central bank leaders are among the government officials consulted, there is likely some overlap between the Article IV reports and those of the central banks. However, the IMF staff does not hesitate to state when they disagree with the government officials, so the two sources provide important independent information.

Finally, the press source that we use is the *Wall Street Journal*. The *Journal* obviously covers a wide range of economics topics, including banking conditions and financial stability. While it pays particular attention to U.S. economic developments, foreign economic coverage, particularly of advanced countries, is also extensive.

All of these sources share with the *OECD Economic Outlook* the feature that they are largely contemporaneous. This is especially true of the press accounts, which typically focus on immediate news.[3] The central bank annual reports are typically published early in the subsequent year, so they are by their nature slightly retrospective, but not substantially so. The IMF Article IV reports are either annual or, occasionally, biennial. As a result, like the central bank reports, they are slightly retrospective.

Our goal in this consideration of additional evidence is not to provide another scaled chronology of financial distress. While the Article IV reports are relatively consistent across countries, the central bank reports and press coverage vary substantially in both detail and the topics discussed. As a result, it would be extremely difficult to identify and rank episodes

[2] The full title of these documents is [Country Name] – Staff Report for the [Year] Article IV Consultation. They are available from the IMF Archive Catalog (http://www.imf.org/external/adlib_IS4/search.aspx).
[3] Occasionally, the *Wall Street Journal* has more retrospective pieces, which we also read and analyze.

consistently and thoroughly using these sources. Instead, our goal is more modest. We want to use these additional sources to see if the dates we derive from the OECD are sensible and reasonably consistent with what is suggested by a wider array of real-time sources. And, because the other sources are produced by very different processes from one another and from the *OECD Economic Outlook*, they provide a check against the possibility of systematic biases in the *Economic Outlook*. Thus, we view this exercise as a check on the quality and reliability of the OECD narrative accounts, and on our reading of them.

B. Approach

For the central bank annual reports, we generally begin with the volume for the year corresponding to the earliest start date in the three chronologies and go through the volume for the year of the latest end date. If the first volume suggests that distress began earlier, we look at prior volumes to determine when the distress began. Similarly, if the last volume suggests that there was still significant distress, we consider later volumes. The reports vary greatly in length. We read the shorter ones in their entirety; for longer ones, we skim them to identify the most relevant chapters or sections, and then read those closely. For each volume we examine, we look for the same sort of indications of a rise in the cost of credit intermediation that we look for in the *OECD Economic Outlook*. We put particular emphasis on references to a financial crisis or panic, a significant disruption in the supply of credit, and to beliefs that problems in the financial system were affecting spending and economic activity.

The IMF Article IV staff reports are sometimes biennial or irregular in their timing. Therefore, for these we start with the report corresponding to or before the earliest year that any of the chronologies identify financial distress and go through the report corresponding to or after the latest end date. Because the reports are typically brief (roughly 25 to 50 pages), we read the entire document looking for indicators of financial distress and disruptions in credit supply.

For the *Wall Street Journal*, we examine the same years as for the other sources. However, reading the entire contents of the *Journal* is obviously not feasible. We therefore begin by limiting our analysis to articles containing three items: the country name in either noun or adjective form (for example, "Spain" or "Spanish"); "bank," "banks," or "financial"; and "crisis," "rescue," "bailout," "crunch," or "squeeze."[4] This procedure typically yields a few dozen articles for a country for each year we are interested in. We then add searches judgmentally to supplement the results of the basic search. For example, if our algorithm yields an article about the aftermath of a bank failure but nothing about the failure itself, we might search over the preceding months using only the name of the bank that failed. As another example, if we find little evidence of financial distress over a period identified by one of the chronologies, we might search for general articles about the country's economy during that period (for example, by searching for articles that include the name of the country and the terms "inflation" and "unemployment"). This would allow us to check that the *Journal* was reporting on the country's economy, and to see whether it mentioned financial distress in its analyses of important economic developments. And, as with the central bank reports, if the articles near the start or end of our search window for a country suggest significant distress, we extend the search backward or forward in time.

There are two cases for which this search algorithm was not practical: the United States in the late 1980s and early 1990s, and Japan in the 1990s and 2000s. The focus of the *Wall Street Journal* on the United States causes there to be far too many articles on U.S. credit conditions for us to analyze. Because of that, and because of the thoroughness of the Federal Reserve's analyses of financial conditions, for the United States we only consider the Federal Reserve and IMF Article IV reports. For Japan, our basic search of the *Wall Street Journal* yielded over 8000 articles over the period 1990–2005. Rather than trying to examine all of them, we instead

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[4] We search the *Wall Street Journal* through the ProQuest Newspapers database search feature (http://search.proquest.com/advanced).

first search for articles that include one of the phrases, "Japan's banking crisis," "Japan's financial crisis," "Japanese banking crisis," and "Japanese financial crisis." The resulting 111 articles provide a fairly clear picture of the *Journal*'s view for certain key periods (such as 1998 and 1999), and a preliminary sense for many other times. For the periods for which these articles were not definitive, we then do a broader search for articles that include either "Japan" or "Japanese" and either "banking crisis" or "financial crisis." This yields roughly a hundred additional articles per year over the period we are interested in.

C. **Could There Be Common Biases?**

As described in the paper and in the remainder of this appendix, we find substantial agreement among the four real-time sources (the *OECD Economic Outlook* and the three additional sources). While the sources do not agree about the timing and severity of financial distress in every detail, they never diverge greatly, and they are substantially closer to one another than they are to the alternative chronologies. One possible concern, however, is that the four sources could suffer from common biases. If they do, then the additional evidence the alternative sources provide would be less valuable. There appear to be three main possible sources of such common biases.

The first is that political pressures led the sources to downplay or suppress unfavorable information about the health of the banking system. We cannot rule out this possibility entirely for the central bank reports, which are public documents produced by domestic policymakers. And there are cases, most notably in parts of Japan's crisis, where the picture painted by the central bank is more favorable than that painted by the other sources. The fact that the various central banks likely differed in how explicitly they were willing to describe financial distress is one reason that it is valuable to base our measure on a common source for all countries.

The possibility of substantial political influence is far less plausible for the other sources. Most obviously, it is hard to see how political pressures could have had a substantial impact on the articles in the *Wall Street Journal*, which is in the business of providing timely news. In addition, two considerations strongly suggest that it is at most a minor issue with the IMF Article IV reports. First, for the pre-2007 episodes, the reports were confidential documents at the time they were written; thus, concerns about undermining public confidence are unlikely to have been central. Second, the reports often included negative assessments of the country's situation and explicit disagreements with country officials. And it was not unusual for those remarks to raise the possibility of a sudden loss of confidence in some aspect of the country's economy. To give a few examples, the 1991 report on Sweden said that "the large and rising external deficit and debt stock could give rise to adverse perceptions of exchange rate credibility which could prove destabilizing" (1991, p. 12); the 2004 report on Turkey said that "rollover risk" involving government debt was a concern and "foreign currency risk is also a problem" (2004, p. 11), and it raised the possibility of a "sudden stop" (2004, p. 38); and the 1985 U.S. report stated, "it would not be prudent to rule out the possibility of a sudden shift in investors' preferences away from U.S. assets that would trigger a sharp decline in the value of the dollar" (1985, pp. 22–23). The fact that the staff reports so freely raised the possibility of various types of sudden, destructive shifts in confidence is hard to square with the hypothesis that they systematically suppressed unfavorable views about the financial system. Finally, we know of no evidence that the *OECD Economic Outlook* was significantly influenced by political pressures.

The second possible source of common bias is that the authors of all four sources lacked the expertise to identify various markers of financial distress, such as banks suffering losses or creditworthy borrowers having trouble obtaining loans. Again, this hypothesis does not fit the facts. The *Wall Street Journal* was arguably the world's leading business newspaper. Although the *Journal*'s coverage of economic events outside the United States may have increased over time, its foreign coverage was substantial over our entire sample period. As we describe below, even in periods of relative calm, it typically published at least one article per year that included substantial discussion of macroeconomic developments in each of the countries we consider.

The other three sources were authored by professional economists, and considerable resources were devoted to them. Both the central bank reports and the IMF Article IV reports usually included discussions of the financial system; and they, as well as the *OECD Economic Outlook*, regularly included discussions of financial conditions and the determinants of credit growth. Even early in our sample period, the *Economic Outlook* sometimes commented on disruptions in credit markets arising from direct policy actions or on indicators that suggested rises in the cost of credit intermediation (see, for example, 1967:2, pp. 35 and 82; 1969:1, p. 82; 1969:2, pp. 43 and 48; 1974:2, pp. 26 and 50; and 1975:1, p. 88). Finally, as documented below and in Appendix A, all of the sources often described indicators of financial distress. In cases where the alternative chronologies identify a crisis and the evidence from our sources indicates no or only minor financial distress, it is rarely the case that all four of our sources completely overlooked financial sector problems. Rather, they noted the developments but placed little emphasis on them or explicitly characterized them as having little effect on credit supply.

The third possible source of common bias is that, since the sources were often attempting to explain recent or prospective economic conditions, perhaps they were more prone to identify financial distress when those conditions were poor. We certainly cannot rule out this possibility for the articles in the *Wall Street Journal* discussing macroeconomic developments in the various countries. We see no evidence of this tendency in the *OECD Economic Outlook*, which was often quite specific about the financial disruptions it identified and their effects on credit supply. And this possibility seems even less likely for the central bank reports and the IMF Article IV reports. In contrast to the *Economic Outlook*, which often focused on macroeconomic developments, both of these sources generally viewed the condition of the financial system as a topic of interest in its own right, and so usually discussed it regardless of macroeconomic conditions. Moreover, any bias of this type would tend cause our analysis to overstate the effects of financial distress.

Finally, the fact that we derive a scaled measure from a single, relatively consistent source that often mentioned signs of distress provides another reason to be less concerned about the possibility of bias. To the extent that bias was present but did not vary greatly, there would still be a consistent relationship between actual distress and our measure. For example, relatively mild language might in fact reflect moderate distress; moderate expressions of concern might reflect major distress; and so on. The resulting estimates of the aftermath of distress would then accurately reflect the true time pattern. They would, however, again be biased upward in magnitude. For example, the estimated response to what we coded as mild distress might reflect the true response to moderate distress, and so overstate the response to mild distress.

D. Analysis of Key Episodes

The remainder of the appendix discusses in detail the evidence on financial distress in key episodes from the alternative real-time narrative sources.

EPISODE-BY-EPISODE ANALYSIS OF ADDITIONAL SOURCES (in Alphabetical Order)

PRE-2007 PERIOD

FINLAND

For Finland in this episode, the three alternative chronologies are broadly similar. Our new measure of financial distress based on the *OECD Economic Outlook* shows financial distress beginning in 1992:1, rising sharply in 1992:2, peaking in 1993:1, and receding quickly thereafter. Both the IMF chronology and Reinhart and Rogoff date a crisis starting slightly earlier (in 1991:2). The IMF places the end of the crisis in 1995, while Reinhart and Rogoff put it a year earlier. The descriptions of financial distress in the reports of the Finnish central bank, the IMF Article IV reports, and the *Wall Street Journal* agree with the alternative chronologies that financial distress increased somewhat earlier than was reported by the OECD. They, however, disagree with the IMF chronology that significant distress dragged on through 1995.

***Central Bank Reports*.** Though relatively short, the Bank of Finland *Year Books* are extremely substantive and informative about financial conditions.[5] The report for 1991 suggested that financial problems were present in 1991, particularly in the second half of the year. According to the report, a recession had started in Finland in 1990, and "the slump in economic activity led to record-high unemployment, a rapid rise in the number of bankruptcies and an increase in banks' credit losses" (1991, p. 6). The Bank of Finland believed that "[t]he rapid increase in economic uncertainty dampened the public's desire to take on further debt, and demand for credit was slack. Furthermore, banks tightened their collateral requirements in the face of increasing credit risk and declining collateral values, which reduced the availability of credit" (1991, p. 20). Banks began to have trouble meeting their capital adequacy requirements (1991, p. 25), and "[i]n May 1991, the Banking Supervision Office, the Bank of Finland and the Ministry of Finance established a joint working group to make contingency plans for a possible banking crisis" (1991, p. 25). The problems of one bank, Skopbank, became so large that "the Bank of Finland was obliged to step in and take control of the bank in September in order to maintain the stability of the country's financial system" (1991, p. 23). Based on the descriptions of substantial credit losses, reduced credit availability, and the failure of one large bank, it is clear that the Bank of Finland saw financial distress in 1991. In this way, it is in closer agreement with the alternative chronologies than with the new measure based on the *OECD Economic Outlook*. At the same time, the descriptions convey much more sense of risks to the financial system than actual disruption, suggesting that the level of distress in 1991 may have been only mild to moderate.

The 1992 *Year Book* suggested that financial distress increased substantially in 1992. It wrote: "Already at the beginning of 1992, it was clear that banks' losses would grow substantially during the year and that their solvency would weaken significantly" (1992, p. 28). It also said that "growing credit losses and shrinking asset values induced banks to tighten their collateral requirements, thus restricting the supply of credit" (1992, p. 23). The greater sense of concern about the financial system was conveyed both by the Bank's comments and the actions it and the Finnish government took. On the comment side, there was reference, for example, to the fact that "[i]n June, the position of a number of savings banks had become so precarious that their continued operation would have been impossible without support from the public sector"

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[5] The full title of the source is the *Bank of Finland Year Book*. It is sometimes cataloged under the Finnish name of the bank, Soumen Pankki.

(1992, p. 31). In terms of actions, "[i]n March 1992, the Government decided to provide the banking sector with a capital injection totalling FIM 8 billion" (1992, p. 28). Nearly all banks received an injection, which occurred in August and December (1992, p. 29). In May, the Government Guarantee Fund was set up to provide support loans and take other actions necessary "to safeguard the stability of deposit banking and safeguard depositors' claims" (1992, p. 30). The sense of urgency, the extensive rescue operations, and the references to reductions in credit supply all suggest substantial financial distress in 1992. While this is largely consistent with the fact that the OECD also identifies substantial distress in this year, the OECD is somewhat slower. The *OECD Economic Outlook* does not identify substantial distress until the second half of 1992, while the Bank of Finland described great concern early in the year.

The 1993 *Year Book* suggested that financial distress remained substantial early in the year, but then improved later on. One source of continued financial problems was seen to be conflict within the government over further rescue operations. The report stated (1993, pp. 28–30):

> Uncertainty concerning the Finnish economy and the position of the banks threatened to hamper the acquisition of funds by banks from abroad in autumn 1992 and again in the early winter of 1993. Likewise, Parliament's rejection of the comprehensive bank support reform proposed by the Government in January threatened to further undermine investors' confidence in banks. Accordingly, Parliament considered it necessary to pass a resolution affirming the State's commitment to safeguard the functioning of the banking system.

Parliament issued such a statement at the end of February 1993; "After this, the uncertainty concerning the banks' acquisition of funding from abroad abated" (1993, p. 30). Overall, "[i]n the course of 1993, the State, on the basis of a proposal by the Government Guarantee Fund, supported the banking system by increasing the amount of its commitments by more than FIM 53 billion in gross terms" (1993, p. 30). In discussing the further decline in bank lending in 1993, the report said that it "was a consequence of both slack demand for loans and, on the supply side, of the banks' tightened collateral requirements and their efforts to maintain and improve their capital adequacy, which had weakened because of credit losses" (1993, p. 31). The description of severe funding problems, increased rescue operations, and effects on credit supply are all consistent with the OECD's view that financial distress was substantial, particularly in the first half of 1993. The Bank of Finland's description that "[t]owards the end of the year, conditions in the Finnish financial markets stabilized appreciably" (1993, p. 8), is also consistent with the OECD's view that distress declined significantly in the second half of the year.

The *Year Book* for 1994 described continued rapid improvement in financial conditions. For example, it said: "The banks again recorded substantial losses in 1994. However, the fall in the level of loan losses ... and a number of developments in the operating environment pointed to improved prospects for the banking sector" (1994, p. 28). Among those other positive developments were "the pick-up in economic activity" and "the marked decrease in bankruptcies" (1994, p. 28). The report also suggested that public rescue measures were winding down, while private-sector adjustments were increasing. In particular, it said: "In order to cover losses and safeguard their solvency, the banks strengthened their equity capital by means of extensive capital programmes. ... Skopbank was the only bank to need government support" (1994, p. 28). Bank lending continued to decline in 1994, but the report mentioned only demand-side factors in its explanation (1994, p. 26). Indeed, it seemed to go out of its way to emphasize that lending was much less restricted. It said (1994, p. 29):

> A survey of companies ... showed that relatively few firms were experiencing difficulties in obtaining financing: only 15 per cent of the firms indicated that availability of financing was a factor hindering their operations. In these firms, lack of collateral was considered the most serious problem. Hence the prime cause of the small amount of new lending appears to be weak demand for credit rather than a 'credit crunch'.

The descriptions suggest that there was at most a small level of financial distress in 1994. This is consistent with the new measure, which shows mild distress in the first half of the year and none in the second half. It is at odds with the IMF chronology, which shows the crisis continuing into 1995.

The 1995 *Year Book* is remarkable mainly for how little it said about the state of the financial system. The natural interpretation is that problems had diminished to the point that they were no longer relevant. There is a section of the report focused on the fact that Finnish banks were still operating at a loss, though losses were "reduced by 50 per cent compared to 1994" (1995, p. 31). The report concluded that "[s]luggish income generation and slow progress in cutting costs held back an improvement in bank profitability despite more favourable business conditions in the economy as a whole" (1995, p. 31). There was also reference to "a narrowing of the margin between banks' markka lending and funding rates" (1995, p. 31), which the report attributed to "a clear post-recession rekindling of competition in the banking sector, ... reinforced by increased activity on the part of foreign rivals" (1995, pp. 31–32). Such increased competition likely also increased the availability of credit. The most explicit statement about the health of the financial system was: "The settlement of the savings bank crisis and an improvement in the financial performance of the other banks led to an easing of the solvency problems of the banking system. The banks did not require new capital support from the government in 1995" (1995, p. 34). Taken together, the explicit statements and the lack of discussion of problems suggest that financial distress was extremely small in 1995. This is consistent with the new measure derived from the OECD reports, which shows no distress in 1995.

***IMF Article IV Reports*.** The IMF Article IV reports agree with the broad outlines of the path of financial distress in Finland in the three chronologies. For the most part, however, the evidence in the reports is not precise enough to shed much light on the differences among the chronologies (which, as noted above, are not large).

The 1991 report (dated August 8, 1991) did not mention financial distress or banking problems. It reported that Finland "went rather abruptly into a recession in the second half" of 1990 (1991, p. 3); said, "The recession in the Finnish economy has deepened in 1991" (1991, p. 4); stated, "property prices, which had been inflated during the boom, fell drastically" (1991, p. 3); and described significant pressure on the currency and large increases in interest rates to defend it (for example, 1991, pp. 4–5). But it did not link any of these developments to troubles in the banking system or increases in the cost of credit intermediation. This assessment is consistent with the view of all three chronologies that there was no significant financial distress in Finland before the second half of 1991.

By the time of the next report, in 1993 (dated July 7, 1993), the IMF staff saw a banking crisis. It said (1993, pp. 2–3):

> In part through its impact on balance sheets, the combination of a major depreciation of the markka and high interest rates contributed to the sharp decline in

> domestic demand that has greatly exacerbated the downturn in activity. At the same time, balance sheet pressures have resulted in a banking crisis, reflecting a collapse in collateral values and unsustainable borrowing by households and the sheltered sectors, much of it in foreign currency. Nonperforming loans rose to about 17 percent of total lending in 1992, a quarter of which was written off as credit losses. The Government has taken corrective steps, including direct capital infusions, the establishment of a Government Guarantee Fund (GGF), and strengthened banking supervision.

Unfortunately, the report was not very clear about the timing of the crisis. It said, "The markka came under severe pressure in the fall of 1990, and the authorities responded by increasing interest rates, with the inevitable side effect of putting pressure on private sector balance sheets, including those of the financial sector" (1993, p. 2); but the previous report had not noted any significant financial distress as of mid-1991. And the 1993 report said that the depreciation, which it viewed as a major cause of the crisis, had begun with a devaluation in November 1991, followed by a decision to abandon the fixed exchange rate in September 1992 (1993, p. 2). It also reported that the government had put substantial resources into the banking system by the end of 1992 (1993, p. 3n). Thus, the report was not particularly informative about whether notable distress began in the second half of 1991 (as described by the alternative chronologies) or in the first half of 1992 (as described by our new chronology). Consistent with this ambiguity, a much later report referred at one point to "the 1992 banking crisis" and at another to "the 1991–92 banking crises" (1996, pp. 12 and 19).

The 1993 report also suggested that in mid-1993, financial distress was still significant, but diminishing (1993, p. 13):

> The authorities noted that ... [c]onsiderable progress had been made on the incentives associated with bank support—some private banks are turning to capital markets to raise equity—and banking supervision had been strengthened. Finally they pointed to their efforts to reprivatize or to merge the banks taken over by the GGF and to support the needed further consolidation of the Finnish banking industry. ... Some recent estimates suggested the need for additional official support of at least Fmk 25 billion for the 1993–95 period.

Similarly, it said, "With the institutional framework for securing the banking system now in place, credit losses should be acknowledged quickly and fully .... As a positive development, some commercial banks are turning to the capital market to raise equity" (1993, p. 16). However, the report referred to "the fragility of the financial sector" (1993, p. 11), and noted the risk of developments that might "deepen the problems in the banking system and slow the recovery of the economy" (1993, p. 15). It also said: "Looking forward, officials were concerned that as activity rebounded a credit crunch could emerge because of inadequate bank capital rather than more conservative lending practices" (1993, p. 13). Thus, the evidence in the 1993 report did not differ sharply from our new chronology, but it did suggest that the peak of the distress may have occurred somewhat earlier than 1993:1.

In the next three reports, the tone of the IMF staff was that the financial system was considerably healed, but still not fully healthy and still fragile. The banking system received much less emphasis in the 1994 report (dated July 29, 1994) than it had in 1993. A long paragraph said (1994, p. 14):

> Officials reported being satisfied with progress in the financial sector. The

> underlying financial position of Finnish financial institutions was improving, supported by ongoing rationalization in the industry. Commercial bank capital has been strengthened by successful equity issues that also serve to alleviate concerns about a possible credit crunch. Moreover, after establishing an asset management company to oversee the disposition of its "bad assets", the authorities successfully sold the Savings Bank of Finland, which the Government had acquired in a rescue operation. Bank supervision has been bolstered and transferred to the Bank of Finland. Both the staff and the authorities agreed, however, that the financial system remained vulnerable and that a sharp increase in interest rates could quickly lead to further serious difficulties.

The only other references to financial sector problems in the report were scattered mentions of the budgetary costs of support for the banking system (1994, pp. 3, 4, and 5n).

The 1995 report (dated July 28, 1995) was more sanguine. It referred to "a banking crisis" in discussing the events of the early 1990s (1995, p. 2). But its only discussion of current banking issues came in a brief paragraph under the heading of "Other structural issues" that implied that the financial system was largely, though perhaps not entirely, healed (1995, pp. 18–19):

> Banking system Profitability is improving only slowly. The recent sale of Skopbank, that had been taken over by the Government during the banking crisis, marked the end of the crisis phase. Officials provided assurances that the merger of Finland's two largest commercial banks, needed to promote rationalization, would not adversely affect competition.

Perhaps surprisingly, the 1996 report (dated July 1, 1996) expressed more concern about the vulnerability of the banking system. It said, "the banking system needs to strengthen further after the 1992 banking crisis" (1996, p. 12); "high and unstable interest rates would undermine the recovery of the banking system" (1996, p.15); and "the banking system continues to be fragile" (1996, p. 20). In a more extended discussion, its tone was somewhat more upbeat (1996, p. 19):

> On the banking system, following the significant support provided by the authorities after the 1991–92 banking crises, banks' conditions had improved: the capital adequacy ratio is now well above the required 8 percent, and credit losses have dropped to normal levels. However, banks' profit and loss accounts remain weak: an overall loss was registered in 1995 and only a balanced position is expected for 1996. This is due to still excessive operating costs and low net interest income, the latter arising from the weakness of the demand for loans. The authorities argued that, with stable macroeconomic conditions, these problems will be gradually overcome .... Banks were now more willing to lend and credit rationing could no longer be regarded as a problem. ... Altogether, no further assistance from the Government was anticipated.

Thus, the evidence from the later Article IV reports suggests that some distress may have lingered beyond 1994:1 (which is the last period for which our new measure shows positive distress). But it provides little support for the view of the Reinhart and Rogoff chronology that a full-blown crisis continued through 1994, or of the IMF chronology that one lasted through 1995.

***Wall Street Journal*.** The evidence from the *Wall Street Journal* largely supports what we find in the *OECD Economic Outlook*. The only noteworthy difference is that the *Journal* describes some distress starting one half-year earlier than the *Economic Outlook* (which matches the start date of the two alternative chronologies). But, like the *Economic Outlook*, it does not suggest severe distress until the second half of 1992, and it points to the distress easing rapidly after the first half of 1993.

The first relevant articles yielded by our search algorithm are from the fall of 1991. In September, the *Journal* reported that the central bank had taken over the country's fourth biggest bank "in a step meant to buttress international confidence in the Finnish financial system" (9/20/91).[6] The article also mentioned that the central bank had injected capital into the bank the previous fall. In October, a round-up of developments in credit ratings described a downgrade of three Finnish banks (10/28/91). A few days later, the *Journal* devoted a long article to banking problems in Scandinavia. It said, "Under the weight of surging loan losses, major banks from Oslo to Helsinki are crumbling," with governments fearing that a major bank failure "might shatter international confidence in their financial systems" (11/1/91). But the only Finnish bank the article mentioned was the bank that had been taken over in September. The article also said that in Finland, "Major banks are well capitalized, but a long recession could have devastating effects, banking analysts warn." Finally, in December, a brief article reported that the country's largest bank had revised up its estimates of losses for the year, but was still thought to be adequately capitalized (12/4/91). Thus, the evidence suggests some distress in late 1991, but not a full-fledged crisis.

According to the *Journal*, the health of Finland's financial system deteriorated somewhat over the next six months. A long article in February described serious problems in the economy, but made no mention of financial distress (2/13/92). But the next month, the *Journal* reported, "Finland unveiled a 29.4 billion-markkaa ($6.53 billion) package for the beleaguered banking industry .... Despite ballooning losses in the past few years, most Finnish banks remain strongly capitalized. Thus, much of the money in the precautionary package might never be used" (3/19/92). It described one purpose of the package as to "head off the threat of a credit crunch." Two months later, it said, "Banks' lending losses in Norway, Sweden and Finland remain at record levels" (5/11/92); and in early June, the country's largest bank reported bigger-than-expected losses because of its "ballooning portfolio of nonperforming loans" (6/1/92). The June article also said, "No bank has yet applied for funds" from the program announced in March; but it quoted one bank executive as saying, "some banks, mainly local ones, will need this support package immediately," and it said that the largest bank was "looking closely at the preference capital offer" from the fund.

The evidence from the *Journal* suggests that the distress increased substantially in the fall of 1992 and rose slightly further in the first half of 1993. In October 1992, it reported (10/16/92):

> Several of Scandinavia's biggest banks reported huge pretax losses for the first eight months, slipping closer to acute financial straits that could prompt state bailouts.
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> The worst news came from Finland, where the nation's two biggest banks suffered record losses and a group of smaller banks posted very weak results. Senior

[6] Because the ProQuest Newspapers database search of the *Wall Street Journal* usually does not give page numbers from the hardcopy of the paper, we only report the date of the article. When there are multiple articles on the same day that are returned by our search, we give the article title as well. In cases where the page number is given and the article was on the front page, we note that fact.

> banking regulators warned that a 28 billion Finnish markkaa ($6 billion) reserve for the financial sector established earlier this year probably would run out of money within 12 months.

In December (which is after the period covered by the 1992:2 *OECD Economic Outlook*), the *Journal* reported that despite an improving economy, the Prime Minister "said the banks may need a 15 [b]illion-markka bailout next year, in addition to the 28 billion-markka rescue package already provided" (12/10/92). In February 1993, a brief article reported that the country's largest bank reported large losses for 1992 and would almost certainly need more state support (2/9/93). Finally, in June, in a generally upbeat article about Finland's economy, the *Journal* described an analyst as saying that "[t]he crippled banking industry has reined in lending, so a credit crunch could hold back industrial investment and thus the scope of economic expansion" (6/7/93).

Thereafter, the information from the *Journal* suggests improvement. In August, it reported, "This country's two biggest banks unveiled ambitious international capital-raising plans—backed by state guarantees—in the clearest sign yet that Finland's banking crisis may be easing" (8/20/93). We found no relevant articles over the subsequent 16 months; the absence of any developments that the *Journal* viewed as newsworthy is an indication that it did not perceive major financial distress. Then in January 1995, a brief entry in the "World Wire" round-up was titled, "Recovery Eludes Finnish Banks," and reported, "Earnings reports by two commercial banks in Finland indicate the sector hasn't emerged from the Nordic banking crisis," and that "[w]hile banks in Sweden and Norway are expected to post healthy profits for 1994," the two Finnish banks "remained sharply in the red last year because of big provisions to cover lending losses" (1/26/95). Finally, in June, in a report on the acquisition by a Norwegian bank of portions of the Finnish bank that had been taken over in September 1991, the *Journal* referred to government spending to support the banks largely as something that had happened in the past rather than as ongoing (6/9/95). Thus, the evidence from the *Journal* is not clear-cut for 1994 and early 1995. Consistent with the *Economic Outlook*, it is suggestive of large improvement. But consistent with the IMF chronology, it is possible that there was some residual distress through early 1995.

JAPAN

The three chronologies differ substantially for Japan. Our new measure shows at least some financial distress in every half year from 1990:2 through 2005:1, with peak distress in 1998 and again in 2002. Reinhart and Rogoff date the crisis as running from 1992 to 2001, while the IMF chronology dates it as running from the second half of 1997 to 2001.[7] The financial concerns identified in the Bank of Japan's *Annual Review*, the staff reports of the IMF Article IV consultations, and the *Wall Street Journal* strongly support the view that distress peaked in both 1998 and again in the early 2000s. They also support the very prolonged low-level distress—both before and after the IMF chronology's crisis period—shown by the new measure.

***Central Bank Reports*.** The *Bank of Japan Annual Review* was first published in

[7] Laeven and Valencia (2013, pp. 256 and 259) state that the IMF end date reflects their practice of limiting the length of crises to five years. Their notes on the Japanese crisis describe developments through 2002 (2014, p. 102).

August 1991.[8] The report for a given year (say 1991) is for the previous fiscal year, which runs from April 1 to March 31 (so from April 1990 to March 1991 for fiscal year 1990). The early volumes are reasonably short (roughly 50 pages), but quite substantive and forthright. Starting with the 1994 volume, the *Annual Review* is substantially more detailed.

The 1991 report, which covers the year ending in March 1991, gave only subtle hints of problems in the Japanese financial system. It mentioned that "[p]rices of assets including land and stocks either stopped rising or started to decline in fiscal 1990" (p. 10). The report suggested that this development might be having a small impact on credit supply, saying (p. 12):

> Turning to financial institutions and securities companies, declines in stock prices, narrowed margins, and reduced brokerage and underwriting commissions inevitably lowered their earnings for fiscal 1990. Under these conditions, financial institutions (whose capital ratios include latent asset value of stocks which had temporarily declined) have been trimming their asset growth mainly by restraining unprofitable transactions since the middle of the fiscal year. Although declines in stock prices have had some effect on the management of financial institutions and securities companies, their financial bases have not been greatly affected, since these firms have been accumulating retained earnings from high profits of the past several years.

The Bank of Japan did not suggest that these financial developments were having a significant effect on the economy. Instead, it emphasized the surge in oil prices accompanying the Gulf War, and the subsequent rise in interest rates to fight inflation, as the source of the fact that "the growth rate of the economy moderated in the latter half of the fiscal year" (p. 1, see also p. 5) .

The 1992 report, which covers the year ending in March 1992, conveyed more sense that problems were brewing in the Japanese financial system, but still suggested that distress was fairly mild. The report discussed the slowdown in the Japanese economy in fiscal 1991, and attributed it to a number of factors, such as tight monetary policy and inventory adjustment (1992, p. 2). The report noted that "the current adjustment phase has been accompanied by a fall in the prices of assets such as land and stocks," and that "the impact of the decline in asset prices has significantly clouded the business outlook for financial institutions and real estate firms" (1992, p. 10). It went on to say that "the non-performing assets of financial institutions increased with the fall of asset prices, and financial scandals surfaced one after another. These could impair confidence in Japan's financial system as a whole" (1992, p. 12). At the same time, the Bank did not mention any effects on lending, and seemed to believe that the banks could solve their own problems—saying that "each market participant must live up to the principle of self-responsibility" (1992, p. 12). Thus, the Bank of Japan appears to agree with the OECD that there was only a modest amount of financial distress in late 1991 and early 1992.

The 1993 *Annual Review* suggested at least some financial distress in the period April 1992 to March 1993. It said: "In fiscal 1992, measures to secure the stability of the financial system were the major concerns of the policy task. Under these circumstances, various efforts to stabilize the financial system were intensified by the financial institutions and authorities concerned, mainly to cope with the increasing nonperforming assets of financial institutions" (1993, pp. 10–11). The report suggested that these problems were affecting credit supply (at least, relative to normal), saying: "the lending stance of financial institutions continues to be

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[8] See Governor's opening letter in the 1995 *Annual Review*. The full title of the source is the *Bank of Japan Annual Review*. It is sometimes cataloged under the Japanese name for the central bank, Nihon Ginkō.

less aggressive compared with the previous phases of monetary ease" (1993, pp. 18–19). There was also reference to "a series of measures aimed at restoring confidence in the financial system," which was announced by the Ministry of Finance in April 1992 (1993, p. 46). The fact that the Bank of Japan saw effects on lending and mentioned the existence of support measures suggests that, like the OECD, it believed that distress was at least somewhat higher in fiscal 1992 than in fiscal 1991.

The *Annual Review* for 1994 suggested that financial distress was still present in fiscal 1993, but had declined slightly from the previous fiscal year. The report said that "borrowing from governmental financial institutions has increased notably among small and medium-sized corporations," in part because of "measures which expanded credit limits and eased lending condition" (1994, p. 17). This suggests that the government felt the need to take measures to provide alternative sources of credit supply. There was also a long discussion of the steps that banks needed to take to cope with the problem of nonperforming assets (1994, p. 26). At the same time, there was reference to the fact that the spread between lending rates and financing costs had declined somewhat, suggesting slightly more accommodative lending attitudes (1994, p. 22). And, in the long discussion of issues and solutions in the Japanese economy, dealing with financial concerns was given far less prominence than the need for structural changes and deregulation (1994, pp. 53–55).

The 1995 *Annual Review*, which covers the period April 1994 to March 1995, conveyed the sense that low-level financial distress continued throughout the 1994 fiscal year. The opening summary said (1995, p. 8):

> In Japan's financial system, banks' nonperforming loans continued to be the issue of utmost importance. Banks have actively charged off bad assets and accumulated provisions against them, which resulted in declines in the publicly disclosed amount of nonperforming loans outstanding as well as increases in loan loss reserves. However, the problem of nonperforming loans is still halfway to being resolved.

The summary also mentioned that two Tokyo credit cooperatives failed during the year (1995, p. 8). In the more detailed discussion of financial conditions, the report said that, although strides had been made in dealing with the issue, "banks have yet to liquidate their nonperforming assets so as to improve cash flows. In these circumstances, the Bank of Japan will continue to take appropriate actions to sustain the stability of the financial system by preventing systemic risk, i.e., the risk of unrest at an individual financial institution spreading into the entire financial system" (1995, p. 25). In discussing weak bank lending, the report emphasized low credit demand and did not mention restrictions on credit supply (1995, p. 21). This is consistent with a relatively modest level of financial distress.

The discussion of financial conditions in the 1996 *Annual Review* suggested that financial distress rose somewhat over the period April 1995 to March 1996. The Governor's foreword said succinctly: "Fiscal 1995 was a challenging year for both the economy and the financial system of Japan" (1996, Foreword). The volume summary discussed the fact that "eleven small financial institutions have failed since the end of 1994. With a view to stabilizing the overall financial system, the Bank of Japan has provided funds for some of the resolutions" (1996, pp. 10–11). It also suggested that the nonperforming loan problem was restricting credit supply, saying: "In the financial sector, owned capital has in effect been damaged by nonperforming assets, which has prevented a number of Japanese financial institutions from actively undertaking business risks. These balance-sheet adjustment problems have tended to limit Japan's economic growth"

(1996, p. 11). Because of particular problems with the *jusen* (housing loan companies), the government set up a resolution scheme in December 1995 that included substantial government funds (1996, p. 37). In a long, somewhat theoretical discussion of balance-sheet adjustments in the financial sector, the report discussed evidence consistent with the prediction that "the availability of funds may be constrained for small and medium-sized firms and individuals" (1996, p. 79). The presence of financial institution failures, government rescue measures, and possible lending effects are all consistent with a modest to moderate level of financial distress in late 1995 and early 1996.

The assessment of the 1997 *Annual Review* was reasonably upbeat. The Governor's foreword said (1997, Foreword):

> Japanese financial institutions disposed of a significant amount of nonperforming loans through write-offs and provisioning in fiscal 1996. Moreover, in June, a package of financial reform bills, including measures to address the *jusen* problem and to reform the deposit insurance system, was legislated. Meanwhile, failed financial institutions were resolved without delay, and the Bank of Japan, with full commitment to restoring and ensuring the stability and sound functioning of the financial system, closely cooperated in the resolution schemes, providing central bank funds when such funds were indispensable for avoiding systemic risk.

While reiterating these positive developments, the overview section also said that in the second half of fiscal 1996 (October 1996 to March 1997), "financial markets during this period adopted a more cautious stance" (1997, p. 13), perhaps suggesting continued or increased restrictions in credit supply. There was an extended discussion later in the volume of the decline in lending during the year, but it did not take a clear stand on whether the decline reflected low demand or low supply of credit (1997, pp. 82–85). The report concluded with the statement: "It is therefore necessary to restore domestic and overseas confidence in the Japanese financial system as quickly as possible" (1997, p. 88), suggesting that confidence was currently weak. Taken together, this discussion suggests some financial distress, but not extreme, and possibly less than in the previous fiscal year.

The fact that all six *Annual Review*'s for the period 1991 to 1997 reveal some financial distress is certainly consistent with the new measure derived from the OECD, which also shows mild to moderate distress in this period. It is also somewhat supportive of the Reinhart and Rogoff chronology, which shows the crisis starting in 1992. It is somewhat at odds with the IMF chronology, which does not date the start of the Japanese crisis until late 1997. However, in fairness to the IMF, the level of distress was arguably small enough that it did not yet rise to the level of a systemic crisis. In this regard, the case of Japan provides strong support for the need for a scaled measure which can identify both low-level distress and crisis-level distress.

According to the 1998 *Annual Review*, financial distress became much more acute in the period April 1997 to March 1998. The Governor's foreword summed up the situation saying (1998, Foreword):

> Failures of large financial institutions in the autumn increased anxiety about the stability of Japan's financial system and heightened market participants' awareness of the credit risk of financial institutions. Meanwhile, financial institutions reinforced their cautious lending attitude. Under these circumstances, the government legislated for the use of public funds to ensure the stability of the financial system and restore the financial intermediary functions.

A later section of the volume stated (1998, pp. 61–62):

> some disturbances occurred in the financial system. Causes of the disturbances included the further drop in stock prices affected by a number of failures of banks and securities companies in November against the background of the prolongation of the efforts to dispose of nonperforming loans. As a result, there were some unstable developments in the market such as the rise in some interest rates reflecting pressure coming from intensified market concerns over credit and liquidity risks. Around the fiscal year-end, however, the market gradually regained stability as a result of an ample supply of funds injected by the Bank and implementation of financial system stabilization measures involving the uses of public funds worth ¥30 trillion.

The report also referred to the fact that "[t]he attitude of private-sector financial institutions toward lending grew particularly restrictive from November 1997" (1998, p. 142). At the same time, the report said that "a massive reduction in lending, which was once anticipated, did not occur" (1998, p. 143). Furthermore, though financial factors were certainly prominent in the discussion of the reasons for Japan's slow growth, other factors, such as the cautious spending behavior of households, were given more emphasis (1998, pp. 58–62). Thus the Bank of Japan's report suggests substantial financial distress in late 1997 and early 1998, but perhaps not quite as much as the OECD reported.

According to the 1999 *Annual Review*, financial distress increased further in fiscal 1998, particularly in the fall of 1998. The opening summary said that "the failure of a number of small financial institutions in May and June, followed by the revelation of financial difficulties at Long-Term Credit Bank of Japan, impaired domestic and overseas confidence in Japanese financial institutions" (1999, Summary). "Fiscal 1998 saw a deterioration in Japan's economy and heightened concern about the stability of Japan's financial system. In view of this situation, various efforts were made to avert a deflationary spiral and to halt the economic deterioration, as well as to restore confidence in the financial system" (1999, Summary). The financial troubles were thought to have reduced credit supply; the report said: "From the autumn of 1998, the lending attitude of Japanese private banks became increasingly cautious against the background of a harsh market environment for Japanese financial institutions and deteriorating corporate earnings" (1999, p. 56). A number of measures were taken to ease the situation; for example, in August, the government decided "to take measures to alleviate the credit crunch, including an expansion of the credit guarantee system" (1999, p. 22). Also, "Long-Term Credit Bank of Japan and Nippon Credit Bank were temporarily nationalized in October and December, respectively, and a total of ¥7.5 trillion in public funds was injected into 15 major banks in March 1999 to boost their capital bases" (1999, Summary). The references to severe financial problems, effects on lending and economic activity, and the need for widespread rescue measures are all consistent with there being a severe crisis in Japan, particularly in late 1998. This matches the behavior of our measure of distress derived from OECD narrative accounts and is consistent with the IMF's dating of the Japanese systemic crisis. The 1999 *Annual Review* did suggest that financial conditions improved in early 1999. It said that "[a]fter the turn of the year, the anxiety about the financial system gradually subsided" (1999, Summary). The OECD also saw improvement in early 1999.

The 2000 *Annual Review* suggested that financial distress continued to fall throughout the rest of 1999 and into early 2000. The summary said: "the bad loan problem of financial institutions remains to be solved. However, confidence in the system was restored to a significant extent both at home and abroad" (2000, Summary). The report also commented that "[t]he Japan premium ... had disappeared since the spring of 1999 due partly to (1) the stabilization of the Japanese financial system reflecting the injection of public funds in financial institutions' capital, and (2) the abatement of concerns regarding liquidity risks" (2000, p. 44). At the same time, it is clear that the Bank of Japan did not believe that financial conditions were completely back to normal. There were references to the fact that "a fair number of small and medium-sized financial institutions failed in fiscal 1999" (2000, p. 66) and that private banks "basically maintained their cautious lending posture" (2000, p. 54). Nevertheless, the sense of improvement was unmistakable. For example, right after the previous statement, the report added: "However, banks, mostly large banks, gradually increased their willingness to lend because of an easing of earlier constraints by banks' own difficulties in raising funds and capital limitations" (2000, p. 54). Also, although "private banks' cautious lending stance was a factor behind the contraction in private bank lending throughout the second half of fiscal 1999, ... at a more basic level it was firms' sluggish demand for funds that affected the development of banks' lending" (2000, p. 54). This sense that distress was present but substantially lower matches very well the much lower (but nonzero) levels of distress we derive from the narrative accounts of the OECD.

The 2001 *Annual Review* did not place particular emphasis on financial conditions. The general sense conveyed was that financial repair was continuing, but far from complete. The summary stated (2001, Summary):

> private financial institutions continued to dispose of massive NPLs. Meanwhile, new NPLs emerged due to the delay in a full-fledged recovery of the economy, and on balance, the outstanding amount of NPLs did not decrease markedly. To restore confidence in the financial markets and to improve the functions of financial institutions, they need to remove NPLs from their balance sheets and make appropriate loan-loss provisioning.

Likewise, later in the report, the Bank of Japan said (2001, p. 74):

> Efforts to revitalize and restore confidence in Japan's financial system continued throughout fiscal 2000. There were the following notable developments: (1) a wave of tie-ups and mergers ...; (2) the capital of regional banks and regional banks II was increased through injection of public funds and by other means following the increase in the capital of a number of large banks; and (3) bankruptcies of small financial institutions ... continued while steady progress was made toward the resolution of failed financial institutions that were placed under special public administration (nationalization) or under the management of financial reorganization administrators.

Lending was viewed as "sluggish" because of a mixture of supply and demand forces. The report stated: "As shown in the various surveys conducted on firms and financial institutions, private banks remained willing to increase lending mainly to blue-chip firms" (2001, p. 33). The implication is that lending to smaller and riskier firms was still constrained. Based on these accounts of loan problems, capital infusions, and limited loan availability, it appears that the Bank of Japan saw some financial distress in 2000 and the first quarter of 2001, but perhaps less than in the previous year.

The 2002 *Annual Review* suggested that Japan's financial distress increased noticeably in fiscal 2001 (from April 2001 to March 2002). The opening paragraph of the Governor's foreword said: "views at home and abroad on the Japanese financial system were severe against the background of the nonperforming-loan (NPL) problem" (2002, Foreword). The more detailed summary said (2002, Foreword):

> Major banks in particular disposed of a far greater amount of NPLs than envisaged initially. Even so, the outstanding amount of NPLs held by financial institutions did not decrease greatly, due to the emergence of new NPLs and further deterioration in the quality of existing NPLs. At the same time, the financial strength of these institutions weakened from the previous fiscal year as a result of appraisal losses on stock holdings as well as NPL disposals over the years. Reflecting this situation, views at home and abroad on Japan's financial system remained severe.

Later in the report, the Bank said: "market participants both at home and abroad considered that Japan's financial system was in a severe situation as evident from a steady decline in bank stocks for most of fiscal 2001 and the widening of yield differentials between bank debentures and Japanese government bonds" (2002, p. 29). Reference was made to the fact that "financial institutions and investors were becoming more cautious" (2002, p. 20), and that "recent capital market developments at home and abroad might adversely affect the real economy" (2002, p. 19). To cope with the deteriorating economy, the Emergency Economic Package was released on April 6, 2001, and another package was released on June 21, 2001; "both placed priority on (1) resolution of the NPL problem in parallel with the problem of firms' excessive debts, and (2) establishment of an institutional framework to limit banks' stockholdings" (2002, p. 32). There were also further injections of public funds to strengthen financial institutions' capital bases (2002, p. 31). Both the tone and the specific references to economic fallout and rescue measures suggest that the degree of financial distress in this year was quite high.

The 2003 *Annual Review* conveyed a sense that financial conditions were still difficult in the period April 2002 to March 2003. The opening summary stated: "The situation remained severe for Japan's financial system during fiscal 2002, with financial institutions making substantial disposals/write-offs of their nonperforming loans (NPLs) and suffering decreases in the value of their stockholdings" (2003, p. 12). However, there was little discussion of restrictions in lending or adverse effects on the economy; indeed, in explaining the absence of recovery in the summer of 2002 and after, much more emphasis was placed on international developments, such as the military action against Iraq (2003, pp. 10–11). One sign that the Bank was concerned about financial conditions is that in October 2002, both the Bank of Japan and the government "announced a series of new policies for maintaining financial system stability," particularly for dealing with the problem of nonperforming loans (2003, p. 35). One component was the Bank's decision to purchase stocks held by banks, in order to "reduce their exposure to the risk of stock price fluctuations" (2003, p. 39). At the same time, "many major financial institutions raised capital from external sources in fiscal 2002" (2003, p. 12), which could be a sign that conditions were easing somewhat. Based on the Bank of Japan's report, it is clear there was still substantial financial distress in 2002 and early 2003. This does not fit well with the alternative chronologies' view that the crisis ended in the second half of 2001. In contrast, the combination of the 2002 and 2003 Bank of Japan reports accords fairly well with the OECD's view, which saw a second peak in distress in Japan in the first half of 2002.

The 2004 *Annual Review* indicated that there was significant improvement in the health of the Japanese financial system over the period April 2003 to March 2004. For example, in the summary, it said (2004, p. 12):

> Looking back at the Japanese financial system during fiscal 2003, although there are still problems left for financial institutions to deal with, persistent efforts to achieve a sound banking sector have started to bear fruit, particularly among major

> banks.
>
> During fiscal 2003, the amount outstanding of nonperforming loans (NPLs) decreased markedly, particularly among major banks. Financial institutions' profitability improved, although further strengthening and greater consistency are required.

At the same time, there were references to the fact that "stock prices remained weak and volatile, and there was a risk that these might negatively affect financial markets and economic activity" (2004, p. 23). Also, the "Financial System Management Council was convened twice during fiscal 2003 to prevent financial crises from materializing" when Resona and Ashikaga Banks got into trouble (2004, p. 37). The Bank of Japan's view that financial distress was still present but decidedly lower in 2003 and early 2004 is consistent with the narrative account of the OECD.

The descriptions in the 2005 *Annual Review* suggested that the Japanese financial system was greatly improved in fiscal 2004. The opening summary said: "The soundness and stability of the Japanese financial system as a whole recovered further, as financial institutions made considerable progress in solving the nonperforming-loan problem. The situation allowed the full removal of blanket deposit insurance to be smoothly implemented in April 2005 without causing disturbances" (2005, p. 6). The report discussed that "[b]y the end of fiscal 2004, the Bank had completed some crisis management measures, in response to favorable changes in conditions in the financial system" (2005, p. 59). For example, it stopped its program of purchasing stock from banks because it had "broadly achieved the expected results" (2005, p. 59). The report also suggested that the healthier conditions were allowing banks to begin lending again. It said (2005, p. 55):

> With the decline in both credit risk and market risk from stock price fluctuations, and the easing of constraints on capital, ... financial institutions gradually started to adopt more assertive business strategies. Specifically, they increased lending to corporate customers, especially small and medium-sized firms, repaid previous injections of public funds, conducted mergers with other financial institutions, and increased business alliances with other financial service providers such as nonbanks.

Taken together, these comments suggest that while financial distress may not have been down to zero by early 2005, it was very low.

The 2006 *Annual Review* strongly suggested that financial conditions were essentially back to normal by early 2006. It said (2006, p. 50):

> With the nonperforming-loan (NPL) problem almost overcome, confidence in the Japanese financial system was restored both at home and abroad in fiscal 2005. The full removal of blanket deposit insurance was implemented as scheduled in April 2005 without major disruption. Subsequently, the financial system has been generally stable, with the economy remaining on a recovery trend.

It went on to say that "by the end of March 2005 all major banks had achieved the target set in October 2002 ... of halving the NPL ratio from its level at the end of March 2002" (2006, p. 51). The Bank's view was that the greater health of the financial system was causing an increase in credit supply. It said (2006, p. 51):

> constraints on financial institutions' activities due to capital adequacy concerns have

> eased further, reflecting the decline in credit costs due to improved loan portfolios, increased profits, and wider means of raising capital. Against this background, bank lending stopped declining and started to increase in fiscal 2005, as the lending stance of financial institutions became more active and credit demand in the private sector stopped declining.

Overall, conditions were sufficiently good that "the Bank clarified its basic stance regarding financial system policy, specifying that it would shift its focus from crisis management to supporting private-sector initiatives aimed at providing more efficient and advanced financial services via fair competition, while maintaining overall system stability" (2006, p. 54). Thus, like the OECD, it appears that the Bank of Japan believed that financial distress was finally gone by the 2005 fiscal year.

***IMF Article IV Reports*.** The IMF Article IV reports strongly support the timing and severity of financial distress described by the *OECD Economic Outlook*. The 1990 report (dated June 8, 1990) discussed substantial turbulence in financial markets, particularly the Japanese stock market, but no troubles in financial firms or disruptions in credit supply. There was discussion that the rapid rise in land prices over the previous four years had "increased social inequities, raised housing costs, exacerbated inflationary expectations, and—because loans could be collateralized through inflated real estate holdings—led to unduly easy lending practices by commercial banks" (1990, p. 14). Monetary policy had moved toward contraction in 1989, but "the present level of interest rates had not yet succeeded in slowing credit expansion" (1990, p. 14). The Article IV report concluded that "[o]n the whole, the economy appeared to have emerged from the period of financial market turbulence with its fundamental strength intact" (1990, p. 14). Thus, like the OECD, the IMF report identified no signs of financial distress through the first half of 1990.

The 1991 report (dated June 19, 1991) was noticeably less sanguine than that of the previous year. The introduction stated: "Asset markets have regained some stability, but the risk persists that further price declines, particularly in the real estate sector, may affect confidence in the financial system and depress domestic demand beyond the staff's expectations" (1991, p. 1). The IMF staff reported that Japanese "authorities believed that the problem of financial fragility in Japan had been much exaggerated" and repeated their reasons for optimism (1991, p. 7), but did not appear completely persuaded. In reviewing the economic forecast, the report said that "[a]n important area of uncertainty regarding the near-term economic outlook is the extent to which tighter monetary conditions, the sharp decline in equity prices, and a possible drop in land prices would lead to a deterioration in the financial position of the nonfinancial business sector as well as instability in the financial system" (1991, p. 26). The IMF staff also expressed concern "that the drop in equity prices and interest rate developments may be exacerbating the tightening in credit market conditions, by weakening commercial bank earnings and capital positions in the face of the need to meet the BIS capital adequacy standards" (1991, p. 28). Given that the Article IV report listed financial instability as a key risk to the forecast and suggested that balance sheet problems at banks could be reducing credit availability, it seems clear that, like the OECD, the IMF report saw noticeable financial distress in late 1990 and early 1991.

The 1992 report (dated June 17, 1992) again discussed signs of significant, but not extreme financial distress. The section on monetary policy was somewhat upbeat, stating that "[w]hile banks have become more cautious in their lending, especially for real estate purposes, there are no signs of a credit crunch" (1992, p. 13). A special section on financial sector issues, however, was more explicit about possible problems. It said (1992, p. 14):

> The decline in land prices has led to a deterioration in the quality of Japanese banks' loan portfolios, while, at the same time, falling equity prices have eroded their capital position. The weakening of banks' financial position and the strains caused by financial liberalization have caused concern about the health of the financial system and its ability to support a renewed economic upswing.

There again seemed to be some tension between what Japanese authorities believed and the views of the IMF staff. The report said: "While some banks are likely to face difficulties, the authorities believe that the situation is manageable. There is, however, a risk that bad loans could eventually rise well above the current official estimate, thus significantly increasing the strains in the financial system" (1992, p. 14). The IMF staff ultimately seemed to agree that "[d]espite elements of risk, the provision of adequate financial resources for a recovery would not seem to be seriously impaired. Banks are expected to meet loan demands of their traditional, large customers, while public financial corporations and smaller financial institutions ... would provide an alternative source of funds for other companies" (1992, p. 15). The report concluded that "[j]udgments as to the state of the financial system are difficult to make, but there would not seem to be an immediate threat to financial stability. However, risks are clearly present and, in the extreme case, they could translate into a need for some official support for the financial system" (1992, p. 18). This extended discussion of risks, more cautious lending behavior, and possible need for government support are all consistent with the view of the OECD that financial distress was present in late 1991 and early 1992, and more severe than in the year before.

The 1993 report (dated June 22, 1993) described financial conditions in late 1992 and early 1993 in terms very similar to those in the 1992 report. It discussed the fact that short-term forecasting was very difficult because of unusual factors, including "the weakened state of the financial system caused by a large amount of nonperforming loans" (1993, p. 5). It also referred to "an increase in the intermediation spread on bank lending since 1990" (1993, p. 4). The report suggested at least some effect of these developments on credit supply, saying: "While the new capital adequacy guidelines had reinforced the cautious lending attitude banks had recently shown, neither the authorities nor other observers saw evidence of a widespread 'credit crunch,' although they noted that lending constraints had adversely affected access to credit by small- and medium-sized enterprises" (1993, pp. 14–15). However, the IMF staff appeared to agree with the authorities that the risks of a widespread meltdown were relatively small. The report said: "The staff observed that the banking system as a whole appeared capable of absorbing a broad range of estimates of bad loans and resulting losses. However, the distribution of losses among banks was not uniform, and significant difficulties at the level of individual institutions could not be ruled out" (1993, p. 14). Taken together, the conditions reported suggest that, like the OECD, the Article IV consultation found signs of substantial, but still contained, financial distress in late 1992 and early 1993.

The descriptions of financial conditions in the 1994 Article IV report (dated July 1, 1994), though similar to those in the 1993 report, were slightly more upbeat. As before, there was discussion of the fact that "[c]ompared with other cyclical downswings, the rise in intermediation spreads has been large, apparently due in part to efforts by banks to raise operating profits to offset losses on bad loans" (1994, p. 15). Similarly, "weaknesses in the financial system" were given as one of the main risks to Japanese recovery (1994, p. 6). But the report conveyed the sense that financial concerns might be resolving somewhat. It said (1994, pp. 17–18):

> The pressure on the financial system from the bad loan problem remains

> substantial, although it is not evenly distributed across banks. ... However, there was a widely shared view that the growth of bad loans had tapered off and that, despite limited disclosure, the dimensions of the problem had become clearer. There was also broad agreement between the authorities and the private sector that the financial sector problems were not a serious drag on the recovery, although small- and medium-sized enterprises had found it more difficult to borrow.

At the same time, "[t]he staff welcomed the authorities' recent initiatives [to deal with problem loans], but also argued for further measures to reduce the substantial risks and uncertainties involved in the present approach" (1994, p. 19). Taken together, these descriptions suggest definite continuing financial distress, but perhaps somewhat less in early 1994 than had previously been the case. This is consistent with the views of the OECD underlying our new measure of financial distress, which shows higher distress in 1993 than in the first half of 1994.

The 1995 report (dated June 30, 1995) contained descriptions of somewhat more serious financial problems. The opening section said: "Measures to address strains in the financial sector are critically needed. ... In particular, a contingency plan should be formulated to rescue institutions in case of a systemic threat—including the use of public funds if necessary" (1995, pp. 2–3). In the more detailed discussion of the banking sector, the IMF staff seemed somewhat more sanguine, though still concerned. It stated (1995, p. 28):

> It does not appear, however, that the current weakness of the recovery can be directly attributed to financial sector problems. While bank intermediation spreads have widened, their current level appears to be consistent with normal cyclical developments; also, business surveys suggest that banks are willing to lend. Nevertheless, the slow pace in resolving the bad loan problem is a source of concern: it heightens the vulnerability of the financial sector to systemic risk.

The report lauded the Japanese authorities for putting out the first official estimate of the size of the bad loan problem. It said: "While the package [of financial sector policies], for the most part, does not contain specific new proposals, its announcement represents a welcome recognition of the difficulties in the financial sector. Taking concrete steps to resolve them must now be a high priority" (1995, pp. 28–29). Overall, the discussion of some effects of problem loans on lending and the mention of a potential "systemic threat" again suggests a substantial level of financial distress.

The 1996 report (dated July 3, 1996) included a very long discussion of financial sector problems. It stated (1996, pp. 25–26):

> The failure of several deposit-taking institutions last summer highlighted the magnitude of the problems that had built up in past years .... Soon thereafter, news of hidden losses at Daiwa Bank heightened concerns in international markets about the health of Japanese banks, leading to a sharp widening in the "Japan premium" charged on interbank borrowing. In the event, prompt actions by the authorities to provide funds to the depositors of failed institutions allayed fears of widespread runs on smaller financial institutions; concern about the creditworthiness of the major banks has also faded in recent months.
>
> These events, nevertheless, underscored the potential fragility of Japan's financial sector and the need to address the problems urgently and decisively.

The IMF staff noted that Japanese authorities had recently shifted to a more activist approach in dealing with problems, including the insolvency of the *jusen* (housing loan companies). However, they expressed concern that not enough was being done, saying (1996, p. 33):

> Nevertheless, it will take several years to recover fully from the problems accumulated during the post-bubble period. A number of smaller institutions will need to be closed in this process, requiring the use of public funds in amounts that may well exceed those currently envisaged. While the recent passage of legislation to wind up the *jusen* is a welcome step toward reducing uncertainty, it leaves unresolved the responsibility for future loss sharing, and fails to provide a model for future actions.

The discussion of numerous failures and needed bailouts, along with increases in the cost of funds for Japanese banks, suggests that the IMF Article IV report saw substantial financial distress in the second half of 1995 and the first half of 1996—consistent with the views of the OECD.

The 1997 report (dated July 3, 1997) is somewhat mixed. On the one hand, there were references to substantial financial problems in the recent past. For example, the report stated: "strains in the financial sector reemerged in late 1996. As a result, bank equity prices declined even more sharply than the market as a whole, and the 'Japan premium' charged in overseas markets rose. The loss of confidence was particularly pronounced for the weakest of the major banks" (1997, p. 30). Similarly, it mentioned that "[s]trains have also emerged in other areas of the financial sector, as evidenced by the closure in May of a life insurance company and rumors of difficulties at several others" (1997, p. 34). At the same time, the report was fairly upbeat about current conditions and about the actions that had been taken to stabilize the financial system. It said that "[c]oncerns about strains in the financial sector have diminished recently" (1997, p. 17), and that "[t]he authorities believed there was no risk of a systemic crisis in the financial sector" (1997, p. 19). It spoke favorably of the use of public funds to close the insolvent *jusen*, and the large write-offs of bad loans that had been taken by deposit-taking institutions (1997, p. 29). The IMF staff, however, believed that more actions were necessary, saying: "further actions were needed to disclose problem loans, clarify the approach to dealing with problems among the major banks, and strengthen the supervision and accounting framework" (1997, p. 19). The report concluded (1997, p. 40):

> Considerable progress has been made in addressing the problems of the financial sector as a whole. Nonperforming loans are on a downward track, and a workable framework is in place for dealing with problems at smaller institutions. Among the major banks, the healthier institutions should be in a position to fully put their problems behind them in the near future .... There remain uncertainties, though, about the viability of the weakest banks. To avoid systemic risks, while at the same time not burdening healthier institutions or delaying the needed restructuring of the banking sector, nonviable banks should be wound up preemptively using public funds, after writing off shareholder claims.

Based on these descriptions, it is clear there was substantial financial distress in the year covered by the report. At the same time, the Article IV report seems to identify more distress in the second half of 1996 than in the first half of 1997, which is different from the OECD, which shows slightly higher distress in early 1997.

The 1998 Article IV report (dated July 14, 1998) stated emphatically that Japan was suffering an acute banking crisis. Indeed, virtually the entire 43-page report was about the country's financial problems and measures that were being taken (and should be taken) to deal with it. The IMF staff appraisal at the end of the report concluded: "the most critical factor [in the sharp economic downturn experienced in Japan since last year's consultation] seems to have been the weakness in the domestic banking system, which has constrained credit and undermined confidence" (1998, p. 36), and that the "need to resolve the continuing weaknesses in the Japanese financial system is the over-riding issue for economic policy" (1998, p. 37). The report described in detail disruptions in credit supply over the previous year, saying (1998, pp. 7 and 10):

> bank credit has tightened substantially, particularly for smaller firms with higher risk profiles. This tightening reflected both greater attention by banks to credit quality in anticipation of "big bang" financial reforms and their efforts to strengthen capital positions in the face of declining equity prices .... These factors were compounded by the failures of a major bank and one of the "big four" securities houses in November 1997, which increased concerns about the viability of Japanese financial institutions .... As a result, the interbank market was severely disrupted and funding costs rose significantly in both domestic and international markets, as reflected in widening spreads and a sharp increase in the Japan premium.

In a box entitled "Is There a Credit Crunch?" the report said that "[r]ecent *tankan* surveys have suggested a sharp decline in banks' willingness to lend" (1998, p. 9). The IMF staff indicated that the credit restriction was having substantial negative effects on investment (1998, p. 12). In response to the crisis, the report said that "authorities have also taken steps to restore confidence in the banking system and relieve financial strains. In a major break with earlier practice, ¥30 trillion (6 percent of GDP) of public money has been made available to bolster the financial position of the deposit insurance system and to inject capital into the banking system" (1998, p. 13). The Bank of Japan made large liquidity injections in late 1997 and early 1998, which were then partially reversed. "However, the emergence of market concerns about another major bank in late June has again unsettled markets, prompting renewed BOJ liquidity injections" (1998, pp. 13–14). Given the descriptions of bank failures, widespread loss of confidence in banks, large government bailouts, and substantial effects on credit availability and investment, it is clear that the Article IV report saw tremendous financial distress in the second half of 1997 and the first half of 1998. This corresponds very closely to the descriptions in the *OECD Economic Outlook*, which we scale as a moderate crisis−minus and a major crisis−regular in those two half years (respectively).

The descriptions of financial conditions in the 1999 report (dated July 12, 1999) were somewhat less dire than in the previous report, but still severe. In recounting what had gone on since mid-1997, the report described failures of financial institutions (1999, p. 5), trouble with insurance companies (1999, p. 35), and the fact that "banking sector strains contributed to a 'credit crunch' affecting particularly small and medium enterprises" (1999, p. 10). However, it is clear that at the time of writing, the IMF staff believed that conditions had stabilized substantially. It stated: "A framework for dealing with banking problems has now largely been put in place, reducing immediate concerns for systemic risk and shifting attention to implementation issues" (1999, p. 16). Among the most significant actions that had been taken was a large government bailout of the banking sector. The report stated: "In October 1998, the government set aside ¥60 trillion (12 percent of GDP) for financial support for banks .... Together with the BOJ's actions to ensure ample liquidity, these steps have helped to reduce concerns about bank failures, and the 'Japan premium' was virtually eliminated by March 1999" (1999, p. 18). Several measures had also been taken in the previous year to "relax financing constraints," such as provision of public funds to increase the availability of loan guarantees and Bank of Japan participation in commercial paper repo operations (1999, pp. 14 and 16). The report believed that credit constraints had been "alleviated by policy actions, contributing to an investment turn-around in the first quarter of 1999" (1999, p. 8). Based on these descriptions, it is clear that there had been extreme financial distress in the recent past and significant improvement by the time the report was written, but the exact timing is somewhat ambiguous. In the *OECD Economic Outlook*, the second half of 1998 was the time of peak financial distress in Japan; based on the Article IV reports, one might date it slightly earlier. But, like the IMF report, the OECD also saw substantial improvement between the second half of 1998 and the first half of 1999.

The 2000 report (dated July 13, 2000) indicated that conditions in the Japanese financial sector had improved substantially, but significant problems remained. It stated: "Under the framework established in late-1998, substantial progress has been made in stabilizing the banking system" (2000, p. 15). But, "[w]hile systemic threats appear to have dissipated for now, concerns that major banks do not yet have in place credible plans to restore core profitability are reflected in the weakness of Japanese bank stock prices" (2000, p. 15). Also, "[b]eyond the major banks, while a number of regional banks have made progress in raising their capital over the past year, weaknesses among the credit cooperatives are only now beginning to be addressed" (2000, p. 15). The IMF staff stressed that "while these smaller institutions did not have the systemic importance of major banks, failures could nevertheless have strong contagion effects once limited deposit insurance was reintroduced" (2000, p. 32). The report also flagged that the "financial strength of the life insurance sector has deteriorated further over the past year" (2000, p. 16). The conclusion of the staff appraisal was: "Important progress has been made over the past two years in strengthening major banks' balance sheets and allaying concerns about financial instability, but much remains to be accomplished to ensure the soundness of the financial system and allow a smooth transition to limited deposit insurance in April 2002" (2000, p. 40). The fact that the descriptions said that there were substantial risks from the financial sector, but did not explicitly talk about credit supply constraints, suggests that the level of financial distress was substantial, but much lower than in the previous two years. This is very similar to the descriptions in the *OECD Economic Outlook*, which we scale as a minor crisis−plus in 1999:2 and a minor crisis−minus in 2000:1.

The 2001 Article IV report (dated July 13, 2001) was similar in many ways to the previous year's report, though perhaps somewhat less sanguine about the financial sector. The report's introduction stated: "Last year's modest recovery has now given way to renewed weakness. ... Slow progress with bank and corporate restructuring and questions about the long-term fiscal situation ... have undercut confidence, while stock price declines and a further deterioration in asset quality have again raised doubts about the stability of Japanese banks" (2001, p. 3). Among the specific problems noted were the fact that "[l]ack of progress in boosting major banks' underlying health is compounded by their growing vulnerability to market risk" (2001, p. 15), that "[p]roblem loans are also taking their toll on the smaller deposit-taking institutions," and that the "life insurance sector remains distressed" (2001, p. 17). As in the 2000 report, credit disruptions were not mentioned; indeed Japanese authorities specifically said there were "no signs of a credit crunch at present" (2001, p. 21). Nevertheless, the IMF staff said that "downside risks remain sizeable. The weak economy could give rise to renewed pressure on equity prices and a further increase in bad loans, raising the risk of a vicious cycle of slowing growth, rising corporate bankruptcies, and a loss of banking system confidence" (2001, p. 20). The new government proposed a package of measures in April 2001 to accelerate the disposal of problem loans at major banks. While the IMF staff was supportive, it expressed some reservations, saying: "The authorities have appropriately identified banking sector problems as a top priority. Vigorous implementation of the recent package, together with strong complementary measures, will be needed to turn this sector around" (2001, p. 38). The report even raised the possibility that "[t]argeted public capital injections may be needed to offset the impact on bank capital from more aggressive provisioning and loan disposal" (2001, p. 39). Overall, the picture in the 2001 report is one of continuing troubles and risks in the financial sector, but not of acute crisis. This corresponds closely to the OECD's portrayal of the same time period.

The 2002 report (dated July 3, 2002) indicated a decided increase in troubles in the financial sector. It stated (2002, p. 13):

> The weak economy and falling equity prices have taken their toll on bank profits, and on market perceptions of banking risks. Major banks' FY2001 loan-loss charges rose to ¥7.7 trillion, four times as large as projected at the start of the financial year. ... Reflecting concerns about their financial health, spreads on bank debentures rose in early 2002 .... Among smaller institutions, two regional banks and 49 credit cooperatives and *shinkin* banks have recently filed for bankruptcy.

The IMF staff also saw considerable risks that conditions could get much worse. For example, the report said (2002, p. 3):

> Continuing banking weaknesses magnify the risks from following a "muddle-through" strategy that leaves economic problems to fester. ... Banks' deteriorating asset quality and exposure to the stock market heighten the risk of bank failures and a credit crunch. The potential impact of surging bankruptcies and unemployment on confidence and activity could be severe.

A later reference to the fact that "bank weaknesses were clearly undercutting the effectiveness of monetary policy" (2002, p. 27) suggested that credit supply effects were already present to some degree. This is consistent with the report's statement that "[s]tatistical evidence suggests that weaknesses in both the corporate and banking sectors have been associated with the recent decline in aggregate bank credit" (2002, p. 29). The report also argued that further bailouts of financial institutions might be necessary, saying: "The mission stressed that the review of classification and provisioning practices it was calling for could result in bank capital ratios falling below regulatory minima. If this were the case and banks continued to face difficulty in raising significant funds from the market, there would be no alternative to a public funds infusion in systemic banks" (2002, p. 18). Taken together, these descriptions suggest a high level of financial distress in the second half of 2001 and the first half of 2002. At the same time, the descriptions are perhaps somewhat less dire than those of the OECD, which we scale as indicating a moderate crisis–regular in 2002:1.

The 2003 report (dated July 30, 2003) painted a picture of continuing significant problems in the Japanese financial system, but not acute crisis. The report said (2003, p. 13):

> Japan's financial system remains weak and vulnerable. The banks' capital positions and earnings are weak; nonperforming loans, although declining, remain high; the system is exposed to sizable market and credit risks; and looking ahead, losses are expected to continue in the absence of reform. Accordingly, financial sector weaknesses, if not squarely resolved, would persist and continue to restrain economic growth.

The capital of the fifth largest banking group, Resona, "fell short of regulatory requirements, and the government subsequently announced that it would purchase ¥2 trillion in shares in the bank" (2003, p. 8). The report also noted effects of these financial sector problems on lending, saying: "With persistent economic weaknesses and bank balance sheet problems limiting loan demand and banks' willingness to lend, bank loans continued declining by about 5 percent a year (including loan write-offs)" (2003, p. 6). Similarly, after discussing the various actions Japanese authorities had taken under the Program for Financial Revival (PFR) (unveiled in October 2002) to reform the financial system, the report said: "The mission welcomed these efforts, but considered that a more comprehensive and accelerated approach was needed to avoid the risk of a prolonged period of pressure on banks in which an ongoing cutback in credit would restrain economic growth" (2003, p. 12). These descriptions of lingering weakness, restrictions in credit supply, and continued bailouts correspond closely to those of the OECD, though they are perhaps slightly less negative.

The 2004 report (dated July 7, 2004) conveyed a sense of substantial improvement but lingering weakness in the financial sector. It stated (2004, pp. 8–9):

> Financial institutions made headway in strengthening their financial conditions, but some banking sector weaknesses persist and regional banks have lagged behind. During FY2003 (the year ending March 2004), major banks cut bad loans, reduced deferred tax assets (DTAs) and equity holdings and lifted capital adequacy ratios .... However, bad loans remained high for one major bank ... and financial strength ratings, which abstract from government support, stayed low. Meanwhile, regional banks—which account for 40 percent of bank lending, but are subject to less demanding regulation than major banks (and are not covered by the PFR)—made less headway in reducing bad loans. During the latter part of 2003 a large regional bank failed and was nationalized, suggesting that significant weaknesses remain among these banks.

In June 2004, the Diet created a new facility that "would offer regional banks precautionary capital injections to support restructuring and strengthening of their operations" (2004, p. 13). While noting the various improvements in the financial sector, the IMF staff still said that "with banks weak and corporations deleveraging, banking lending continues to contract (partly reflecting loan writeoffs)" (2004, p. 7), and concluded that financial sector "weaknesses remain that are apt to restrain growth over the medium term if not addressed" (2004, p. 22). Based on these descriptions, it appears that the IMF staff saw some financial distress in the second half of 2003 and the first half of 2004, but that it was certainly on a downward trend. This matches well the descriptions in the *OECD Economic Outlook*.

The tone of the 2005 Article IV report (dated July 5, 2005) was decidedly upbeat. While not declaring the financial system completely healed, it suggested that financial distress was quite low, and that "the emphasis of policies is appropriately changing from stabilization to revitalization" (2005, p. 29). One paragraph (the contents of which were repeated in a couple of places in the report) summarized the IMF staff's view (2005, pp. 6 and 10):

> Further advances also have been made in strengthening the banking system. Tightened regulation of major banks under the Program for Financial Revival (PFR), together with corporate sector improvements, have reduced nonperforming loans (NPLs) and supported ratings upgrades .... Major banks more than met the PFR's goal of halving the NPL ratio to around 4 percent by the program's expiration in March 2005. The pace of decline in bank lending has slowed and, according to the Tankan survey, borrowers perceive an increased willingness to lend. In addition, the blanket guarantee on bank deposits was lifted at end-March, with no signs of strain.

> Regional banks, which have been subject to a less rigorous action plan than major banks, have also made progress, albeit more slowly, in cutting bad loans. Nonetheless, the process of revitalizing the banking system has further to go. The quality of bank capital is weakened by deferred tax assets (DTAs), which have fallen steadily but still account for about a third of major banks' Tier 1 capital. Core profitability remains low, leaving banks vulnerable to shocks and ill-positioned to perform effective financial intermediation.

In the concluding staff appraisal, the report said: "The banks are healthier, and major banks' balance-sheet problems are largely resolved. ... Continued supervisory scrutiny is needed, though, to address remaining balance-sheet weaknesses—particularly NPLs at regional banks" (2005, pp. 29–30). That the IMF staff flagged at least some remaining areas of weakness echoes the reports of the OECD, which we scale as identifying some form of credit disruption in 2004:2 and 2005:1.

***Wall Street Journal*.** The evidence from the *Wall Street Journal* is remarkably consistent with that from the other real-time sources.

Our search algorithm yielded only hints of mild distress in 1990 and 1991. There was a passing reference to "mounting financial troubles" (4/5/90); a quotation from an analyst referring to "the [domestic] Japanese financial crisis" (1/2/91, brackets in the original); and an article saying that "Japanese banks grew choosier in placing deposits with U.S. banks" and that "U.S. banks are charging some Japanese banks a premium for loans" (4/9/91). But it was not until 1992 that the *Journal* clearly described notable financial distress. For example, it referred to "Japan's deepening financial crisis" ("Bond Market Faces Pressure from Supply," 4/6/92), and said that "the once-powerful Japanese banks ... are looking frail" ("False Alarm? ...," 4/6/92). A particularly strong statement came in August, in a front-page article headlined "Japan's Shaky Banks May Slow Its Recovery." The article said that "loss-ridden banks ... loom as the main obstacle to rehabilitating the world's second-largest economy"; and that "Japan's banks are in crisis," with "ballooning" bad loans (8/24/92). In October, the *Journal* reported that, "[a]lthough a systemwide collapse is generally viewed as unlikely," banks' weakened condition could "hobble the recovery" (10/16/92).

The *Journal* described a generally rising pattern of distress over the next several years. Articles in 1993 referred to "Japan's tottering banking system" (1/13/93), "the nation's banking crisis" (4/5/93), "Japan's unresolved banking crisis" (4/12/93), and "Japan's deep banking crisis" (9/7/93). After a dearth of coverage in 1994, an article in early 1995 referred to "Japan's prolonged banking crisis" and said, "The crisis has hurt Japan's broader economy as well, because the weakened banks have had to rein in new lending to businesses" (1/30/95). Reports of significant problems continued over the year. For example, in June the *Journal* said, "Japan's banking crisis continues to worsen," with ratings downgrades and potential failures and bailouts ("Japan Considers Plan for Insolvent Banks ...," 6/8/95). Over the following two years, numerous articles described the crisis as ongoing; several cautioned that the crisis was far from over, perhaps hinting at modest improvement (for example, 4/1/96, 5/3/96, 12/20/96, 1/10/97, and 4/25/97). Both the generally rising pattern of distress over the period 1993:1–1997:1 and the absence of significant problems in 1994 match up well with the views of the OECD. One minor difference is that the OECD did not describe any improvement in the latter part of this period.

In the *Journal*'s view, the situation took a turn for the worse in late 1997, and the distress peaked in late 1998. In November 1997, it reported that weakening balance sheets were "forcing foreign banks to question the soundness of many Japanese institutions, demanding that Japanese banks pay more for short-term money-market loans," and that "[c]oncerns over the health of Japanese financial institutions are rippling through the nation's economy" (11/13/97). That same month, it reported the failure of the country's fourth-largest securities firm, raising "the question of whether other large shutdowns are in store at Japan's banks, insurers and brokerage firms, which have been weakened by a seven-year fall in land and stock prices and a resulting bad-loan crisis" ("Business and Finance," 11/24/97). A front-page article said simply, "banks are paralyzed" ("As Economic Dominoes Fall, Global Risks Rise," 11/24/97). In January 1998, the *Journal* referred to "bankers' sudden reluctance to lend" (1/21/98). In June, "Japan's banking crisis has worsened in recent years" (6/30/98). In September, "Japanese bankers, politicians and bureaucrats scramble[d] to stave off a crisis in the financial system," and "bankers say privately they have little choice" other than "to stop lending" (9/1/98). By November, the *Journal* was referring to "the rubble of Japan's banking crisis" (11/10/98). This evidence is very consistent with the new measure, which rises sharply starting in 1997:2 and peaks at extreme crisis–minus in 1998:2.

The evidence from the *Journal* points to a marked improvement over the next two years. As early as January 1999, it reported that "Japan's banking industry mop-up is gathering surprising momentum," though "[a] banking-industry recovery will take years" (1/28/99; see also 1/27/99, 2/3/99, 2/8/99, and 5/24/99). In August, a front-page story was titled, "Japanese Banks Stir, But Bad Loans Remain." It reported, "fears of a meltdown in the banking system, a major concern around the world just last year, are fading .... It's clear that banking regulators are no longer staring disaster in the face," and that the biggest problem facing the financial system was not the health of banks, but of borrowers (8/23/99). The absence of much discussion of distress in 2000 suggests that the *Journal* no longer viewed distress as a major issue. For example, an article in August mentioned large stocks of nonperforming loans and the possible vulnerability of banks to interest rate increases, but adopted a tone that the full-blown financial crisis had passed (8/24/00). Again, this is consistent with the views of the OECD underlying our new measure, which fell rapidly over this period.

At the end of 2000, however, the *Journal* described a turn for the worse that continued over roughly the next 15 months. In a front-page article, it reported that policies begun in 1998 had "beat back the worst financial panic here in a half-century," but that "Japan's banking crisis [isn't] anywhere near solved." It described "the huge amount of bad debt that remains on lenders' books," "undercapitalized banks ... cutting back on credit to promising young businesses while keeping their weakest borrowers alive with new loans," and renewed policy timidity (12/11/00). In January 2001, it described developments that, according to a prominent business leader, "could reignite the Japanese financial crisis of two years ago" (1/12/01). An article later that month began: "Revived anxiety about the health of Japan's banking industry is rousing an old specter" (1/31/01). In August, it referred to "the country's crippled banking sector" (8/15/01). An article in October began, "Japan's banks are showing signs of stress similar to those that preceded the country's 1998 financial crisis, prompting analysts to warn that a repeat crunch looms unless the government acts to head it off" (10/23/01). In February 2002, the *Journal* reported, "some analysts are worried that 2002 may be the year things boil over for Japan's troubled banking system. Investec Asset Management in London, for one, puts the chances of financial collapse some time this year at nearly one in three" (2/4/02). The article also said, "a consensus is emerging among banking-sector analysts that Japan's banks are insolvent and some sort of government bailout of the lenders is inevitable," although "many private-sector economists dismiss the crisis scenarios as overblown." A month later, it said, "fear of a financial crisis grows" (3/6/02). These accounts match up well with the evidence from the *OECD Economic Outlook*, which described worsening distress over this period and a second peak in 2002:1.

Like the OECD, the *Journal* saw the situation as improving after early 2002. In August, for example, it referred to "a few tense weeks in February, when concerns about the economy and frail banks raised the prospect of a financial crisis" (8/7/02). In September, amid renewed "lack of confidence in the banks" and "[c]oncerns over capital shortages," it quoted an analyst as saying, " 'The macro economy is not as bad as it was in March,' when concerns of a financial crisis had mounted" (9/4/02). In November, it offered a more negative assessment, saying that "the country's on-again, off-again financial crisis is back on again." But it also made clear that it viewed the highest level of distress as having occurred in 1998, saying, "This time, the outlook isn't as grim [as in 1998]: Nobody thinks the Japanese government will let big lenders collapse or the financial system buckle, a nightmare scenario that actually seemed possible in the late 1990s" (11/22/02).

After the end of 2002, the *Journal* saw steady improvement. An article in March 2003 headlined "Is Japan's Banking Overhaul Starting to Produce Returns?" answered its question with a tentative yes, but cautioned, "it is too early to pronounce Japan's financial problems over" (3/28/03). Similarly, an article in May about actions to avoid a crisis was titled, "Suddenly, Evidence That Japan Has Found the Right Playbook—A Widely Condemned Plan to Force Changes at Banks Scores Important Victory" (5/22/03). Despite continuing mentions of ongoing problems (for example, 6/5/03, 6/23/03, and 10/3/03), by March 2004, an item in the "World Watch" began: "As Japan's banks emerge from their quagmire of bad loans" (3/22/04). In June, the *Journal* reported, "Japanese banks appear to have turned the corner" (6/1/04). Articles in 2005 included the statements: "as Japan slowly leaves behind its years of a near financial crisis" (1/21/05); "As the dust starts to settle in Japan's long-running banking crisis" (2/22/05); "Confident that the banking crisis plaguing Japan for more than a decade is almost over, the nation's central bank ..." (5/23/05); and banks "[h]aving jettisoned bad loans and replenished their capital bases" (8/24/05). In October, the *Journal* appeared to declare the crisis over, referring to "the end of the country's banking crisis" (10/7/05). It did so even more strongly in March 2006, with an article saying "Finally, a Healthy Japan" in its title and referring to "the end of the long banking crisis" (3/29/06). For comparison, the last period when our new measure shows positive distress in Japan is 2005:1.

NORWAY

In the case of Norway in this period, all three chronologies agree that financial distress ended at roughly the end of 1993. But there is considerable disagreement about the start of the crisis. Reinhart and Rogoff's chronology dates it as beginning in 1987, while the IMF chronology and our OECD-based measure both place the start of important distress in the second half of 1991. The reports of the Norwegian central bank (Norges Bank), the IMF Article IV reports, and the *Wall Street Journal* suggest that the dating of distress in the new measure and the IMF chronology are quite accurate. The additional sources mention some signs of financial concern in the late 1980s, but suggest that they are minor.

***Central Bank Reports*.** The annual reports of the Norges Bank are detailed and substantive.[9] They tend to focus very closely on financial markets, particularly foreign exchange markets, and central bank operations, and less on macroeconomic conditions and the broader effects of financial developments. As a result, the information they provide about changes in the

[9] The full title of the central bank report for Norway is *Norges Bank Annual Report*.

cost of credit intermediation is more limited than that in the *OECD Economic Outlook*.

The *Norges Bank Annual Report* for 1987 provided only a small indication of financial concern. The main focus of much of the discussion was the wide fluctuations in the krone exchange rate, which occurred for many reasons—including political uncertainty in the middle of the year. The report suggested that these exchange rate fluctuations caused liquidity problems for banks. It said: “The new developments in the foreign exchange market over the past two years or so are also the main reason for major liquidity deficits in the Norwegian money market. This deficit must be met by banks’ borrowing from Norges Bank” (1987, pp. 7–8). The chronological summary of central bank actions contained numerous references to the fact that the Bank was supplying liquidity to the banking system (1987, pp. 9–20). The only sign that this might have been more than routine central banking was a reference quite late in the volume to a statement released by the Bank. The report stated (1987, p. 38):

> Like most central banks, Norges Bank states that it will if necessary act as “lender of last resort”. In a press release of 30 October 1987 the Bank expressed its readiness to prevent nervousness in the market as a result of fear that Norwegian credit institutions could come under pressure with respect to liquidity. One way to do this is to provide loans to banks on special terms (S-loans).

That the central bank felt the need to make such a statement could be a sign that it had concerns about financial stability. At the same time, the report gives no evidence that banks had difficulties with funding, loan defaults, or other signs of a rise in the cost of credit intermediation. Thus, it does not appear that the Bank viewed financial distress as significant in 1987. This is at odds with the Reinhart and Rogoff chronology, and roughly consistent with the new measure and the IMF chronology.

The central bank report for 1988 gave somewhat more indication of financial concern. It reported that in the summer, “Private bond yields rose steeply, apparently as a result of a very large volume of issues by credit enterprises and a change in interest rate expectations. Credit enterprise issues ... were related to their need for funds to finance housing loans they took over from banks as part of banks’ adjustment to their weaker equity capital situation” (1988, p. 27). In a move similar to that of the October 1987 press release, the governor of the Norges Bank made a statement in his annual address in February 1988 that said: “However, should financial institutions find themselves in a position which could affect general confidence in the credit market, Norges Bank—cognizant of its responsibility as the central bank—is prepared to take such measures as are necessary to bolster market confidence in our financial system” (1988, p. 44). That the governor made the statement could suggest that the Bank saw at least the possibility of a loss of confidence. The report also mentioned that “[i]n 1988 three banks sustained loan losses entailing the loss of their equity capital,” and that “[s]everal finance companies came under liquidity pressure in 1988 as a result of weak operating performance” (1988, p. 44). However, the report also said: “The crises experienced by Sunnmørsbanken, Sparebanken Nord and Tromsø Sparebank were resolved with minimal disruption of the market, and general confidence in the Norwegian financial system was maintained. The safety net designed to cope with such situations functioned as intended” (1988, p. 44). While the explicit statement that confidence was maintained argues against a high level of financial distress, the presence of bank failures and the need for the safety net suggests at least some distress in 1988.

The 1989 report was striking in the absence of any discussion of banking-sector problems. The section of the report “Regulatory, Supervisory and Control Functions,” which normally discusses financial supervision issues, had no subsection on that topic in this volume. In discussing monetary policy, the report said that Norges Bank had reduced the overnight interest rate by 2 percentage points over the first half of the year. It added: "These reductions were made possible by a stable krone exchange rate and the slowdown in domestic demand for credit" (1989, p. 7). The absence of any concern about financial institutions or credit supply suggests that financial distress was not present in 1989.

The 1990 Norges Bank report contained somewhat more discussion of financial issues, but it was still very limited. Early in the report, there was reference to the fact that "[t]he Norwegian foreign exchange market has become less liquid in recent years, partly due to the fact that market participants have become more cautious and fewer in number as a result of the merger activity and the losses in the banking system" (1990, p. 10). This suggests that there were some problems in the banking sector. Later, the volume reported that "[i]n 1990 Norges Bank approved the provision of liquidity support to four individual banks in the form of special loans (S-loans)" (1990, p. 31). It also discussed that "[o]n 30 October 1989, Norion Bank was placed under public administration and is in the process of being wound up. ... In the light of the Norion Bank affair, Norges Bank has adopted internal guidelines to come into play if commercial or savings banks should be placed under public administration in the future" (1990, pp. 31–32). These problems with individual banks received little general discussion, suggesting that they were not viewed as causing a loss of confidence more broadly. As a result, the Norges Bank report appears to be consistent with the view shown by the new measure (and the IMF chronology) that there was little if any financial distress in 1990.

Perhaps the best indication that financial conditions were perceived as fairly healthy through 1990 is that the descriptions changed dramatically between 1990 and the 1991 *Annual Reports*. The 1991 report conveyed the sense that there were substantial problems in the Norwegian financial sector, particularly in the second half of the year. The opening section stated: "Towards the end of the year large interventions in support of the krone became necessary. A number of factors had a negative impact. In mid-October it was announced that the share capital in Christiania Bank was lost, and Den norske Bank announced an upward revision of their loss estimates" (1991, p. 9). It went on to say that "[t]he problems in the Norwegian financial industry had an impact on interest rates in the second half of the year" (1991, p. 11), and that "[t]he large losses sustained by Norwegian financial institutions have made it more difficult for banks to raise sufficient foreign currency loans in international markets" (1991, p. 15). A number of rescue measures were introduced. "On 25 October the banks' liquidity requirement was reduced from 8 to 6% as part of the authorities' rescue package in support of the banking system" (1991, p. 18), and in December, a new arrangement was made whereby Norges Bank placed subsidized deposits in banks "to strengthen banks' earnings" (1991, pp. 14–15). Likewise, "Both the number and size of S-loans showed a large increase from 1990 to 1991, as a result of substantial financial and liquidity problems facing a number of financial institutions. In 1991 loans on special terms were granted to 11 banks, to the Savings Banks Guarantee Fund and to one mortgage company" (1991, p. 29). The Government Bank Insurance Fund was also "established by special legislation in 1991" (1991, p. 29). These descriptions of bank failures, funding problems, and rescue measures, along with the frequent references to widespread problems, suggest a very high level of financial distress. This is consistent with our new measure derived from OECD records, which shows a moderate crisis in the second half of 1991.

The report for 1992 is somewhat hard to interpret. The Norwegian krone came under severe pressure in two periods during the autumn, and in December 1992 the krone's link to the ECU was suspended (1992, p. 5). The currency turmoil and the Norges Bank's efforts to stabilize the krone fill nearly every page of the report. The few references that there are to the rest of the financial system suggest significant problems, but they are not discussed in nearly the same detail as in 1991. In the section on capital markets, the report said that "[u]nrest in international markets and the problems in the Norwegian financial sector at the end of August resulted in a steeper rise in yields on bonds issued by private institutions [banks and mortgage companies] than corresponding government bond yields" (1992, p. 19). A later section said (1992, p. 28):

> In 1992 loans on special terms were granted to 6 banks and a total of 5 finance companies and mortgage companies. The loans to finance companies and mortgage companies were related to the unrest and uncertainty in financial markets at the end of August and beginning of September. On 4 September 1992 Norges Bank reaffirmed its pledge, first issued in November 1991, to provide liquidity support to mortgage companies, and extended the declaration of liquidity support to include finance companies.

This certainly suggests that problems were present in the financial system and that they increased in the second half of 1992, but it is unclear how bad they were. Because there is limited information in the 1992 volume, it is hard to be sure what the Norges Bank believed about the level of financial distress. The report could be consistent with the new measure of financial distress, which shows a lessening of distress in early 1992 and then a second severe bout in the second half of the year, but it could also be consistent with other views.

The 1993 report was very clear that financial conditions improved markedly during the year. For example, in discussing interest rate spreads, the report said: "The substantial narrowing can be partly attributed to the situation prevailing at the beginning of the year when private bonds were still burdened by the turbulence in the Norwegian financial sector in the autumn of 1992. Both banks and other private participants institutions achieved steadily earnings profits [*sic*] and saw their financial position improve during 1993" (1993, p. 16). Rescue measures also were reduced noticeably. In 1993, S-loans for acute liquidity needs were only supplied to three banks (1993, p. 27), many fewer than in the previous two years. And in December, the special-term deposit scheme, whose purpose "was to provide general support to the banking system in the form of low-interest deposits from the central bank," was discontinued (1993, p. 12). This description is roughly consistent with the new measure, which also shows greatly diminishing financial distress over 1993. But, it is perhaps a little more optimistic: distress is still quite high in the first half of 1993 in the new measure, whereas it appears fairly low in the Norges Bank report.

The 1994 report gave no indication of concern about the banking sector. The report had very much a tone that conditions were back to normal. There was extensive discussion of new guidelines for monetary policy emphasizing both employment and price stability; exchange rate stability was viewed as important mainly as a means to those ends (1994, p. 5). The only indication of any banking problem at all was that two banks received S-loans (1994, p. 35). Based on the Norges Bank's account, it would appear that the alternative chronologies, which show the crisis ending in 1993, are somewhat more accurate than the new measure, which shows a small amount of financial distress continuing into the first half of 1994.

IMF Article IV Reports. The staff reports from the IMF's Article IV consultations largely support the view of the OECD that financial distress did not become acute in Norway until 1991. The 1987 report (dated June 29, 1987) contained no discussion of banking problems, save for one reference to the fact that a cut in subsidies to one company "might force banks to write down much of this company's debts" (1987, p. 13). Discord over the budget and a fall in oil prices had caused severe pressure on the krone in 1986, leading to devaluation in May (1987, p. 1). But despite modest moves toward fiscal and monetary restraint, the report concluded that "[s]o far in 1987, however, domestic credit expansion appears to have remained very rapid" (1987, p. 15).

The 1988 Article IV report (dated November 30, 1988) started from the view that "the coincidence of an overheated economy and a sharp drop in oil prices subjected Norway to a major adjustment problem" in 1986 (1988, p. 1). As a result, both fiscal and monetary restraint was called for. The report said that "credit growth had decelerated significantly since mid-1986," and that "credit growth was expected to remain within the target range of 8–12 percent set in the 1988 National Budget" (1988, p. 9). It went on to say (1988, p. 9):

> A number of factors on both the demand and supply side had contributed to the success of monetary policy in 1988. The demand for credit had been held down by the high debt burden of the household sector, higher real after-tax interest rates, and a slower wage growth. On the supply side, large bank losses in 1987 and 1988 had caused banks to try to reduce their exposure, which had had a somewhat contractionary effect on the supply of credit.

Although the reference to reductions in credit supply is suggestive of some financial distress, it does not appear to have been large.

The 1989 report (dated December 6, 1989) again mentioned large loan losses, but mainly stressed their importance for foreign exchange interventions. It said: "With a deterioration in their financial positions because of large losses since 1986, Norwegian banks had become much more cautious in entering the foreign exchange market. Thus the Norges Bank intervened more frequently and even when the rate was well within the band" (1989, pp. 7–8). The report mentioned that "[s]tate banks presently accounted for some 30 percent of the lending of the banking system. This contrasted with some 6–8 percent in the mid-1980s" (1989, p. 8), and that "more than 80 percent of all housing starts [were] now being financed by the State Housing Bank" (1989, p. 12). While the IMF staff did not say that this change reflected reluctance of the private sector to lend, it could be a sign of some financial distress. At the same time, if this were the case, the increase in state bank lending would appear to be filling at least some of the void.

The 1990 Article IV staff report (dated February 1, 1991) did not discuss any banking problems or credit supply contraction in the section on monetary conditions. But in the section on structural, trade and aid policies, it did flag some concerns. It stated (1990, p. 9):

> Profitability in the financial sector remained weak in 1990. Large loan losses reflected the rapid credit expansion during the economic boom of the mid-1980s and, in retrospect, insufficient credit evaluation. To increase profits, the institutions had sought to reduce costs by closing branches and by mergers. Nevertheless, profits remained low or negative. The banks' capital needs were large since, in addition to loan losses, the capital adequacy standards of the Basle Committee would apply beginning 1992. It was estimated that together the banks would need NKr 6–8 billion in new capital by 1992, an amount that would be difficult to acquire from the market. The Government was considering contributing new equity.

The report did not draw any link from the high capital needs to credit supply disruption, but their presence could suggest at least some financial distress in 1990 and early 1991.

The 1993 report (dated May 13, 1993), which was the next one after that for 1990, contained numerous references to severe problems in the financial sector. For example, it stated (1993, p. 4):

> In late 1991 long simmering problems in the Norwegian banking sector came to a head. Large losses on loans wiped out the equity base of the three largest banks forcing the Government to effectively take them into public ownership and recapitalize them. Thus far, this has involved treasury expenditure of about 3 percent of GDP. Bank credit to the private sector has tended to contract over the past two years, reflecting both weak demand for credit and the adoption of more conservative lending policies by financial intermediaries.

The reference to "long simmering problems" again suggests some distress before late 1991; but it is clear that problems became much more acute at that time—consistent with the fact that our new measure of financial distress spikes in late 1991 and the IMF chronology dates the start of the crisis then. The reference to "conservative lending policies" and government bailouts, as well as frequent use of the word "crisis" throughout the report, suggest that the level of distress in this episode was quite high. The 1993 report went on to say (1993, p. 10):

> In 1992, the performance of the commercial banks improved considerably, but remained unsatisfactory as loan losses continued, albeit at a much lower level than in 1991. Thus, in November, the authorities decided to inject further capital into the commercial banks to ensure that they would be able to meet the new capital adequacy requirements, due to enter into force in January 1993.

This is consistent with the OECD's analysis, which saw distress continuing throughout 1992, with a surge late in the year. The 1993 report concluded that "the financial performance of the banks has not yet improved sufficiently and important challenges remain to be addressed to secure the transition from crisis management to a well functioning financial system" (1993, p. 14). This suggests that the IMF staff still saw significant distress at the time of the writing in May 1993, which is consistent with all three chronologies.

The 1994 report (dated January 18, 1995) indicated that financial distress had dissipated almost completely since the previous report. It stated (1994, pp. 5–6):

> Lower interest rates and economic recovery have led to a rapid strengthening of the financial position of the banking system. The net income/assets ratio of commercial banks (after credit losses), which had been minus 4.3 percent in 1991, turned positive in 1993 and reached 1.5 percent in the first half of 1994, and the capital structure of the banks has also improved substantially.

The one remaining issue that the IMF staff highlighted was the rate at which nationalized banks were returned to private hands. The report stated (1994, p. 16):

> The bank rescue operations mounted in 1991 were successful and the banks have been brought back to profitability and strengthened their capital positions. The staff believes that the Government should aim to reprivatize the commercial banks more rapidly and completely than presently envisaged, and, more generally, that the Government should aim to reduce its influence over credit allocation and the competitive balance in Norway's financial system.

Thus, like all three of the crisis chronologies, the Article IV reports suggest that the Norwegian crisis was largely over by the end of 1994.

***Wall Street Journal*.** The evidence from the *Wall Street Journal* largely supports the new measure derived from the *OECD Economic Outlook* and the IMF chronology. The only noteworthy difference is that the *Journal* provides evidence of significant distress beginning in the first half of 1991 rather than in the second half.

We find little evidence from the *Journal* of distress over the period 1987–1990. A pair of general articles about Norway's economy described a sharp slowdown in credit growth after 1986 (7/8/87 and 2/9/90), but neither attributed it to financial distress. One attributed the slowdown to "[t]ough government austerity measures, including wage controls and high interest rates" (2/9/90). The other cited "restrictive fiscal and monetary policies," as well as government-imposed "tighter bank credit policies, higher excise taxes and reduced agricultural subsidies"; it also said that "the government has applied the monetary brakes to consumer spending, imposing new reserve requirements on commercial banks and allowing interest rates to climb to some of the highest levels in Europe" (7/8/87). The only indication of financial distress we have found was one reference to "vast losses that have crippled some big local banks in recent years" (9/11/89). The fact that such references were so rare suggests that the *Journal* did not see significant financial problems in Norway before the end of 1990.

Starting at the very end of 1990 (after the period covered by the 1990:2 *OECD Economic Outlook*), however, the *Journal* featured a drumbeat of news of important problems at Norway's largest banks. The first mention we have found came in late December, when a short article reported a capital injection into the third-largest bank "from a national bank guarantee fund to shore up a capital base eroded by soaring loan losses" (12/24/90). Two weeks later, "Reeling from huge loan losses, Norway's No. 2 bank, Christiania Bank & Kreditkasse, ... said it will seek a capital injection from a national bank guarantee fund" (1/7/91). A few days later, the government "said it would propose a five-billion kroner ($831 million) guarantee fund to assure stability and confidence in the nation's banks" (1/11/91). The next month, "Den norske Bank, Norway's biggest bank, reported a bigger-than-expected pretax loss for 1990 and said it plans to seek a hefty capital injection from a national bank guarantee fund" (2/20/91). And in March, Christiania reportedly unexpectedly large losses, and its credit was downgraded (3/8/91; see also 4/30/91). Thus, the *Journal* describes notable financial distress one half-year earlier than identified by the IMF or the *Economic Outlook*.

Consistent with those chronologies, however, the evidence from the *Journal* indicates that distress increased in the second half of 1991 and remained high through the end of 1992. In October, it reported (10/15/91):

> Christiania Bank & Kreditkasse said it expects huge third-quarter pretax losses to wipe out remaining shareholders' capital, setting the stage for a state takeover of Norway's No. 2 bank.
>
> Startled banking authorities and Norway's minority Social Democratic government rushed yesterday to shore up international confidence in Christiania Bank and the nation's beleaguered financial system. The central bank headed off a potential credit crunch.

A few days later, "Norway unveiled a 13.4 billion-kroner ($2.01 billion) financial support package in an effort to buttress the capital base of the nation's foundering banking system. Oslo ... urged swift action to ease a potential credit squeeze or even a banking industry collapse after huge losses" (10/18/91). And in November, the *Journal* said, "The latest round of state intervention ... will leave virtually the entire banking industry under state control. And even No. 1 Den norske Bank and a few remaining independent savings banks are lining up for state handouts" (11/1/91).

The problems continued in 1992. In March, the *Journal* said that Christiania "posted huge 1991 operating losses," and that "[u]nderscoring Norway's crisis, beleaguered Oslo bankers warned that further capital infusions from state coffers will be necessary to shore up that country's finances" (3/5/92). Soon after, it reported an OECD warning that "the Norwegian financial sector's problems could lead to a credit crunch" (3/10/92). In November, "Den Norske Bank AS said its loss widened to 2.46 billion kroner ($385.6 million) in the first nine months of the year. ... The bank also confirmed it is carrying on discussions with the Government Bank Insurance Fund ... regarding further cash help to strengthen its capital base" (11/5/92). Finally, late that month, "Norway unveiled huge capital injections to keep foundering banks afloat" (11/24/92).

Our search algorithm yields far fewer articles describing financial distress in 1993 than over the previous two years, and those articles were much less dire. In February, the *Journal* reported, "Norway's largest banking group, Den norske Bank AS, said its net loss narrowed .... 'Although loan-loss provisions are on the way down, the road to recovery is still long for the Norwegian corporate sector,' Finn Hvistendahl, chief executive officer, said" (2/17/93). In a brief item in March, it said that Norway's economy was doing better than Finland's and Sweden's, and did not mention financial distress (3/25/93). In August, it reported, "Norway's largest banking group, Den Norske Bank AS, swung to a profit .... 'The improvement in performance provides a solid base for the gradual increase of private capital in the bank,' said DNB Chief Executive Finn Hvistendahl" (8/18/93). We found no relevant articles in 1994. Thus, the evidence from the *Journal* is consistent with the evidence from the *OECD Economic Outlook* that the financial distress receded after the end of 1992 (although the *Journal* points to somewhat more rapid improvement in 1993:1 than does the *Economic Outlook*). In contrast, because the alternative chronologies are 0-1, they cannot capture the gradual improvement over this period.

SPAIN

There is substantial disagreement between the *OECD Economic Outlook* and the alternative chronologies about the health of Spain's financial system in the late 1970s and early 1980s. Both alternative chronologies identify an extended crisis. Reinhart and Rogoff date it as beginning in 1977 and ending in 1985. The IMF chronology agrees on the start date, but lists the end date as 1981. However, the IMF authors report that this dating reflects their practice of limiting the duration of crises to five years (Laeven and Valencia, 2013, pp. 258–259), and their notes on the crisis discuss problems over the period 1978–1983 (Laeven and Valencia, 2014, p. 108). The *Economic Outlook*, in contrast, made no mention of any financial distress in Spain over the entire period. As a result, our new measure takes on a value of zero for Spain throughout these years. The reports of the Bank of Spain, the IMF Article IV consultations, and the *Wall Street Journal* provide only occasional hints of mild financial distress. Thus, the evidence from this episode is again supportive of the *OECD Economic Outlook* as a reasonably good proxy for what a range of real-time narrative sources show about distress. At the same time, our measure derived from the *Economic Outlook* clearly understates distress in this episode at least somewhat.

***Central Bank Reports*.** The *Annual Reports* of the Bank of Spain provide detailed and substantive analyses of the Spanish economy and financial system.[10] The report for a given year is typically published around the middle of the following year. The focus is on the calendar year, but there are sometimes references to events in preceding years and early in the following year.

A typical report from these years either did not discuss any financial distress, or included brief mentions of modest complications in financial intermediation (coming from such sources as regulatory changes or small-scale banking failures or troubles) but did not suggest developments that could be reasonably characterized as a financial crisis. The only noteworthy evidence in the other direction is that the reports described various bank failures over this period, and a passage in the 1983 report said that there had been a large crisis in the late 1970s and early 1980s. But neither the various references to bank failures nor the retrospective judgment in 1983 suggest that the Bank of Spain believed the failures significantly disrupted intermediation or had important effects on the economy.

The first report we examine is for 1976, which is the year before Reinhart and Rogoff and the IMF identify the beginning of a crisis. In that report, the Bank of Spain made a few mild references to limitations on credit availability, but did not emphasize them or view them as important to the overall performance of the economy. For example, in a discussion of the construction sector, it said, "During 1976, ... the degree of credit rationing experienced by the sector has softened" (1976, p. 68). And in discussing credit flows, it mentioned "limited availability of credit," and said that over the period 1974–1976, "banking system credit oscillated ... between isolated episodes of clear containment and a general situation that can be described, overall, as slightly restrictive" (1976, pp. 277–278). Thus even in a period when Reinhart and Rogoff and the IMF do not identify problems, the Bank of Spain made some mention of intermediation issues, suggesting these may have been normal for Spain in this period.

The 1977 report, like the 1976 one, included only a few passing references to possible issues in intermediation. The report described intervention in a distressed bank, the Bank of Navarra, in January 1978. But it said, "The episode was, however, brief, and there soon reappeared a downward trend that took the interbank interest rates at the end of February and during almost all of March to the lowest levels in recent history" (1977, p. 244). The report also made one mention of banks' desire to improve their balance sheets as a factor affecting loan supply. Specifically, it referred to "greater caution by the banking system with respect to its customers, motivated by the overall deterioration of the financial situation of companies since 1974; and by an attempt by the banking system to improve the control of its assets" (1977, p. 284).

The 1978 *Annual Report* was very similar to the 1977 one. As in 1977, there was a mention of restrictions in credit supply, but here the Bank of Spain seemed to attribute them to the weak positions of borrowers and not to problems in credit intermediation: "there also existed a problem of [credit] supply, due to a more cautious attitude of banks in the face of the growing financial difficulties of their customers" (1978, p. 248). There was also a passing reference to an "increase in the degree of credit rationing" (1978, p. 71). The report also said that the problems in credit supply that it described were "dramatically highlighted by the crisis in January 1978 at Bank of Navarra and the subsequent difficulties experienced by other institutions" (1978, p. 248). But although the report used the terms "crisis" and "crises," it said that those developments did not have broader consequences: "significant changes in market developments

[10] The Bank of Spain *Annual Reports* for these years are only available in Spanish. They are typically cataloged under Banco de España, *Informe Anual*. All the translations presented in this section were prepared by Marc Dordal i Carreras.

were not observed as a result of the banking crises registered in 1978. In the period since the crisis at Bank of Navarra, in January, it is not possible to identify movements either in negotiated amounts or in interest rates" (1978, p. 255). Indeed, the way the term "crisis" was used suggests that it was almost a synonym for bank failure or bank troubles.

The Bank of Spain's view was little different in 1979. That year's report included some references to reductions in lending, but they were attributed mainly to tight monetary policy, a weak economy, and the poor health of borrowers, though with banks' health also playing some role. And even the strongest statement about a possible rise in the cost of credit intermediation used relatively mild language: "Delinquent and suspended loans have seen a sharp rise in the last three years; this has led to a more pessimistic evaluation by the banking sector about the quality of their investments and to a more conservative policy for risk provisions, which the authorities have encouraged in order to ensure the soundness of financial institutions" (1979, p. 152). The report also mentioned "increased credit rationing recorded during the first half of the year" (1979, p. 165), but said that "[i]ndicators of credit rationing shrunk and less difficulty in obtaining funds by companies was observed in the latter part of the year" (1979, p. 111).

The 1980 and 1981 reports were notable for the almost complete absence of references to possible financial distress. In discussing credit markets, the 1980 report said: "In the year as a whole, no significant restrictions were observed on the supply side" (1980, p. 157); and "credit markets evolved, over 1980, without tensions and more smoothly than in the previous three years" (1980, p. 87). The 1981 report said: "There were not, in any case, credit tensions in 1981" (1981, p. 52); "The decline in housing starts in 1981 is mainly explained by the persistent weakness of demand, while funding difficulties have lost importance over the year as a limiting factor" (1981, pp. 84–85); and, "no rationing was practiced in the markets" (1981, p. 176).

The 1980 report reinforced the view that rationing was a normal part of the allocation of credit in this period, suggesting that the references to credit rationing in the earlier reports do not necessarily indicate disruptions to the normal functioning of the system. It stated, "quantity restrictions have been losing relevance in 1980 as a mechanism for allocating resources, clearly being increasingly replaced by the cost of loanable funds" (1980, p. 157; see also p. 122).

The 1982 report saw credit availability as improved further from 1981. It reported, "Business opinion surveys showed, like other indicators of the credit market, a decreased importance of external funding difficulties as a limiting factor in the development of investment projects" (1982, p. 92); and, "the failure of significant signs of rationing to appear shows that, in 1982, an improvement in the conditions of the provision of credit to the private sector took place" (1982, p. 185). At the same time, two passages in the report suggest that the Bank of Spain saw at least some financial distress. One occurred in the context of a discussion of the Bank of Spain's efforts to control the money supply: "Banking crises and deposit withdrawals from distressed banks in order to hoard money, or to place it in other institutions, added instability to the monetary multipliers and, consequently, to the generation of deposits" (1982, p. 188). The other occurred in an explanation of a table showing equity issues by financial institutions (1982, pp. 293–294):

> The clean-up process of banks in crisis was the main cause of the significant increase observed in 1982 in the issuance of equities by financial institutions (Table IV-31). The increase in issues by the banking sector of more than 60% over the previous year, must be analyzed in this context, not being linked, in any way, to an improved market predisposition, but to 'accordion' operations performed by the Deposit Guarantee Fund in banking institutions .... Banks, meanwhile, also

participated, although to a very limited extent, in these clean-up expansions of shares.

Once again, the context suggests that the report used the term "crisis" to refer to failure or severe trouble at a particular institution, not to a widespread loss of confidence. In any event, the fact that it mentioned these issues only twice in the report, that it did not tie them to credit availability or to broader economic developments, and that it said elsewhere that credit availability was improved, all indicate that it did not perceive significant overall distress.

The discussions in the 1983 report of developments in that year again suggest little overall distress. The Bank of Spain saw high public borrowing as leading to high interest rates and some renewed credit rationing, but did not describe these developments as involving disruptions to intermediation. For example, it said (1983, p. 163):

> The evolution of interest rates in 1983 is an example of the consequences of the strong demand by the public sector to financial markets as the result of persistent and high deficits .... The absorption of such a rapid pace of demand for loanable funds—with growth rates of around 40-50%— ... involves considerable pressure on interest rates and on the degree of quantitative rationing of credit, although it occurs in a context of weak demand for funds by the private sector.

Similarly, the report said, "The moderation imposed on the growth of monetary aggregates and the intense pressure of the financial needs of the public sector significantly reduced the supply of credit to the private sector" (1983, p. 187). The report also mentioned the government takeover of a group of banks. However, the report did not imply that this action affected intermediation, and discussed it only in the context of the behavior of the money supply. In particular, it referred to "the hoarding of coins and bills that developed as a result of the electoral process and the expropriation of the banks of the Rumasa group" (1983, p. 133; see also p. 132). Thus overall, it is hard to interpret the report as suggesting notable distress during the year.

At the same time, the 1983 report said that there had been a substantial crisis in previous years. The most important passage is (1983, p. 129):

> Around the turn of the decade from the seventies to the eighties, the Spanish financial system experienced the most extensive and deepest crisis of this century with regard to the number of institutions and the amount of borrowed funds that were affected by solvency problems. The authorities prevented panics among creditors of the banking system, and, after a clean-up period, the institutions in crisis are beginning to operate normally again.

The report also said, "the banking crisis has significantly increased subsidized credits to distressed banks or to their buyers—directly or through the Deposits Guarantee Fund—and increased, likewise, the [Bank of Spain's] portfolio of low-profitability assets" (1983, p. 195). It also referred to "the crisis suffered by a group of banking institutions" (1983, p. 197), to "strong loan loss provisions" and "the high growth of the portfolio of delinquent and dubious loans" (1983, p. 198), and to "the auctions of cleaned-up banks" (1983, p. 204).

We believe the most plausible interpretation of this material is that there were significant bank failures in the years before 1983, but that the Bank of Spain never perceived them as significantly disrupting intermediation or having important macroeconomic consequences. One piece of evidence for this interpretation is that the only statements we have found in any of the reports through 1983 about broader effects are the very mild hints of slight disruptions in the 1977, 1978, and 1979 reports described above, and the negative statement in 1983 that "[t]he authorities prevented panics" (1983, p. 129). A related piece of evidence is that the discussions in the 1983 report came in the context of narrow issues. The key passage quoted above was part of a discussion of how differential reserve requirements, which were a legacy of the bank failures, made the relationship between reserves and deposits less straightforward, and so complicated control of the money supply. Likewise, the mentions later in the report of "the crisis suffered by a group of banking institutions" (1983, p. 197), "the auctions of cleaned-up banks" (1983, p. 204), and so on occurred in discussions of tables showing the balance sheets of the banking sector and the central bank. Similarly, in the 1982 report, difficulties in the financial sector were discussed only in the context of monetary control (1982, p. 188) and bank equity issues (1982, pp. 293–294). However, while we feel that ours is the most plausible interpretation of the key passage, it is possible that there was significant distress in those years that had not been reported earlier.

The 1984 report described some reductions in credit availability. However, it attributed them to new rules about cash and debt ratios and to tighter monetary policy, rather than to disruptions in intermediation. Specifically, it said (1984, pp. 101–103):

> The review of the paths of monetary expansion that had begun in the spring of 1983 resulted in severe tensions in all financial markets, with a significant rise in interest rates ... and an increase of the phenomena of rationing, reflecting the difficulties encountered by banks to adjust the growth of their assets to the new conditions imposed by the authorities. To this were added the uncertainties generated by the significant changes introduced, in the final months of 1983 and early 1984, to the institutional framework of cash and investment requirements and to the monetary intervention mechanisms. This led the banking system to impose, in the initial months of 1984, a waiting period to the process of expanding its assets, which resulted in the deceleration [in money growth].

It also said that after a few months, "the uncertainties associated with the already mentioned institutional changes largely dissipated" (1984, p. 103). The Bank of Spain did not suggest that these developments were having major effects on the economy. It also said that "financial institutions were able to recover in 1984 a degree of intermediation in the financial flows that had been normal in previous years, but that had experienced a decline in 1983" (1984, p. 99). The report also mentioned the budgetary costs of "the clean-up of Rumasa group" (1984, p. 137; see also pp. 82, 98, and 134).

In 1985, the Bank of Spain again saw no financial distress. Indeed, it said, "The degree of credit rationing was minimal throughout the entire year" (1985, p. 155), and referred to "a reduction in [loan] delinquency levels, continuing the trend already noted in the previous year" (1985, p. 156). As in 1984, the report did, however, note clean-up costs for the group of banks belonging to the conglomerate that had been taken over in 1983. For example, it said, "there stands out the atypical clean-up episode of the banking group part of Rumasa .... The funds needed for the rehabilitation of the group of banks that are part of Rumasa were provided by the State, which granted loans of 440 billion [pesetas] to the parent company of the group" (1985, pp. 145–146). It went on to say that the loans to Rumasa, as well as some loans to public companies, "have not been, and are not expected to be, recovered" (1985, p. 146). As in 1984, this discussion occurred in the context of the government budget, and again the Bank of Spain did not link it to broader issues involving the financial sector.

Thus, the Bank of Spain never described significant disruptions to financial intermediation or credit supply in real time over the period when Reinhart and Rogoff and the IMF identify a crisis. It did describe mild disruptions and some bank failures, and in one case, stated retrospectively that the failures had been significant in earlier years. But even in that case, it did not say that they had caused a noteworthy rise in the cost of credit intermediation, or tie them to declines in loan supply or to broader economic outcomes. Thus, while there may have been some financial distress, it was likely small.

***IMF Article IV Reports*.** The IMF Article IV reports, like the *OECD Economic Outlook*, made no mention of any financial distress in Spain over the periods when the IMF chronology and Reinhart and Rogoff identify a banking crisis.

The alternative chronologies date the start of the crisis in 1977. The first Article IV report on Spain did not occur until three years later (the 1979 report, dated January 28, 1980). For completeness, we therefore examine not just the Article IV reports, but also two IMF documents from 1977–1979 that assess economic conditions in Spain. The first is a staff report on "Spain—Recent Economic Developments" dated May 9, 1977 prepared as background for the 1977 Article XIV consultation. This report was considerably more detailed than a typical Article IV report, although much of the focus was on developments in 1975 and 1976. The second is a document dated January 24, 1978 titled "Spain—Request for Stand-By Arrangement" that included a staff analysis of Spain's economic conditions similar to those in the Article IV reports. We examine all of the existing Article IV reports for the relevant period: 1979, 1981 (dated February 23, 1982), 1983 (dated March 25, 1983), 1984 (dated July 17, 1984), 1985 (dated August 27, 1985), and 1986 (dated January 7, 1987).

In all of these reports, there was no mention of financial distress or increases in the cost of credit intermediation. The structure and detail of the Article IV reports for Spain were similar to those for other countries, so there was ample opportunity for the IMF staff to discuss those issues if they perceived them as noteworthy. For example, a typical report for Spain included between one and three pages on developments related to monetary policy. These generally included discussions of the determinants of credit growth and credit availability. The 1979 report, for instance, described how tight monetary policy was limiting credit to the private sector: "With overriding priority being given to the attainment of the money supply targets, the expansion of bank credit to the private sector was severely squeezed" (1979, p. 8). Similarly, the 1983 report described how the availability of credit to the private sector would be limited by the conjunction of the Bank of Spain's money growth target and the government's borrowing: "The degree of restraint with respect to credit to the private sector implied by the M_3 target will depend crucially on the ability of the Government to check the growth of the public sector deficit and to increase its nonmonetary financing" (1983, p. 7). The 1981 and 1984 reports included similar language (1981, p. 8; 1984, p. 5).

A typical report also included between one and three pages on fiscal policy, where it would have been natural to discuss any fiscal costs associated with bank bailouts. This material often included discussions of subsidies or transfers to public and private enterprises. But this material either did not mention whether the recipients included financial firms (for example, 1979, p. 14), or focused explicitly on nonfinancial firms. The 1983 report, for example, stated: "Transfers to enterprises in difficulty were a matter of concern. The Spanish representatives underlined that the financial position of many major public and private firms, particularly in sectors such as steel, shipbuilding, mining and automobiles, had become critical" (1983, p. 9). And the 1985 report referred to "the group of public enterprises under the aegis of the National Institute for Industry (INI), which together with the railway company (RENFE) account for the major share of public problem enterprises" (1985, p. 9). The passage closest to a reference to a bailout of financial institutions—and the closest passage we have found in any of the reports to a reference to financial distress—is a mention in the 1986 report of the costs in 1984 from the government's takeover of the Rumasa conglomerate. However, the report made no suggestion that the takeover had been associated with an increase in the cost of credit intermediation. Indeed, it did not even mention that Rumasa's holdings had included banks (1986, p. 3):

> The general government borrowing requirement on a cash basis ... was boosted to the equivalent of almost 10 percent of GDP in 1984 by a large increase in net lending to public and private ailing enterprises, including the takeover of the debts of the bankrupt RUMASA holding and of various companies under the state holding group INI.

In addition, the reports sometimes included discussions of the determinants of investment. This material never cited financial distress as a limiting factor. The 1983 report, for example, said (1983, p. 12):

> The staff forecast is somewhat more pessimistic than the official forecast regarding fixed investment, which is likely to be adversely affected by continued uncertainty about the strength of the recovery of external demand, by the tightening of monetary policy and by the existence of wide margins of unutilized capacity.

Finally, the reports often devoted some attention specifically to the financial system. However, the focus was on structural problems and structural reform, with no discussion of financial distress. For example, the 1984 report described a structurally high cost of credit intermediation, referring to "a banking sector that, for too long, has enjoyed excessively high spreads, stemming from oligopolistic practices" (1984, p. 20). Similarly, the 1986 report said, "A faster rate of reduction of rigidities in the financial markets would contribute to reducing the costs of financial intermediation, which remain relatively high in Spain compared with most other industrial countries" (1986, p. 19).

***Wall Street Journal*.** The evidence from the *Wall Street Journal* also supports the view based on the *OECD Economic Outlook* that there was no major financial distress in Spain over this period. This evidence takes two forms.

The first is a lack of mention of financial distress in general discussions of Spain's economy. We identified slightly more than one article per year over this period that devoted significant attention to overall economic conditions in Spain (3/21/77, 6/10/77, 6/5/78, 6/23/78, 3/12/80, 3/25/80, 9/9/80, 3/2/81, 10/7/81, 9/15/82, 5/9/83, 2/16/84, 4/11/84, and 10/18/84). Several of these articles listed multiple problems affecting the economy. For example, a long front-page article in 1978 on post-Franco Spain mentioned high unemployment and inflation, a large current account deficit, low investment, and heavy regulation (6/5/78). Similarly, an op-ed in 1984 discussed unemployment, inflation, and foreign debt, as well as progress in reducing the government's role in the economy and sources of strong growth (4/11/84). Over these articles, there were only two hints that financial distress might have been affecting borrowers' ability to obtain funds or the overall performance of the economy. One occurred in 1981, when the *Journal* mentioned that "[d]omestic sources of long-term financing have almost dried up" (3/2/81). But even that article did not explicitly attribute the financing problems to a rise in the cost of credit intermediation. Instead, it implied that lack of confidence in Spain's economic prospects was behind the lack of funding. It also commented that "the 30 foreign banks in Madrid ... had a bumper year in 1980," suggesting that some types of financing were still readily available. The other hint came in 1984, when the *Journal* said, "The modernization of Spanish banking has been suspended" (10/18/84). However, the article gave no indication that there had been a rise in the cost of credit intermediation. Rather, it appeared to be describing slow progress in structural reform.

The second type of evidence involves the fact that, although the *Journal* occasionally mentioned bank failures over this period (and although it used the term "crisis" a handful of times), the mentions were few and sporadic. And with one possible exception, the *Journal* never suggested that the problems might be systemic. The first mention came in September 1981—more than three years after Reinhart and Rogoff and the IMF date the start of the crisis—when a three-sentence article reported the arrest of 21 administrators of a bank that had "collapsed" in 1978. The article said the bank was "the first of 16 Spanish banks to collapse since 1978, when the recession began to squeeze the profits at banks, especially smaller ones" (9/24/81). The next came more than a year later, when the *Journal* reported that "[t]he four-year-old banking crisis in Spain has claimed its biggest victim," with the Bank of Spain acting to rescue the country's twelfth-largest private bank (11/5/82; see also 11/19/82). Then, in early 1983, the government took over a large conglomerate whose holdings included 18 banks (2/24/83). Later articles described those banks as holding 5 percent of the economy's deposits (4/5/84) and quoted an official saying that they constituted "10% of the banking system" (4/20/84). The *Journal* did not paint a clear picture of whether the takeover and subsequent developments led to significant financial distress. At times, it implied that the banks mainly funded other companies within the conglomerate, and that the entire conglomerate was already insolvent at the time of the takeover (3/21/83, 11/17/83, and 7/13/84). But it also reported that the government said the takeover was needed "to avoid a colossal crisis in the financial system" (3/5/84; see also 7/8/83). This is the one suggestion we have found in the *Journal* in this period of the possibility of broader effects from banking problems. The final articles we have found mentioning banking troubles in this period (other than updates on the collapse of the conglomerate) were brief items in October 1983 and December 1984. In the first, the *Journal* reported the purchase of a bank that had been rescued (10/14/83). In the second, it reported that the country's third largest bank announced that it would not pay a dividend that year and that the funds would be used instead to improve the balance sheet of a "troubled" bank it had acquired in early 1983 (12/7/84). Thus, the discussions of banking problems in Spain in these years are never nearly as serious as the *Journal*'s descriptions in other crisis episodes, such as those in Scandinavia in the early 1990s and Japan in the 1990s and early 2000s.

Thus, one could argue that the evidence in the *Journal* points to occasional credit disruptions in Spain in these years (most notably in late 1982 and early 1983). But there is no reasonable case that the articles in the *Journal* suggest problems nearly as severe as those in other crisis periods identified by the alternative chronologies and by the *OECD Economic Outlook*.

***Discussion*.** Spain in this period probably represents the most striking divergence between our measure and the traditional chronologies: our measure shows no distress at all, while both the Reinhart and Rogoff and IMF chronologies identify a systemic banking crisis that lasted at least five years. The other real-time narrative sources are largely consistent with the *OECD Economic Outlook*; they point either to no distress (in the case of the IMF Article IV reports) or to only slight distress (in the cases of the Bank of Spain annual reports and the *Wall Street Journal*). This evidence indicates that examining the *Economic Outlook* is a reasonably accurate way of summarizing real-time narrative assessments of financial distress from a range of informative sources. But it does not settle the question of what a comprehensive assessment of financial distress in Spain in this era would show.

Our view is that such a comprehensive assessment would point to a conclusion squarely between the complete absence of distress shown by our series and the extended systemic crisis identified by the standard chronologies. There were clearly nontrivial problems in the financial system in this period. As described by the Bank of Spain (especially retrospectively in its 1983 report) and the *Wall Street Journal*, numerous banks failed in this period. And, although it is not in the spirit of our analysis to bring in additional retrospective information, the divergence between our series and the traditional chronologies in this episode makes it useful to do so. The standard retrospective assessment of this period is one provided in 2009 by Jaime Caruana, who served as Governor of the Bank of Spain from 2000 to 2006.[11] He repeatedly refers to the episode as a "crisis," and at one point calls it "a very costly crisis" (p. 33); and he reports that the banks that suffered difficulties accounted for 27 percent of bank deposits (p. 35). This clearly indicates noteworthy distress. But even his account does not paint the episode as dire. He says, "it was a manageable crisis because the core large institutions were not seriously affected. It was a subset of banks that was affected, but not the whole system" (p. 33). He also says that "it was a real crisis but, all in all, manageable" (p. 35); and that there were "seven big banks that [were] not in such bad shape and were able to purchase" the banks that were restructured by regulators (p. 38). In addition, as noted above, none of the real-time observers described important effects on overall credit supply or economic performance, and Caruana does not either; and two of the real-time sources did not judge the developments as being worth mentioning at all.

In contrast, the retrospective account of the Swedish crisis of the early 1990s in the same volume as Caruana's account of the Spanish episode begins (p. 7):[12]

> Sweden suffered a major financial crisis in the early 1990s. The crisis affected six of the seven largest banks, equivalent to a market share of some 85 percent. It also affected finance companies and credit insurance companies. The financial crisis coincided with and was aggravated by a severe currency crisis, which culminated in a 25 percent depreciation of the krona. All this happened in the midst of a severe local economic recession, leading to a total gross domestic product (GDP) contraction of some 6 percent in total over a period of three years. As a result of the multiple crises, the national fiscal budget deficit shot up to 13 percent per year, incidentally, the same figure as the unemployment rate.

Together, this evidence makes it essentially impossible to defend the view that there was no financial distress at all in Spain in these years. Thus, our measure is surely not completely accurate in this period. Our decision to rely on a single real-time source on grounds of consistency, transparency, and reduced scope for judgment inevitably means that we are not attempting to construct a perfect measure of distress. This episode illustrates that feature of our measure. At the same time, the real-time and retrospective evidence makes it equally difficult to defend the proposition that there was distress in this years that rose to the level of such episodes as Sweden in the early 1990s, much less that such elevated distress lasted for many years. Thus, the standard chronologies are also not completely accurate in this period. In short, this episode is clearly a case where both our new series and the standard chronologies contain useful

[11] Jaime Caruana, "Bank Restructuring in Spain: The 1978–83 Banking Crisis," in Stefan Ingves, Göran Lind, Masaaki Shirakawa, Jaime Caruana, and Guillermo Ortiz Martínez, "Lessons Learned from Previous Banking Crises: Sweden, Japan, Spain, and Mexico," Group of Thirty Occasional Paper 79, April 2009, 33–40.

[12] Stefan Ingves and Göran Lind, "Is the Swedish Model for Dealing with a Banking Crisis still Valid?," in Stefan Ingves, Göran Lind, Masaaki Shirakawa, Jaime Caruana, and Guillermo Ortiz Martínez, "Lessons Learned from Previous Banking Crises: Sweden, Japan, Spain, and Mexico," Group of Thirty Occasional Paper 79, April 2009, 7–24.

information that is not contained in the other.

Our hypothesis as to why the *OECD Economic Outlook* failed to mention what were unquestionably positive levels of distress in this episode is that, as we note in Appendix A, the accounts in the *Economic Outlook* of developments in countries outside the G7 in this period were relatively brief. As a result, distress in small countries that was positive but not central to macroeconomic developments was likely not to be mentioned. Fortunately, the general consensus in work on financial crises, as well as the evidence from our new series, is that significant financial disruption was uncommon in advanced countries in the early years of our sample. Thus, it is unlikely that the brevity of the early entries for small countries causes our series to miss many episodes of notable distress.

SWEDEN

Though the three crisis chronologies are broadly similar for the case of Sweden in the early 1990s, there are some differences. Both the Reinhart and Rogoff and IMF chronologies date the start of the Swedish crisis a year before the first rise in financial distress that we find in the OECD reports (which is 1992:2). Also, both alternative chronologies have the crisis lasting noticeably longer than we do. The IMF chronology, for example, dates the end in 1995:2, whereas our distress measure returns to zero in 1993:2. The additional evidence suggests that this is a case where the earlier start date of the alternative chronologies is arguably more accurate. Other than that, the new measure of financial distress accords well with the auxiliary evidence, particularly in the timing of the peak distress. We also find no evidence that financial distress in Sweden dragged on through 1995.

***Central Bank Reports*.** The annual reports of the Sveriges Riksbank are quite informative up through 1993.[13] Unfortunately, the format changed in 1994 and the report became more of a glossy brochure and less of a substantive document. As a result, these reports provide more information about the start and the acute phase of the Swedish financial crisis, and less about the conclusion. In general, the reports provide more discussion of financial conditions and rescue measures, and less about the effects of distress on lending and consumer and business spending. As a result, the information is somewhat narrower than that in the *OECD Economic Outlook*.

The Riksbank report for 1990 suggested at least some financial distress in that year. Though banking problems were not central to the discussion, the 1990 report noted that "[s]harply rising credit losses were announced in the banking sector after several profitable years. This contributed to more stringent credit assessments towards the end of the year" (1990, p. 25). The report went on to say: "It was finance houses, however, that encountered acute problems in the credit market in 1990. A crisis in this sector arose in the autumn as a result of falling property prices" (1990, p. 25). Since finance houses provided only a small fraction of total lending, and the report does not emphasize a general problem, it seems likely there was only small overall financial distress in 1990.

The central bank report for 1991 suggested that financial distress increased somewhat in 1991—particularly late in the year. The Riksbank said that credit losses rose substantially because the conjunction of the fall in commercial property prices and the recession reduced

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[13] The title of the volumes is the *Sveriges Riksbank Annual Report*. The volumes are typically released early in the subsequent year.

firms' ability to repay existing loans (1991, p. 21). The end result was that "[t]he solvency of many banks and finance houses weakened appreciably in 1991" (1991, p. 25). Two major banks required reconstruction and effective nationalization toward the end of the year (1991, p. 25). Though there was little explicit discussion that these developments were likely to affect lending and spending, the report did say that "[b]anks hit by losses may therefore be forced to restrict their lending in order to comply with capital adequacy requirements" (1991, p. 26). Based on the Riksbank report, the 1991:2 start date of both the alternative chronologies may be more accurate than the new measure's first rise in 1992:2.

The Riksbank reports for 1992 and 1993 confirm that these were the years of greatest financial distress—consistent with the new measure. The 1992 report gave particular attention to the currency crisis, which forced Sweden to abandon its fixed exchange rate in November (1992, p. 7). But it also stressed that "financial problems ... hit certain agents in the Swedish market, partly as a result of the currency unrest in the autumn" (1992, p. 17). It continued with a discussion that "[d]uring 1992 Nordbanken, Första Sparbanken and Gota Bank incurred such large losses that the State was obliged to provide various forms of support" (1992, p. 23).

The 1993 report conveyed the sense that the problems had been large early in the year, but then resolved rapidly. In discussing state support measures it stated (1993, p. 29):

> Immediately after State support for banks had been approved by Parliament in December 1992, S-E-Banken, Sparbanken Sverige and Föreningsbanken banken gave notice that they might be in need of State financial support. The State had already taken over Nordbanken and Gota Bank, which were being reconstructed.
>
> As the financial situation for banks gradually improved during 1993, towards the end of the year S-E-Banken, Sparbanken Sverige, and Föreningsbanken were able to raise additional capital in the private market.

In our measure based on OECD reports, acute distress in late 1992 would typically not be discussed until the first *OECD Economic Outlook* for 1993. This likely explains why the OECD described more severe conditions in 1993:1 than in 1992:2.

As discussed above, the Riksbank reports became noticeably less informative with the 1994 volume. To the degree that they discussed policy and the economy, the main issues raised were inflation and the budget deficit (1994, pp. 4–5). This, combined with the fact that the 1993 report indicated that the problems were resolving rapidly in the second half of the year, suggests that the much later dates for the end of the crisis in the Reinhart and Rogoff chronology (1994:2) and the IMF chronology (1995:2) may be less accurate than the earlier end shown by our new measure.

IMF Article IV Reports**.** The evidence from the Article IV reports is consistent with the view that notable financial distress in Sweden began somewhat earlier that suggested by the OECD. However, it agrees with the OECD that distress peaked in late 1992 and early 1993, and ended somewhat earlier than suggested by the IMF chronology and Reinhart and Rogoff.

The 1991 report (dated August 9, 1991) provided little indication of financial distress in 1990 and the first half of 1991. Indeed, it suggested even lower levels of distress than described by the Riksbank. The only mention of financial-sector problems was a discussion of modest risk from rising corporate debt: "the growth of corporate debt, if it were to continue, could reach a level which could constitute a problem for the domestic financial system. Corporate debt-equity ratios would rise, and if corporate solvency problems were to emerge, the assets of domestic banks could become impaired" (1991, p. 11).

The 1992 report (dated June 23, 1992), however, suggested that notable problems developed in the second half of 1991 and the first half of 1992. However, the overall tone was that the problems were not severe. Most notably, the report stated (1992, p. 9):

> The authorities observed that over the past year, the solvency of many banks and finance houses in Sweden had weakened appreciably due to credit losses related to the steep falls in commercial property prices. This weakness was particularly concentrated in two major banks, Nordbanken and Sparbanken, which required government guarantees in 1991 totaling SKr 8 billion to facilitate borrowing to restore their capital position. More recently, ... the Government sought parliamentary approval for further government support to Nordbanken in an amount up to SKr 20 billion. The authorities did not rule out the need for further support to the banking sector were property prices to continue weakening substantially in the period ahead. However, they did note that at present, the commercial banks, other than Nordbanken and Sparbanken, were comfortably meeting the Basle capital adequacy requirements.
>
> The authorities observed that the uneven distribution of bank losses had widened the spread in the lending capacity of the various banks. However, there was to date no real evidence of a "credit crunch". In the Riksbank's view, the recent sharp slowing in the growth of the credit and monetary aggregate was almost exclusively demand determined.

Similarly, financial distress and banking problems were not included in a list of risks to the outlook, although "possible further asset price deflation" was mentioned (1992, p. 7). Thus the Article IV report saw noteworthy but not dramatic distress in this period. This contrasts with the *OECD Economic Outlook*, which saw no distress in this period.

The 1993 report (dated July 13, 1993) concurred with the OECD that the problems became considerably more severe in late 1992 and continued through the first half of 1993. It referred to "a banking system under severe strain" (1993, p. 1), "the present high spread between commercial bank lending and deposit rates," and "the banks' present lack of capital to support increased lending as the economy recovers" (1993, p. 18). In a more detailed description, it made clear that the crisis was significant and ongoing (1993, pp. 13–14; see also pp. 4 and 6):

> The authorities observed that during 1992 substantial budgetary support had been provided to Sweden's ailing banking system, while the state had to intervene directly in a number of important banks. Despite these measures, however, it had become evident that the banking sector crisis was of such a character and magnitude that more general and far-reaching measures were called for in order to safeguard the stability of the payment system. To that end, in December 1992 Parliament approved legislation indicating that the state would guarantee that the banks and certain other credit institutions would be in a position to meet their credit obligations on a timely basis. ... While it was as yet too early to quantify the likely additional budgetary aid needed, it was expected that it would be substantial. ...
>
> In the authorities' estimation, credit demand was at present extremely subdued and the currently undercapitalized state of the banks was not a major factor inhibiting credit growth. However, they regarded it imperative that swift and adequate government support should be provided as necessary to the banks in order to ensure the sound functioning of the payment system. Moreover, they regarded it important

> that increased competition among banks be fostered in order to place downward pressure on the large spreads between bank lending and deposit rates—presently around 7 percentage points—which in themselves stifled borrowing and investment.

The 1994 report (dated December 9, 1994), however, suggested dramatic improvement. The only noteworthy mention of banking troubles was a self-contained paragraph most of the way through the document. It described large improvements in the health of the banking system since 1993 and emphasized its overall health, though at the end it noted that some residual risk remained (1994, p. 15):

> During 1992 and 1993 the Swedish banking system required Government support totaling SKr 90 billion, or 6 percent of GDP, in the form of capital transfers and loan guarantees. The authorities noted that since 1993 there had been a substantial improvement in the banks' overall financial situation in the wake of lower domestic interest rates, a recovery in the economy, and some rebound in asset prices. Moreover, the banks had raised substantial amounts of capital in the domestic equity market, thereby further strengthening their capital adequacy position. ... [T]he eventual cost of the government support operation might be significantly lower than originally calculated. In the authorities' view, the banking system was in a sufficiently strong position to weather the present level of high interest rates for some years without the need for further state support. However, they acknowledged that any further increase in interest rates could undermine the banks' balance sheet position.

Finally, the banking sector received even less attention in the 1996 report (dated August 13, 1996). In the introductory background material, the report implied that the banking crisis had ended by the end of 1993, saying: "During the period 1990–93, the Swedish economy experienced its worst postwar crisis with record levels of unemployment, large fiscal imbalances, a forced float of the currency, and a severe banking crisis" (1996, p. 2). It also said, "The banking crisis has been successfully dealt with" (1996, p. 22). And it reported, "Marking the end of the banking crisis, the 'bank support guarantee,' approved by the Riksdag in December 1992 at its height, was terminated as of June 30, 1996" (1996, p. 6). However, the report appeared to be describing the formal end of events related to the crisis, and did not imply that there had been any significant banking issues after 1993. Thus, the evidence from the Article IV reports, like that from the Riksbank, suggests that Sweden's crisis did not linger in any important way into 1994 or 1995—consistent with the view of the OECD.

***Wall Street Journal*.** The picture painted by the *Wall Street Journal* is quite similar to that painted by the Riksbank and the Article IV reports: the financial distress appears to have begun earlier than suggested by the *OECD Economic Outlook*, but to have ended earlier than suggested by the IMF chronology and by Reinhart and Rogoff.

A handful of articles in the fall of 1990 described problems in finance companies, but did not suggest that they were associated with broader financial market disruptions (9/28/90, 10/2/90, and 11/14/90). Our search algorithm did not identify any articles mentioning financial distress in Sweden in the first half of 1991.

Beginning in the second half of 1991, however, the *Journal* began to describe significant problems. In early October, it reported that "havoc is rippling through Sweden's financial system" (10/4/91). The article went on to say, "Senior Stockholm bankers fret that no quick relief is in sight. Overall, credit losses in Sweden's financial services industry more than quadrupled last year to a record 17.2 billion kronor." The article also reported that "while the shock waves aren't powerful enough to swamp the system, they do promise to give financiers rough times for the next several years." A month later, the *Journal* devoted a long article to banking troubles in Sweden, Finland, and Norway. It said, "Under the weight of surging loan losses, major banks from Oslo to Helsinki are crumbling. Recession, huge write-downs of overvalued real estate portfolios and poor management have prompted boardroom shake-ups, massive government bailouts and a collapse in confidence." It viewed Norway's banking system as "hardest hit" of the three, but described large loan losses in Sweden's banking system and a government bailout of a large bank (11/1/91). In the first half of 1992, the *Journal* reported "huge losses" (3/5/92) and additional bailouts (4/3/92 and 5/11/92). One article referred to the "18-month nightmare that has cost taxpayers across Scandinavia nearly 80 billion kronor," and said, "Banks' lending losses in Norway, Sweden and Finland remain at record levels" (5/11/92). Thus, the evidence from the *Journal* is consistent with the assessment of the alternative chronologies and the evidence from the Sveriges Riksbank that Sweden's crisis began in late 1991.

The *Journal* viewed the situation as deteriorating further in the second half of 1992. In mid-September, it referred to "the deepening crisis in Sweden's financial sector" (9/18/92). A few days later, it described a series of negative developments (9/22/92):

> Real, or inflation adjusted interest rates have hovered around 10% for most of the summer, further lambasting stricken real estate markets and swamping beleaguered Swedish banks with new red ink.
>
> Underscoring the continued deterioration, Sweden's fourth biggest bank, Gota Bank, suspended payments last week and was able to stay afloat only after the government stepped in and guaranteed that all commitments to deposit-holders and creditors would be fully honored.
>
> On Friday, Standard & Poor's placed ratings of 13 banks, mortgage lenders and other financial institutions on its CreditWatch list for possible downgrade .... Worried Swedish bankers forecast that continued high interest rates are also likely to mean further state bailouts of faltering banks.

The *Journal* described a series of additional unfavorable developments and government actions over the next several months (9/25/92, 10/5/92, 10/16/92, 11/6/92, 11/17/92, and 12/23/92). In December, it referred to "the long-running crisis that has battered Scandinavia's financial-services industry the past two years" (12/23/92).

After the end of 1992, references to financial distress receded rapidly from the *Journal*. (As noted above, developments in late 1992 are covered by the 1993:1 issue over the *OECD Economic Outlook*. Thus, there is no inconsistency between the *Journal*'s view that the crisis peaked in late 1992 and the *Economic Outlook* providing its most negative assessment in 1993:1.) The *Journal* described steps toward the restructuring of a bank in early 1993 (1/22/93), and large reported losses for 1992 at a major bank shortly later (2/24/93). In July, it stated that a major Swedish bank "is weathering a national banking crisis" (7/6/93), suggesting that it viewed the crisis as not yet over. And in August, it said, "In what upbeat executives touted as the end of an acute financial crisis, Sweden's Skandinaviska Enskilda Banken rebounded to a second-quarter operating profit," but that "continued heavy loan loss provisions probably will keep the bank in the red for the full year" (8/18/93). Thus, the *Journal* appeared to view conditions as improved but not fully back to normal in late 1993.

For the next 16 months, our search algorithm yielded only one article relevant to financial distress in Sweden—a report of the government-financed merger of two banks (12/13/93). In

January 1995, the *Journal* reported that "banks in Sweden and Norway are expected to post healthy profits for 1994," and contrasted the banking sectors of those two countries with Finland's, where "the sector hasn't emerged from the Nordic banking crisis" (1/26/95). The next month, it reported (2/17/95),

> Sweden's biggest bank, Skandinaviska Enskilda Banken, announced that its 1994 operating profit showed a fivefold increase over the previous year, underscoring the swift recovery begun last year.
>
> But the bank also announced a large one-time write-down of the value of properties seized after loan defaults in recent years. ...
>
> The property write-off actually is the latest sign of recovery for Sweden's beleaguered banks.

And in June, the *Journal* referred to "the Scandinavian banking crisis of the early 1990s" (6/9/95), strongly implying that it viewed the crisis as over. Our search algorithm yielded no other relevant articles for 1995. Thus, the evidence from the *Wall Street Journal* does not support the view of the alternative chronologies that the crisis in Sweden lasted through 1994 or 1995.

TURKEY, 1982–1985

Turkey in the early 1980s is another case where both the IMF chronology and Reinhart and Rogoff identify a crisis, but our new series based on the *OECD Economic Outlook* does not. The two alternative chronologies are quite similar: the IMF chronology dates the crisis as running from 1982 to 1984; Reinhart and Rogoff date it from 1982 to 1985. The reports of the Turkish central bank, the IMF Article IV reports, and the *Wall Street Journal* indicate that there was indeed some financial distress in this period. However, in the additional sources, the characterization of the distress is less severe than in cases where all three chronologies agree that a significant crisis occurred, such as Finland, Norway, and Sweden in the early 1990s. Moreover, the additional sources all suggest that the distress was effectively over by the end of 1983, rather than continuing into 1984 or 1985.

***Central Bank Reports*.** The reports of the Turkish central bank are very detailed and substantive.[14] At the same time, the reports can be slightly hard to analyze. Much of the report focuses on information about the balance sheets of the financial sector, which is somewhat dry and hard to interpret. Also, the translations are a bit awkward, particularly in this period, which sometimes makes discerning their meaning difficult.

The report for 1982 made it clear that Turkey's economy and financial system had been undergoing significant changes. Turkey was in the midst of a disinflation program, and was taking measures to liberalize its financial markets—such as allowing banks to set the interest rate on deposits. The report said: "The implementation of tight monetary policy to control the inflation and efforts spent to form conditions for free market economy were successful despite the difficulties faced in the financial sector in the second half of 1982" (1982, p. 25). The nature of those difficulties was only detailed toward the very end of the report, in a section on capital markets. The report stated (1982, p. 71):

> In recent years, thanks to the expansion in the volume of transactions of institutions,

[14] The full name of the volume is *The Central Bank of the Republic of Turkey Annual Report*.

> which in time increased in numbers and are defined as money dealers, the capital market has shown a rapid development and its share within the financial system has increased. However, towards the end of 1981, as the volume of certificates issued by these institutions, embodying their own liabilities, mounted up in comparison with their net assets, they became insolvent. This instability continued during 1982 and affected the developments in the capital market adversely.

The report said that "[t]he magnitude of the crisis, which started towards the end of 1981, attained a serious dimension in June 1982 which caused one of the largest brokers to face difficulty in repayments" (1982, p. 75). It also described a number of measures taken to deal with the problem, saying: "On January 14, 1982, ... Decree No. 35 was issued in order to arrange the transactions of brokers who were in financial difficulty, and to liquidate them if necessary, and to guarantee the claims of those who deposited money with them" (1982, p. 74). Given the discussion of financial problems and rescue measures, it is clear that some financial distress occurred in 1982. In this regard, the reports of the central bank are more consistent with the alternative chronologies than with the new measure.

At the same time, the tone of the 1982 report was matter-of-fact and did not convey a sense that the problems with money brokers spilled over to the banks or were otherwise particularly consequential. There is one mention in the section on the balance sheet of the central bank of "special support credits provided to certain banks having acute problems of liquidity" (1982, p. 63). But a later reference to the fact that the "[c]apital-resource ratio is one of the indicators of the sound structure of banks. This ratio which was 4.5 percent in 1981 rose to 6.3 percent in 1982" (1982, p. 64), suggested that the solvency of the banking system improved in 1982. The report mentioned that credit growth at deposit money banks slowed in 1982, but attributed it to a less rapid rise in deposits due to structural factors, rather than to problems in financial system (1982, pp. 66–67). Based on these portrayals, it seems likely that the perceived degree of financial distress in 1982 was not large, and perhaps only mild.

The 1983 *Annual Report* gave scattered hints of continuing distress. The opening section said (1983, p. 18):

> financial problems existed in 1983 in the private sector, as far as corporations and banks were concerned as it was experienced in 1982, stemming from the facts such as persistence of the traditional financial structure and practices and failure to increase capacity utilization ratios. In order to protect the economy from adverse effects of these problems, the Central Bank continued to extend support credits to the banks which were in critical condition.

Our reading is that the report was mainly talking about structural problems, but that some banks were in trouble. Later, the report described: "When compared to the previous years, one of the important developments in 1983 was that monetary authorities transferred TL 74.9 billion to deposit money banks which usually provided funds to monetary authorities" (1983, p. 46). These transfers were in the form of increased rediscounts (1983, p. 53), which is consistent with some banks having liquidity needs. Finally, "[a]ccording to the Decree by Law No. 70 on the banks, which was issued in July 1983, the deposit limits of the banks were abolished, and the 'Insurance Fund for Savings Accounts' was established in order to insure the saving deposits at the banks" (1983, p. 54). The introduction of deposit insurance on savings accounts clearly suggests financial concerns, but the fact that this is all that was said about it might suggest that the action was not seen as particularly necessary or consequential. Thus, the report for 1983 is again consistent with some financial distress in Turkey in 1983, but the amount is unclear.

The report for 1984 did not give any indication that a dramatic crisis had occurred in the current year or the previous two. Financial conditions were not mentioned in the economic overview, and real GDP was described as increasing substantially in each of 1982, 1983, and 1984 (1984, p. 17). The only sign of financial distress of any sort was reference to a slowdown in the growth of bank credit, which was attributed in part to the rise in nonperforming loans. The report stated (1984, p. 55):

> In 1984, credits of deposit money banks increased by 29.9 percent .... The rate of increase was 67 percent in 1981, 36.9 percent in 1982 and 33.9 in 1983. The rise in rediscount rates and reserve requirement ratios have been effective on the slowdown observed in the rate of increase of credits. Besides this, non-performing debts which showed a rapid increase in the last few years, induced banks to be more selective in extending credits.

Based on this report, it would be hard to identify more than very minimal financial distress in 1984.

***IMF Article IV Reports*.** The Article IV reports also described some financial distress in Turkey, mainly starting around mid-1982 and continuing through the second half of 1983. But the tone was not nearly as severe as with episodes where all the chronologies agree that there was a crisis, such as the Scandinavian countries in the early 1990s.

The 1983 report (dated May 20, 1983) made a few references to financial disruptions, but did not suggest that they were having a large role in economic developments. (The previous report had been in August 1981, before the starting date of the crisis in the Reinhart and Rogoff and IMF chronologies.) In a discussion of the central bank's difficulties in controlling the money supply, it said: "The problems caused by the collapse of the Kastelli brokerage firm in June 1982 added to the monetary difficulties as this necessitated support to several banks and made it impossible for the Central Bank to force them to make up their shortfalls in reserve requirements" (1983, pp. 6–7). It went on to say, "Excessive competition for deposits among banks, particularly following the Kastelli bankruptcy, together with financial difficulties in many firms, ... created financial difficulties for many banks" (1983, p. 7). It also reported, "In March 1983, under the existing banking law, the Government replaced the management of three of the smaller banks that had been in financial trouble since the Kastelli bankruptcy" (1983, p. 9). However, the IMF staff did not emphasize the financial distress. The conclusion of the report mentioned that "[t]he authorities recognize the need for increasing the financial strength of the banks" (1983, p. 18). And, in a discussion that began, "Perhaps the most difficult area at the moment relates to judgments in quantitative monetary policy," it referred to "the confidence problems arising from the Kastelli crisis" as one source of "a changing monetary environment" (1983, p. 18). But the main emphasis of the report was on such issues as government and external debt, domestic stabilization, and structural reform.

The next report, in 1984 (dated September 7, 1984), described some ongoing problems through late 1983, but again did not emphasize them. There were only two noteworthy mentions of financial distress. First, the report stated, "Against the background of a financial crisis that left a number of commercial banks in a strained liquidity position, and encouraged by a marked slowdown in the rate of inflation, monetary policy was relaxed considerably after the middle of 1982" (1984, p. 6). Second, it reported, "Given insufficient growth in their liquidity and a strong demand for credit, partly from enterprises in difficulty, several commercial banks turned to the Central Bank for assistance, which in the course of the year [1983] extended LT 70 billion in special credits to banks and discounted about LT 140 billion of commercial bills for private enterprises" (1984, p. 6). But the report devoted vastly more attention to such subjects as high inflation, the balance of payments deficit, and the government budget deficit.

Finally, discussions of financial distress and banking problems were entirely absent from the 1985 report (dated December 18, 1985). The closest to a hint of possible problems was the statement, "Although gross official reserves and reserves of the banking system have strengthened considerably since 1980, the cover these afford in relation to short-term debt has fallen sharply" (1985, p. 14).

***Wall Street Journal*.** The *Wall Street Journal* conveyed a similar sense as the other additional sources that there was some financial distress in 1982 and 1983, but little in 1984. The first references to financial distress yielded by our search algorithm came in mid-1982. In June, the *Journal* described how deregulation in 1980 had led money brokers to offer interest rates on deposits "of 160% or more" (6/23/82). It also said: "Many of those money brokers were unlicensed; some were simply grocers who took up 'banking' on the side. ... Eventually the government sensed that these so-called bankers were using the flood of deposits to pay out interest on existing accounts, a practice known as a Ponzi scheme that had to end in ruin. And, indeed, it did." The article focused on the recent collapse of the largest broker, Banker Kastelli. It reported: "To avoid a total panic, the government took over Banker Kastelli, announced that the rights of small investors were under 'state guarantee' and offered low-interest credits to private banks threatened by Banker Kastelli's collapse." An article in July reported, "Most of the money brokers collapsed during the winter after the government warned Turks against such investments," and said, "The country's economic problems were compounded in recent months by a banking crisis that led to the collapse three weeks ago of a major money brokerage [Banker Kastelli]" (7/15/82).

Two articles later in the year elaborated on these developments. One in August provided a similar description of the collapse of the brokerage houses, and referred to "the continuing credit crisis among Turkey's banks" (8/5/82). But it also reported that the former deputy prime minister and head of economic policy "doesn't think the country's banking system is as shaky as appearances indicate. 'It isn't a big problem,' he says. 'The banks aren't threatened.' " An article in September reported, "The Turkish government is currently liquidating the brokerage house [Banker Kastelli] and providing cheap credit to the endangered banks" that had been hurt by the brokerage's collapse (9/8/82). Finally, two articles in the fall described significant problems involving Turkey's economy or its foreign debt with no mention of financial distress (9/28/82 and 10/14/82). Thus, the evidence from the *Journal* points to mild improvement over the last five months of 1982.

The next noteworthy development we have found in the *Journal* came in March 1983, when the government took over two small banks. The *Journal* said the takeovers (3/17/83):

> may presage official action to shore up a number of major banks that are also thought to be in serious need of cash ....
>
> The difficulties these small banks faced reflect a weakness that bankers say pervades the Turkish banking system ....
>
> It was thought unlikely that either bank would be liquidated.
>
> It is widely believed that the government is considering milder action against at least two major banks that have had trouble meeting interest payments to depositors, but it was considered unlikely that any larger bank would be placed under government control.

Two articles later in the year largely recapitulated these developments, with one referring to "shaky banks" and saying that some analysts believed that to not have followed the government's policies to help troubled banks "would severely damage the banking system and cause massive unemployment" (8/18/83; see also 11/2/83). That the actions were taken could be a sign that the effects of the trouble were fairly contained.

Our search algorithm yielded only one noteworthy article in 1984 and 1985. In September 1984, the *Journal* reported that nonperforming loans were thought to be substantial, and quoted one analyst as saying, "A major industrial failure could lead to a major bank failure" (9/20/84). Several articles over this period discussed Turkey's economy and made no mention of current financial distress (6/22/84, 7/25/84, 2/27/85, and 5/9/85).

Thus, the evidence from the *Journal* for this period points to distress that was clearly nontrivial, but did not reach as deeply into the financial system or affect major banks as severely as in the episodes that we classify as moderate crises or worse. To the extent there was distress, the timing based on the *Journal* matches the IMF's dating of 1982–1984 more closely than Reinhart and Rogoff's of 1982–1985.

TURKEY, 2000–2003

In the case of Turkey's financial problems in the early 2000s, there are subtle differences among the three crisis series. Our new measure shows distress spiking in 2001:1 and remaining very high in 2001:2. It then decreases fairly rapidly over 2002 and 2003, hitting zero in 2004:1. The *OECD Economic Outlook* for 2001:1 reported that acute troubles in the financial system began at the end of 2000. As discussed in the paper, we code episodes that happen after an issue of the *Economic Outlook* went to press as occurring in the half-year when they were actually discussed. The IMF chronology dates the Turkish crisis as beginning in 2000:2 and ending in 2001:2. Reinhart and Rogoff date the crisis as occurring just in 2000 (which, following our conventions, we code as starting in 2000:1 and ending in 2000:2). The information from the reports of the Turkish central bank, the IMF Article IV reports, and the *Wall Street Journal* agree that the financial troubles began in late 2000, which is roughly consistent with all three chronologies. The additional sources also showed that severe financial problems continued at least through all of 2001, which is at odds with the Reinhart and Rogoff chronology. The additional sources described some lingering distress in 2002. But only the Article IV reports suggested notable distress in 2003; the *Wall Street Journal* described none, and the reports of the central bank pointed to a financial system that was largely, though not quite entirely, healed. This points to a view between that of the IMF chronology (which puts the end of the crisis in 2001) and our new measure (which shows distress declining after 2001, but remaining substantial through 2003:1 and still positive in 2003:2).

***Central Bank Reports*.** To get a baseline by which to judge later developments, we begin with the central bank annual report for 1999.[15] The report discussed that the economy was in a recession, and attributed the problems to a variety of factors, including the worldwide contraction, the 1998 Russian crisis, and an earthquake that hit a key industrial area of Turkey in August 1999 (1999, pp. 24–29).[16] The chapter on financial markets said, "The banking sector

[15] The full title is, as before, *The Central Bank of the Republic of Turkey Annual Report*. The reports for this period are substantially longer than in the 1980s. The reports are available online after 1996 at http://www.tcmb.gov.tr/wps/wcm/connect/TCMB+EN/TCMB+EN/Main+Menu/PUBLICATIONS/Reports/Annual+Reports.

[16] The electronic version of the 1999 volume does not have page numbers. The page numbers given refer

started 1999 with the take over of three financially weakened banks ... by the Savings Deposit Insurance Fund (SDIF). It was also a year in which the adverse consequences of the previous year's developments became visible in banks balance sheets" (1999, p. 123). There was a subsequent reference to the fact that "five banks were transferred to the Savings Deposit Insurance Fund in December" (1999, p. 141). The report suggested that banking troubles were affecting lending, saying: "The slow-down in economic growth in 1999 caused the quality of the loan portfolio to deteriorate and the risk of lending to increase considerably. These unfavorable developments led the banks to cut back on lending and substitute the risk free government securities for the loans in their portfolios" (1999, pp. 123–124). Though this report does not indicate widespread financial difficulties, it certainly gave the sense of at least mild financial distress in 1999—well before any of the chronologies suggests a systemic crisis.

The annual report for 2000 gave little indication that a financial crisis was a dominant feature of the year. Indeed, the opening summary on the Turkish economy said that "[t]he main determinant of the developments in the Turkish Economy in 2000 was the 'Disinflation Program' which had been applied since the beginning of the year" (2000, p. 13). A "crisis" was mentioned in passing as a development that forced the central bank to depart from its target for net domestic assets (2000, p. 15). The "financial turmoil initiated by the liquidity crisis at the end of November" was also discussed in the section on the balance of payments (2000, p. 49), which is consistent with the notion that the central bank viewed it primarily as a currency issue. Later in the report, there was more discussion that the liquidity problems affected the banking system. For example, the report said: "The net worth and the profit of the banking system significantly deteriorated in 2000. ... The effects of the financial crisis at the end of November ... can only be seen in the balance sheet at the end of 2000" (2000, pp. 103–104). Similarly, there was reference to the fact that "[t]he crisis emerging in the second half of November 2000 adversely affected the financial condition of the public banks because of the high daily need for liquidity" (2000, p. 105). There was also some mention of emergency measures. In particular, the report said (2000, p. 105):

> Before the implementation of the disinflation program in 2000, the five banks in weakened financial condition were transferred to the Savings Deposit Insurance Fund (SDIF) in order to improve the financial condition of the banking sector. After the [Banking Regulation and Auditing] Board started its operations [at the end of August 2000], the number of the banks transferred to the Fund reached eleven banks. ... The share of the assets of the banks transferred to the Fund in the total assets of the sector was 8 percent in November 2000.

It also stated that "the banks taken over by the SDIF were provided with credit amounting to TL 500 trillion to meet their urgent liquidity needs. The credit was extended in two stages [December 4, 2000 and December 6, 2000]" (2000, pp. 99–100). Based on the various references to a "crisis" and the emergency measures, it seems clear that the central bank saw some financial distress in late 2000. At the same time, the bank's discussion of the economy was relatively optimistic, and there were references to the increases in consumption and investment spending (2000, pp. 16 and 33). Thus, it is possible that the bank perceived the level of distress to be fairly low even in late 2000.

The 2001 *Annual Report* made it clear that there was substantial financial distress in 2001. There were many references to crises in November 2000 and February 2001. The report's analysis of what happened centered on vulnerabilities in the financial system, combined with a

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to the pages in our printout (with 1 assigned to the first page of Chapter 1 as in later reports).

rapid decrease in capital inflows. It stated (2001, p. 118):

> The increased risks taken by these banks materialized due to sharp increases in interest and foreign exchange rates during the financial crises of November 2000, and February 2001. These adverse developments led to significant losses and deterioration in their financial structure. Afterwards, 9 private sector banks became insolvent and were taken over by the Savings Deposit Insurance Fund.

The report also said that "[p]ast due loans ... increased by 41 percent in real terms ... in November 2001 with respect to the same month of the previous year" (2001, p. 129). The central bank believed that both credit demand and credit supply were greatly reduced as a result of the losses and other effects of the crisis. It stated: "The decrease in the supply of credit resulted from the fact that banks preferred to stay liquid due to increased interest expenses, the shrinking financing possibilities, and difficulties in collecting past-due loans" (2001, p. 126). It also said that the crises caused a fall in output, stating: "The Turkish economy entered into a recession period in 2001, stemming from the crises in financial markets in November 2000 and February 2001 after having realized rapid growth in 2000" (2001, p. 17). Importantly, the bank believed that the currency crisis component of the financial turmoil had its own direct effects on demand. It said: "A substantial amount of capital outflow occurred after the financial crises in November 2000 and February 2001 and the Turkish lira depreciated rapidly after being allowed to float. These developments negatively affected the expectations of economic agents and led to a contraction in domestic demand and thus of the economy" (2001, pp. 17–18). In response to the crisis, a comprehensive bank restructuring program was put into practice in May 2001 (2001, p. 16). "During the restructuring process, SDIF banks were given public support in the form of cash and government securities to strengthen their financial structure and terminate their short-term liabilities. The problem loans of these banks were transferred to ... a newly established unit" (2001, p. 121). To pay for the bailout, the Supplementary Budget Law was enacted in June (2001, p. 38). These descriptions of severe banking problems, credit disruptions, effects on the economy, and bailouts all suggest substantial financial distress. The report also does not give any indication that conditions were improving over the year. In this way, it is consistent with the new measure which shows high levels of distress in both the first and second halves of 2001. The report is clearly at odds with Reinhart and Rogoff's view that the Turkish crisis was confined to 2000.

The annual report for 2002 was quite upbeat. There was reference to the fact that "the financial stability maintained throughout the year supported economic recovery" (2002, p. 13). Importantly, the central bank seemed to define financial stability very broadly, focusing particularly on the exchange rate and government debt. With regard to the banking sector, the report conveyed the sense that conditions were certainly better, but not completely healed. There was reference to "speeding up the banking restructuring program" (2002, p. 12). The report stated that "privately owned banks were provided with capital support under provisional Article 4 added to the Banking Act. This article aimed at resolving the non-performing loans and strengthening the capital base of privately owned banks" (2002, p. 101). It also said, "Within the context of the 'Banks Capital Strengthening Program', according to the results of the three-step auditing, Pamukbank, whose capital adequacy ratio was under zero, was transferred to the SDIF on July 18, 2002" (2002, p. 101). The fact that banks still needed substantial public assistance strongly suggests that financial distress was present in 2002. At the same time, the report said that "the capital needs of 25 of these 27 banks ... were determined as TL 1.3 quadrillion. Fortunately, with the positive developments in the first half of 2002, the total additional capital need of the banks dropped to TL 224 trillion as of June 21" (2002, p. 102), suggesting substantial improvement during the year. The annual report also discussed further reductions in credit supply, saying (2002, p. 85):

> The volume of real credit, decreased in real terms in 2002, as it had in 2001. In addition to the contraction in the supply and demand for credit, there were other factors contributing to the acceleration in the decrease in the credit volume. Unpaid credit started to be monitored in the non-performing loans item instead of in the credit item. There was a drop in the number of Banks. In June 2002, TL 3.1 quadrillion, which was the credit portfolio of a bank taken over by the SDIF, was transferred to the off balance sheet items.

This, too, suggests continuing financial distress in 2002. In this way, the central bank report is more consistent with the new measure, which shows continued mild financial distress in 2002, than with the other chronologies, which place the end of the crisis in either 2000 (Reinhart and Rogoff) or 2001 (IMF).

The annual report for 2003 suggested that little financial distress remained in 2003. As in 2002, the report was very upbeat, extolling the rapid rate of GDP growth and recovery in investment spending (2003, pp. 13 and 19). Also, similar to the 2002 report, there were references to the "stability in the financial markets observed by the end of Iraqi war in April 2003" (2003, p. 15). There was, however, discussion of ongoing bank restructuring. For example, the report said (2003, p. 104):

> While important steps were taken in order to sustain soundness and stability in the banking sector in recent years, the restructuring program continued. The financial restructuring of state-owned banks was completed, but operational restructuring continued. ... Since 1997, 18 of 20 private banks ... were resolved and transferred to the SDIF. While one of the remaining 2 banks was used as "bridge bank", the other was decided to merge with a public bank as a result of failure in its resolution process. Also, the capital bases of private banks improved and their risks restricted.

In terms of credit, the report stated (2003, p. 86):

> the volume of credits followed an upward trend both demand wise and supply wise. It is observed that most of the increase occurred in the credit items that had the least probability of being unpaid, like the credits extended to consumers and Small and Medium Sized Enterprises. Also, a decline in non-performing loans was experienced due to the state and private banks and the banks under the Savings Deposit Insurance Fund.

Later, the report made clear that "[t]he non-performing part of loans still continued its high level while it dropped due to the upward trend in economic growth and the decrease in interest and exchange rates" (2003, p. 111). Even with these references to continued bank restructuring and the still-high level of nonperforming loans, it seems clear that the Turkish central bank saw financial conditions as basically quite sound in 2003. This is somewhat inconsistent with the new measure, which shows mild distress (4 and 2 on our scale) in the two halves of 2003, but not dramatically so.

***IMF Article IV Reports*.** The first Article IV report after the start of the period when the chronologies identify financial distress was in 2002 (dated April 4, 2002). That report agreed with the various chronologies that a crisis began in 2000, saying: "against a background of a fragile banking system and a widening current account deficit, bank liquidity problems led to a serious financial crisis in November 2000" (2002, p. 4). In the view of the IMF staff, the events of November 2000 were a currency crisis as well as a banking crisis, and the subsequent turmoil in February 2001 was primarily a currency crisis. The report said (2002, p. 7):

> with a worsening current account and a fragile banking system, in late 2000 a liquidity crisis affecting a few domestic banks turned into a full-blown crisis, with a massive loss of reserves. Prompted by political infighting, this was followed by another speculative attack in February 2001, forcing the government to float the currency amidst sky-high interest rates and a renewed acceleration in inflation.

The report described major steps to improve the health of the banking system starting in the first half of 2001. It reported that policies adopted in May 2001 "featured a fundamental restructuring of the banking sector" (2002, p. 7); said that "[i]n the first half of 2001," there had been "a fundamental financial restructuring of state banks" (2002, p. 31n); and referred to "the authorities' successful efforts to solve the state banks' liquidity problems in 2001" (2002, p. 31).

At the same time, the report made clear that the financial distress had not been fully resolved as of the time of writing in April 2002, particularly for private banks. It said that "the staff stressed the need to move quickly with the bank recapitalization scheme" (2002, p. 16); listed "continued progress in financial sector restructuring" as a force that would improve growth in 2002 (2002, p. 17); and said in the opening paragraph of the concluding section that "Turkey remains beset by ... a banking sector damaged by the two recent crises" (2002, p. 42). And in an extended discussion, the report said (2002, p. 35):

> As regards private banks, the Saving Deposit Insurance Fund (SDIF) has intervened in 19 banks since 1997, of which 4 have been sold, 5 have been merged (of which one was subsequently sold), another 6 have been closed and liquidated, while the remaining 4 are in various stages of resolution. The authorities' efforts in 2001 to induce financially weak private banks to raise their capital were important, but insufficient to deal with the deterioration in banks' financial condition. As part of the new Fund-supported program, the authorities strengthened their strategy by introducing a scheme to allow the use, under strict conditions, of public money to assist banks in their recapitalization efforts. The legal framework for this scheme was put in place at the beginning of February 2002.
>
> With the restructuring program for state banks and smaller private banks well advanced, discussions focused on rehabilitating the core private banking system .... The authorities explained that the first stage of a three-stage implementation process, involving a targeted valuation of bank portfolios to get reliable estimates of banks' net worth, would be completed by end-March as scheduled. Preparations for the second phase, where third-party audit firms would verify compliance with the regulations and guidelines associated with the targeted assessment exercise, was also on schedule. ... Looking ahead, the BRSA [Bank Regulation and Supervision Agency] would inform banks by mid-May of the amount of capital, if any, they would need to raise by end-June. Both the authorities and the banks noted that it may take banks more than the 1½ months allowed in the existing timetable to call shareholder meetings and raise private capital to qualify for public support. The staff agreed that a slight delay would not detract from the success of the recapitalization scheme, but stressed the need to maintain the momentum of the process.

These descriptions of needed bank restructuring schemes in 2002 are consistent with the

OECD's view that financial distress continued through that year.

At the time of the 2004 report (dated July 9, 2004), the IMF staff clearly viewed any significant distress as having passed. The report said that "[b]anking sector balance sheets have improved" (2004, p. 11); referred to "the resolution of the banking crisis" (2004, p. 13); said that policy "was successful in substantially strengthening the [banking] system" (2004, p. 28); and stated, "The banking system was properly capitalized, bank profitability had been restored and NPLs were falling" (2004, p. 28). Nevertheless, the report gave some evidence of lingering mild distress. It noted that the "blanket guarantee of all bank depositors and creditors" that had been put in place at the height of the crisis was still in effect and was scheduled to be lifted in July (2004, p. 27). And it said (2004, pp. 29–30):

> there was also broad agreement that while the initial pace of reform was dramatic, sustaining it and preserving its achievements had been challenging. ... [S]upervisors were unwilling or reluctant to make decisions, and asset disposition had been slow .... Resolution of bad assets, including settlements with the former bank owners, had been very disappointing and slow ....
>
> There were also questions as to whether private loans restructured under the Istanbul Approach would truly turn performing, once the long grace periods for making payments expired. ... Finally, removal of the blanket guarantee was a key issue, with some arguing that this would promote the necessary consolidation of the banking system; others arguing that if mishandled it could create more problems.

In the concluding section, the report said, "Confidence in the banking system is largely restored but formidable challenges remain," and that for financial sector reform, "The first priority should be to monitor removal of the blanket guarantee, in particular developments in individual banks, and to have contingency plans ready in case weaknesses emerge" (2004, p. 41).

Thus, the view of the IMF staff was largely consistent with the new measure. The staff saw a significant crisis starting in late 2000 (which, as mentioned above, is consistent with the first discussion of distress taking place in the 2001:1 *OECD Economic Outlook*), and then resolving over the next few years. The largest difference is that the Article IV reports suggested notable improvement between the first and second halves of 2001, whereas the *Economic Outlook* described similar levels of distress in the two periods. In addition, the Article IV reports suggested that some distress may have lingered into 2004, which is closest to the dating in the new measure but later even than in that one.

***Wall Street Journal*.** The *Wall Street Journal*, like the Central Bank of Turkey, described some distress in 1999. However, the only noteworthy evidence from the *Journal* we have found was confined to January, and is consistent with the evidence from the central bank that the distress was not major. In mid-January, it reported, "In a new sign of how a credit crunch and export slowdown is hitting the Turkish economy, ... another troubled bank, Interbank, was taken under the protection of the Central Bank's Deposit Insurance Fund on Friday. The bank said operations would continue normally" (1/11/99). A week later, it said, "The banking sector is ... reeling from the state takeover of troubled Interbank .... Speculation that four or five other small, mostly closely held banks are suffering funding difficulties sent bank shares down on the Istanbul market" (1/18/99). Other articles over the course of the year on Turkey's economy gave no indication of financial distress (3/2/99, 3/24/99, 7/2/99, and 7/6/99).

Our search algorithm uncovered only one hint of financial distress over the first ten months of 2000: in October, an article on structural reforms in the banking sector described how the reforms were hurting some banks' earnings, and said that some small banks might not survive (10/9/00). However, the *Journal* described a sharp rise in financial distress in the final two months of the year in conjunction with a currency and sovereign-debt crisis. In late November, it mentioned "a seven-day crisis of confidence triggered by concerns over the solvency of Turkey's midsize banks," and said, "The banking system was already under pressure, squeezed on one side by corruption investigations and on the other by lower profits" (11/29/00). A few days later, it referred to a "banking crisis" (12/4/00). A few days after that, it described "a two-week crisis of confidence in the country's financial system," and quoted Moody's as saying, "If there are to be banking failures—and this appears increasingly likely—they are likely to happen sooner rather than later" (12/6/00). The following day, the government took over "troubled Demirbank, the country's ninth-largest financial institution" (12/7/00). Finally, an article on the currency, debt, and banking troubles stated, "Consumer lending ... has ground to a halt" (12/12/00). This evidence is consistent with the IMF chronology (which puts the start of the crisis in November 2000), and with the evidence from the *OECD Economic Outlook* (where the events of November and December 2000 are described in the 2001:1 issue).

The evidence from the *Journal* points to the distress worsening through the first several months of 2001 as the currency and sovereign-debt problems continued. For example, in late February, the *Journal* reported, "Turkey's weak banking system is a major reason that Standard & Poor's rating agency downgraded Turkey's sovereign debt Friday. It said the current financial crisis is causing a significant deterioration in the public finances, and in the balance sheets of the banks and their customers. The crisis is likely to lead to a spiraling of public debt and more bank failures, it said" ("Turkey Searches for a Solution to Its Financial Dilemma ...," 2/26/01). An article a few days later referred to "the country's 10-day-old financial crisis" and "last week's financial panic" (3/1/01). In mid-March, the *Journal* quoted the country's "economic czar" as saying, "There's an emergency situation in the banking sector," and described plans for significant injections of capital and liquidity (3/15/01). A retrospective article later in the year said that "in February ... state banks were about to collapse under the weight of debt-service payments" (6/1/01).

The coverage in the *Journal* characterized the situation as somewhat improved but still severe through the summer of 2001. For example, an article in late April that was largely about structural problems in the banking sector discussed bailouts, bad debts, and large losses at state-owned banks (4/30/01). In mid-June, it said, "The country is trying to shore up its banking system" (6/14/01). In July, "Turkey's banking regulator took control of five private banks," and the regulator "said allowing the banks to continue operating would 'pose a threat to the rights of depositors and trust and stability in the financial system' " (7/11/01). Later that month, the *Journal* described the country as "mired in financial crisis" (7/17/01).

Finally, the evidence from the *Journal* points to relatively rapid improvement after about July 2001. Our search algorithm yielded only two additional articles about the health of Turkey's banking system through the end of 2004. In August 2001, it described "a cautiously optimistic mood in Turkish markets," and cited as one contributing factor "continuing talks over the purchase of stakes in two big Turkish banks by London-based HSBC Group and Italy's Banca Intesa BCI" (8/6/01). And a year later, it said that "banking institutions are now more resilient" (7/12/02). The description of banks as being healthier, rather than as being fully healthy, hints at some residual distress. But the mildness of the language, and the general paucity of coverage of the banking system over this period, point strongly to large improvement. Moreover, several article discussing the health of the country's economy made no mention of any financial distress (9/6/01, 11/5/01, 3/14/02, and 3/7/03). Thus, the *Journal*'s coverage agrees with the OECD and the IMF's chronology that there was substantial distress in 2001. But it is somewhat inconsistent with the evidence from the OECD that the distress was as severe in the second half of 2001 as in the first half, and that it remained substantial in 2002 and still positive in 2003.

UNITED STATES

The three chronologies are vastly different for the United States. Reinhart and Rogoff date a very long crisis stretching from 1984 to 1991; the IMF chronology dates a very short crisis just in 1988; and our new measure shows essentially no distress until a rapid rise in 1990, and then a gradual decline over 1991 and 1992. We find that the descriptions of financial distress from the Federal Reserve and the IMF Article IV reports correspond closely to those in our new measure derived from the *OECD Economic Outlook*. The additional sources also provide support for the view that there were at least some financial concerns in the mid-1980s. They are least supportive of the IMF view that distress was concentrated in 1988. Because the coverage of the United States economy in the *Wall Street Journal* is unmanageably large—and because the records of the Federal Reserve are so thorough—for the United States we do not consider the evidence from the *Wall Street Journal*.

***Central Bank Reports*.** We focus on two main sections of the Federal Reserve Board of Governors *Annual Report*: the opening overview material on the economy and monetary and financial markets, and the Record of Policy Actions of the Federal Open Market Committee (FOMC).[17]

In 1984, the year Reinhart and Rogoff identify as the start of the crisis, the Federal Reserve certainly flagged some concerns. The introduction to the 1984 report stated: "Strains also remain evident among financial institutions: the quality of loan portfolios at some depository institutions has deteriorated, and the earnings of thrift institutions remain constrained by low-yielding assets accumulated in earlier years" (1984, p. 3). According to the Federal Reserve, "pressures on private short-term interest rates intensified around early May in reaction to the well-publicized liquidity problems of Continental Illinois Bank" (1984, pp. 13–14). The Federal Reserve, while viewing the financial strains as a risk, did not seem particularly worried that the problems would mushroom or damage the economy. The Record of Policy Actions for the May 1984 FOMC meeting reported that "members commented that credit growth had shown no sign of slowing so far and there were, as yet, no significant indications of a stiffening in loan standards and credit availability; in fact, there were indications of aggressive lending practices in real estate and other areas" (1984, p. 103). The July Monetary Policy Report stated: "More recently, yield spreads have narrowed, as progress has been made on debt questions and the Continental Illinois situation has remained unique and contained" (1984, p. 61). At meetings later in the year, "the vulnerability of some depository institutions, businesses, and farmers to financial strains" was included on the list of possible risks to the economy, but fairly far down (1984, p. 125). Thus, based on the records of the Federal Reserve, it would appear that there was a small amount of financial distress in 1984, but certainly nothing approaching a crisis.

The Federal Reserve's view of financial conditions in 1985 was very similar to its view in 1984. The introductory overview in the 1985 report stated: "Strains in financial markets were evident at times in 1985 but did not cause major disruptions in overall market conditions" (1984, p. 18). The July Monetary Policy Report noted localized runs on savings and loan

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[17] The title of the volumes is the *Annual Report of the Board of Governors of the Federal Reserve System*. The volumes for the 1980s and 1990s are available in digital form from FRASER, http://fraser.stlouisfed.org/publication/?pid=117.

associations in Ohio and Maryland during the year, which "for a time, generat[ed] some concerns here and abroad about the safety of other financial institutions" (1985, p. 58), but concluded that "these various problems have been relatively well contained, without significant effects on other institutions and markets" (1985, p. 58). In terms of lending, there was reference to the fact that "the growth of home mortgage borrowing ... was probably restrained somewhat by the tightening of lending standards that accompanied the rise of mortgage loan delinquency rates to record levels" (1985, p. 17). And, at the March FOMC meeting, members suggested that "[w]ith a number of lending institutions, especially those associated with relatively depressed industries and with housing finance, also experiencing financial pressures, the overall economy was vulnerable to adverse developments" (1985, p. 92). However, these were fairly isolated comments, and financial strains were noticeably low on the list of possible threats (see, for example, 1985, p. 101). Thus, it appears that, consistent with the OECD, the Federal Reserve saw only very limited financial distress in 1985.

The Federal Reserve annual report for 1986 contained even fewer references to financial distress. There was a discussion in the introduction that the "well-known problems faced by firms in the mining, energy, agricultural, and many manufacturing industries, and by a number of heavily indebted developing countries, were feeding through to the financial intermediaries supplying them credit. For example, 136 commercial banks failed in 1986, compared with only 7 in 1981" (1986, p. 22). Similarly, there was reference to the fact that the "financial condition of the thrift industry as a whole has improved markedly since the early part of the decade, but the difficulties of many institutions have intensified" (1986, p. 23). Nevertheless, the general tone was one of relatively little concern. For example, at the February FOMC meeting, many positive factors were cited for the outlook. In discussing the negative side, "members mentioned the downside risks inherent in the debt problems faced by many consumers and a number of industries, including agriculture, and the associated financial strains on some of their institutional lenders" (1986, p. 97). Financial distress was certainly on the list of risks to the economy, but was not emphasized. This suggests, if anything, even less distress than what was described by the OECD in 1986 (from which we identify a credit disruption−minus in 1986:1 and no distress in 1986:2).

The 1987 *Annual Report* was remarkable mainly in the degree to which financial distress was not mentioned. The introductory overview discussed that "the October stock market crash added substantial uncertainty to the prospects for continued economic growth" (1987, pp. 5–7). However, the mechanisms mentioned were that the "sharp drop in stock prices reduced household wealth considerably and raised the possibility of a further slowing in consumer spending, domestic business investment, and housing construction," not a disruption of credit availability (1987, p. 7). In discussing credit market developments explicitly, the report said: "the banking industry was under some continuing stress in 1987, which primarily reflected the well-publicized difficulties with energy and developing-country loans and, in some parts of the country, with agricultural and real estate loans as well" (1987, p. 19). The tone, however, was that the problems were well controlled, with reference to "most banks continued to be healthy and to enjoy reasonable profits," and "problems with the quality of agricultural loans appear to be diminishing" (1987, p. 19).

The meeting-by-meeting summaries of Federal Reserve thinking in 1987 were essentially silent on financial concerns until after the October crash. The Record of Policy Actions for the November meeting began with a mention of "the extraordinary developments in financial markets" (1987, p. 132). There was an extended discussion of "the need to assure adequate liquidity in a period of continuing volatility in domestic and international financial markets," and the fact that "markets continued to be characterized by an unusual degree of anxiety and uncertainty" (1987, p. 135). Members "generally agreed that the sharp decline in stock prices and the still unsettled conditions in financial markets portended weaker growth in economic activity, at least for the nearer term" (1987, p. 136). But, like the introduction to the *Annual Report*, the November and December meeting summaries focused on the effects of the stock market crash on wealth and confidence; discussions of disturbances to credit supply were notably absent. Furthermore, the December meeting summary said that "financial markets appeared to be functioning more normally" (1987, p. 144), suggesting that any effects were short-lived. Taken together, the lack of any discussion of disruption in credit supply in the overview or meeting summaries suggests that the Federal Reserve, like the OECD, did not see a noticeable rise in the cost of credit intermediation in 1987.

In 1988, the only year in which the IMF chronology identifies a systemic crisis, the Federal Reserve's annual report shows only limited concern about financial conditions. Quite late in the introductory overview, the report mentioned "the worsening condition of the thrift industry, the need to achieve sounder capitalization of commercial banking organizations, and the rising indebtedness of businesses involved in restructuring activity" as financial developments warranting attention (1988, p. 17). But, it went on to say that the "turmoil in the thrift industry has not noticeably disrupted mortgage activity" (1988, p. 17). The July Monetary Policy Report said, "The banking industry also has been the subject of considerable concern, arising from its well-publicized difficulties with energy, agricultural, real estate, and developing country loans. These problems have been highlighted by the many bank closings and the rescue by bank regulators of several large banks" (1988, p. 54). But as in the introduction to the report, it went on to say: "It is important to note, however, that throughout this period of stress in the industry, the commercial banking system has continued to play its crucial role as a provider of credit to the economy" (1988, p. 55). Thus, to the degree there was financial stress, the Federal Reserve appeared to believe it was relatively minor, particularly in its effects on lending and the economy.

The meeting-by-meeting discussions conveyed less concern than the July Monetary Policy Report; their overall tone was one of only modest worry about financial distress. At the February 1988 FOMC meeting there was still some discussion of lingering effects of the 1987 stock market plunge. Members believed that "financial markets, including the foreign exchanges, were still relatively sensitive, and many financial institutions had been weakened by serious debt repayment difficulties among their domestic and foreign borrowers" (1988, p. 82). There was no discussion of tighter lending standards, but unsettled financial markets were viewed as a risk to the outlook, particularly if stock prices fell further (1988, p. 83). By May, financial concerns had largely disappeared. Policymakers had raised the funds rate by half a percentage point during the intermeeting period. In the discussion, members noted, "Weaknesses in the financial sectors of the economy and relatively heavy debt burdens also increased the downside risks in the economy. But, on balance, while some slowing from the current rate of expansion was a reasonable expectation, the risks were on the side of faster-than-desired growth and more inflationary pressures" (1988, p. 100). Throughout the rest of the year, financial concerns were mentioned only in the context of the pace of further funds rate increases. For example, in August, some members suggested that "a cautious approach to further tightening might be appropriate in light of the fragilities that had developed in the economy, including the vulnerability of many financial intermediaries" (1988, p. 119). Taken as a whole, Federal Reserve records for 1988 perhaps suggest a small amount of financial distress (so more than the zero we find), but certainly not a systemic crisis.

The report for 1989 similarly suggested at most a very modest amount of financial distress. The introduction discussed the "contraction of the thrift industry, which was prompted by the

Financial Institutions Reform, Recovery, and Enforcement Act of 1989," but emphasized that the "shrinkage of the thrift industry's assets led to a rechanneling of funds in mortgage markets but appeared to have little effect on overall credit availability" (1989, p. 3). Likewise, the report discussed that "[t]he second half of 1989 was marked by indications of increased financial stress among certain classes of borrowers, with implications for the profitability of lenders, including commercial banks" (1989, p. 18). After discussing the problems with banks in Texas, Oklahoma, Louisiana, and New England, as well as the build-up of loan loss provisions and rising delinquencies, the report concluded, "Although these developments might foster a more cautious attitude toward granting credit to riskier borrowers, it seemed unlikely at the end of 1989 that the availability of credit had been reduced in a more general way that could materially impede the ongoing economic expansion" (1989, p. 18).

The Record of Policy Actions for individual meetings in 1989 raised some of the same issues, but did not suggest they were a significant concern. For example, in July, as economic growth appeared to be slowing some, "[s]ome members emphasized that a recession, should one materialize, might be aggravated by the debt burdens or debt exposure of many businesses and financial firms" (1989, p. 102). The records from the August meeting discussed the laws dealing with the clean-up of the S&L crisis, but the emphasis was on possible implications for house prices and money growth, not on concern about the financial system (1989, pp. 112–114). It was only at the December meeting of the FOMC that a decline in the availability of credit was discussed: "It was noted that the availability of financing for the construction of housing appeared to have been reduced by tighter supervisory regulations and some decrease in the number of traditional institutional lenders to this industry" as well as "weakness of real estate markets in a number of areas and the large resulting losses on loans" (1989, p. 135). Overall, the records of the Federal Reserve are consistent with the OECD's view that financial distress was low in 1989. Since the decline in credit availability noted in December would show up in the OECD records for the first half of 1990, they are also consistent with the rise in distress noted by the OECD (and therefore shown in our new measure) in early 1990.

The overview section of the 1990 report gave a definite sense of financial distress during the year. It referred to the fact that "a significant number of institutions were encountering difficulties that reduced their ability or willingness to provide credit" (1990, p. 5). It continued that "[i]n some instances, prospective builders were deterred from construction in 1990 by the difficulty of obtaining credit" (1990, p. 8). Though the report stated that "[f]or the most part, however, the decline in depository credit seemed likely to be taken up by other lenders, with minimal impact on the overall cost and availability of credit" (1990, p. 18), its descriptions of the decline in credit supply and its effects on the economy seem to run counter to this claim. For example, on the next page, the report stated: "widespread signs of cutbacks in the availability of credit and increases in its cost ... exerted a contractionary influence on the economy and was reflected in slow growth of bank credit" (1990, p. 19).

The meeting-by-meeting accounts of policy in 1990 provided more detail of the concerns, and changes in credit availability over the year. At the February meeting, "The members acknowledged that there were considerable risks, stemming mainly from the financial side, of a weaker-than-projected expansion, and some did not rule out the possibility of a downturn" (1990, p. 93). And, several members commented that "problems in certain sectors of the financial markets ... were contributing to greater caution on the part of lenders and a reduced availability of credit to some borrowers" (1990, p. 93). The report of the March meeting contained a much more extensive discussion of these developments. It said, "members had heard numerous reports of reduced availability of credit to smaller businesses, notably home builders. Credit terms also were reported to have been tightened by some lenders on new auto loans and home equity loans" (1990, p. 105). The report also stated: "Financial developments introduced a degree of uncertainty into the current economic situation; on the whole, they were likely to exert some restraining influence on overall economic activity" (1990, p. 105). Very similar views were expressed at the May and July meetings. For example, in July: "Many members commented ... that the risks appeared to be weighted in the direction of a weaker-than-projected economic performance, especially in the context of changing conditions in credit markets stemming from the financial difficulties of many borrowers and lending institutions" (1990, p. 120). In these descriptions, the Federal Reserve was very much like the OECD in seeing significant financial distress with possible consequences for lending and economic activity in the first half of 1990. At the same time, the consequences for the economy were still in the form of "risks," which is consistent with the notion that the Federal Reserve, like the OECD, did not see U.S. financial conditions as truly dire.

The Federal Reserve's view of financial distress became more severe in the second half of 1990. The report on the October FOMC meeting discussed that interest rate spreads for some banking organizations had increased sharply (1990, p. 138). It also said (1990, pp. 139–140):

> Efforts by banks and other lenders to protect or improve their capital positions in the face of deteriorating loan portfolios were reflected in widespread signs of growing constraints on the availability of credit and increases in its cost .... In the view of a number of members, the exposure of the economy to a severe downturn in business activity ... [stemmed] from the possible aggravation of the strains in financial markets, further retrenchment in lending by banks and others, and the increased difficulty of many heavily indebted businesses and individuals to meet and service their debt obligations in a sluggish economy.

At the November meeting, members thought that a brief downturn was most likely, but that there was a risk of a more severe contraction because of, among other factors, "concerns about the condition of many financial institutions, a curtailed supply of credit to many borrowers, and more generally a widespread perception of relatively fragile financial conditions" (1990, p. 148). The December report, in addition to citing many of the same concerns, said that the Federal Reserve had eliminated some reserve requirements "to help counter the tightening by depository institutions of credit terms for many types of borrowers" (1990, p. 154). The description of severe reductions in credit availability, effects on lending and economic activity, and the need for actions to increase credit supply are all consistent with the high level of distress we see in the *OECD Economic Outlook* in the second half of 1990.

The 1991 *Annual Report* confirmed the view expressed by the OECD that financial distress continued throughout 1991. The introductory overview stated: "Concerns about capital, especially in light of rising loan delinquency rates and mounting loan loss provisions, induced many banks to continue tightening lending standards through the early part of 1991 and to maintain fairly restrictive standards over the balance of the year" (1991, p. 25). The Federal Reserve, while noting that other sources of credit filled some of the resulting vacuum, said: "banks and thrift institutions, however, have cut back on other types of lending that can be rechanneled less easily" (1991, p. 26). The report attributed the faltering of the recovery in the second half of 1991 to, among other forces, the fact that "financial intermediaries, chastened by their negative experience with earlier loans, became more hesitant to extend new credit; the resultant tightening of lending standards deepened the decline in economy activity early in the year and inhibited the subsequent recovery" (1991, pp. 3–4).

The meeting-by-meeting Federal Reserve accounts of conditions again suggested substantial distress in 1991, but like the OECD, showed distress declining over the year. The summary of the February FOMC meeting had a long discussion of the negative consequences of credit constraints. It said: "the problems of many financial institutions ... were adding to the generally somber economic climate. Not only had financial problems affected attitudes, but constraints on the availability of credit to many borrowers with limited or no access to alternative sources of financing were having a retarding effect on business activity" (1991, pp. 105–106). In late March (1991, p. 117),

> Some concern was expressed regarding the possibility that persisting constraints on the availability of financing to homebuilders might continue to inhibit homebuilding activity, but given the expected strengthening in the overall economy and the already improving capital positions of many banking institutions, a degree of optimism seemed warranted that such financing might become more readily available in the months ahead.

This sense of progress was stated even more broadly in the summary of the May meeting, which said: "the overall condition of the banking system appeared to be improving despite the continuing difficulties of a number of individual institutions" (1991, p. 123). The summary of the July meeting was decidedly less sanguine. It said: "members noted that the distress being experienced by some financial intermediaries was a key source of concern and downside risk for the economy. ... Many depository institutions apparently were continuing to pursue very cautious lending policies, though the shift toward even more stringent terms on loans seemed to have abated" (1991, 133).

In the second half of 1991, the Federal Reserve described further improvement in financial conditions. The summary of the August meeting said that the negative risks to the outlook "stemmed to an important extent from the financial side of the economy" (1991, p. 141), but "[o]n the positive side, the financial condition of banking institutions appeared to be continuing to stabilize or improve" (1991, p. 142). The summary of the October meeting said, "In some important respects, financial developments could be viewed as favorable. ... [T]he balance sheets of many financial institutions were improving" (1991, p. 151). Importantly, even with these improvements, the Federal Reserve saw continuing distress. For example, in November (1991, p. 158):

> Several members referred to the continuing adjustments by financial institutions and many business firms to the financial excesses of the past decade and the greater-than-expected downward pressure that these adjustments appeared to be exerting on the expansion. ... One facet of the adjustment process was greater caution on the part of institutional lenders. Many business borrowers continued to complain about the difficulty of obtaining credit, while institutional lenders stressed the lack of demand from qualified borrowers.

Thus, it is clear that like the OECD, the Federal Reserve saw financial distress through the end of 1991.

The 1992 *Annual Report* gave somewhat mixed views of the trends in financial distress. The introductory overview seemed to stress that financial conditions were similar to those in 1991, while the meeting-by-meeting summaries of conditions gave a definite sense of improvement. In the overview section, the Federal Reserve listed "exceptional caution among financial intermediaries" as one of the headwinds facing the economy (1992, p. 3). It also noted that "[b]anks gave little indication in Federal Reserve surveys that they had begun to ease the tighter lending standards and terms that they had put in place in 1990 and 1991" (1992, p. 27).

The summary of the February FOMC meeting, in contrast, stated that "a number of members reported on anecdotal indications that banking institutions in various parts of the country appeared to have become somewhat more willing lenders" (1992, p. 118). Likewise, the summary of the May meeting stated: "Many of the members commented that the various financial constraints on the expansion were diminishing" (1992, p. 136). The report of the June/July meeting said that "conservative lending policies at financial intermediaries" and efforts to strengthen balance sheets "had exerted a significantly retarding effect on economic activity," but suggested that "subsiding constraints on expenditures from financial factors" were likely going forward (1992, p. 145). Finally, at the November meeting the sense was that "despite many lingering problems, the general health of the banking industry had improved markedly and there were spreading reports of greater efforts by banks to find creditworthy borrowers" (1992, p. 171). Taken together, the overall thrust of the 1992 report was that there was some continuing distress, but it was clearly declining. This is largely consistent with the OECD's portrayal, but not quite as optimistic. The OECD saw only minor distress in early 1992, and none in the second half of the year.

IMF Article IV Reports. The evidence from the IMF Article IV reports is very similar to that from the Federal Reserve reports. There were occasional mentions of low levels of financial distress, and of risks of distress, on and off over the period 1984–1992. But the only period when the IMF staff identified significant financial distress was in the early 1990s, with the distress peaking in late 1990 and early 1991. Thus, the evidence from the Article IV reports is very consistent with that from the *OECD Economic Outlook*.[18]

Each of the first three Article IV reports for this period included a self-contained discussion of problems in the banking sector. In each case, the tone of the report was that the problems were not having a large effect, and were being addressed by the central bank. In the 1984 report (dated July 6, 1984), the IMF staff viewed the difficulties as having "some impact" on the economy and as a potential risk, but did not stress them (1984, p. 15):

> Federal Reserve officials commented on the recent difficulties experienced by certain banks in the United States and the implications of such problems for the conduct of monetary policy. In their view, the authorities had been successful in providing assistance to banks in trouble while keeping the growth of bank reserves under control. They noted that shifts of funds toward safer financial instruments in the wake of these incidents, and the consequent widening of risk premia, could be expected to have some impact on economic activity by raising the cost of funds to private borrowers, but thus far the Federal Reserve had not attempted to offset such effects. Looking ahead, they cautioned that providing assistance to banks without affecting the stance of monetary policy would become a formidable task if a number of large financial institutions were to suffer a loss of confidence.

Similarly, the 1985 report (dated July 8, 1985) stated (1985, p. 16):

> Federal Reserve officials commented on the recent difficulties experienced by

[18] For all countries, the Article IV reports often cite the views of the local authorities. But for the United Sates, they were cited particularly often, and the IMF staff appeared to put considerable weight on the Federal Reserve's assessments of the health of the U.S. financial system. As a result, the information in the Article IV reports for the United States may be less independent of that in the central bank reports than it is for other countries.

> certain banks and thrift institutions in the United States and the implications of such problems for the conduct of monetary policy. ...
>
> The number of problem banks had increased considerably, but Federal Reserve officials observed that such banks represented only 6 percent of all commercial banks. Moreover, despite pressures on earnings and asset quality experienced in recent years, U.S. banks in general—and the largest banking organizations in particular—had raised record amounts of capital, significantly increasing their capital ratios. In the view of the Federal Reserve, there was an adequate buffer in the banking system to cope with a deterioration in the quality of bank assets.

The 1986 report (dated July 7, 1986) expressed even less concern (1986, p. 17):

> The task of the monetary authorities has recently been complicated by the problems affecting certain depository institutions in the United States. ... The Federal Reserve representatives said that the health of the U.S. financial system continued to be of concern, but this concern was addressed primarily through efforts to strengthen regulation and supervision—and, when necessary, through the availability of funds at the discount window—rather than through the general tools of monetary policy. They went on to note that, should problems related to financial institutions be judged to have broad effects on the demand for liquidity in the economy, these would have to be taken into account in conducting monetary policy.

References to banking problems or financial distress were largely absent from the next several reports. The report for 1987 (dated July 23, 1987) made no mention at all of these issues. The closest was a reference to commercial banks' reluctance to lend to developing countries (1987, p. 22). The next report (for 1988, dated July 26, 1988) mentioned "the weak financial condition of a number of thrift institutions (major suppliers of housing finance) and mortgage borrowers in certain regions" (1988, p. 9). But it did so only in the context of "the possibility ... that spending might exceed the budget estimates because of higher than projected outlays by the Federal Savings and Loan Insurance Corporation (FSLIC) and the Federal Housing Administration (FHA)" (1988, p. 9). The 1989 report (dated August 3, 1989) also mentioned that "the outlays required for dealing with the savings and loan crisis could substantially overshoot the levels projected on the basis of the Administration's rescue plan" (1989, p. 9). In addition, it spent two paragraphs describing pending legislation intended to fund resolution of insolvent savings and loans institutions and to restructure the industry (1989, p. 23). And it made a passing reference to "domestic financial weaknesses" (1989, p. 27). But, as with the 1987 and 1988 reports, the report made no suggestion that financial distress or banking problems were having an important effect on the economy. Thus, the evidence from the Article IV consultation reports does not support the IMF chronology's identification of a crisis in the United States in 1988.

Beginning with the 1990 report (dated August 3, 1990), however, nontrivial discussions of problems in the financial system returned. As with the reports for 1984–1986, the discussion of those problems in the 1990 report was self-contained. The tone was somewhat more severe than in the earlier reports, however, with the report saying that "significant short-term problems could not be ruled out" (1990, p. 15). In particular, it said (1990, p. 15):

> An area of potential policy concern covered in the discussions is the apparent fragility of some segments of the U.S. financial system. A recent development that has attracted attention in this regard is a possible reduced credit availability resulting from increased lender caution (particularly, though not exclusively, vis-à-vis loans

> involving highly leveraged borrowers and real estate transactions). The Federal Reserve representatives said that, although lenders' decisions to tighten their standards in certain sectors and locales should prove to be beneficial for the U.S. economy over the long run, significant short-term problems could not be ruled out and accordingly credit conditions would be monitored closely. Toward mid-July, the Federal Reserve lowered the federal funds rate by a quarter of a point with a view to offsetting the possible impact of the stiffer terms of loans applied by lenders.
>
> In his testimony to Congress on July 18, Chairman Greenspan ... reconfirmed that the step recently taken by the Federal Reserve was intended to counter a slight additional degree of restraint on the economy stemming from the tightening in credit conditions that was occurring independent of the Central Bank's actions. ... He also indicated that, if the process of credit market tightening due to more stringent lending standards were to go further, the Federal Reserve would be prepared to take additional steps with a view to maintaining stable overall financial conditions.

Financial distress was far more prominent in the 1991 report (dated August 13, 1991). "[R]educed credit availability" was cited as one of the "risks to the outlook" in the first paragraph on the economic outlook, though the report added that the risks "were seen more as factors that might reduce somewhat the forward momentum of the economy rather than causing a relapse into recession" (1991, p. 6). The risk "related to reduced credit availability" was cited again in the opening paragraph of the concluding section of the report (1991, p. 20). The more detailed discussion of developments related to monetary policy included several references to a "credit crunch" (1991, pp. 12–13). In discussing the period from October 1990 to February 1991, the report referred to the crunch "as a factor potentially turning the economic downturn then underway into a more serious and lengthy recession" (1991, p. 12). And it referred to "indications consistent with the view that the credit crunch is no longer worsening" (1991, p. 12), suggesting that it viewed the distress as ongoing. It also mentioned "the potential macroeconomic effects of the reduced availability of credit from depository institutions," "a reluctance and/or inability on the part of depository institutions to make loans, perhaps in response to tightened regulatory supervision and higher capital standards," steps "to ensure that creditworthy borrowers would not be excluded from credit markets," and the possibility "of unexpected economic weakness which could stem, for example, from a continuation of restricted credit availability" (1991, p. 13). Thus, the IMF staff saw considerable financial distress over this period. Indeed, it appears that it perceived the worst of the distress to have come slightly later than viewed by the OECD (which placed the worst of the distress in late 1990).

The 1992 report (dated August 3, 1992) made several references to financial distress and reduced credit availability in discussing economic developments over the previous several years (1992, pp. 1, 2, 13, and 14). These discussions included one reference to a "credit crunch" (1992, p. 14). In addition, "the failure of numerous savings and loan associations and a hardening of the lending posture of commercial banks" was included in a list of negative forces affecting the economy starting around mid-1989, "some of which still persist" (1992, p. 2). Thus, this passage left it unclear whether the IMF staff thought the distress was continuing. However, elsewhere the report clearly suggested improvement. Financial distress and banking problems were not mentioned in the discussion of issues related to monetary policy in the concluding section of the report (1992, p. 18). And the report described how "the Federal Reserve Chairman noted that ... the progress being made by borrowers and lenders in repairing strained balance sheets would be expected to support a strengthening in the rate of economic growth" (1992, pp. 12–13). But the report also listed "the balance sheet restructuring underway" as a force moderating the expansion (1992, p. 13). Thus, it appears that the IMF staff perceived the financial system as improved but not fully healed.

Finally, the 1993 Article IV report (dated August 4, 1993) made essentially no mention of problems in the financial system. There was a mention of "the need to facilitate balance sheet adjustment," with the statement that "[g]ood progress had been made in this respect, although the process was by no means over"; but there were no specifics about whether the process involved lenders, borrowers, or both (1993, p. 11). And the report devoted a paragraph to financial reform, but the focus was on structural issues rather than on any short-run developments that were impeding lending (1993, pp. 15–16). Thus, the IMF staff appeared to view the distress as effectively over by mid-1993. This assessment is similar to what we find based on the *OECD Economic Outlook*.

POST-2007 PERIOD

NETHERLANDS

The Netherlands in 2008 through 2010 is the one country in the post-2007 period where both Reinhart and Rogoff and the IMF identify a systemic crisis, while our new measure shows a more modest rise in financial distress (our measure reaches a high of 4 in 2009:1). One thing that makes this case difficult is that the Netherlands has a large financial sector. As a result, it can be difficult to disentangle distress in the financial services industry (in the sense of reduced activity in that sector) from broader financial distress (in the sense of a shift back in the supply of credit).

Our reading of the additional narrative sources is that they support a classification somewhat higher than that of our measure based on the *OECD Economic Outlook*. The additional sources discuss the insolvency of some large Benelux banks, and the resulting government bailout, which could be a sign of credit disruption. At the same time, there is more limited discussion of effects on credit supply and linkages to the real economy, which is central to our identification of financial distress. The fact that there was a substantial bailout may help explain why the alternative chronologies identify a systemic crisis in this episode: both Reinhart and Rogoff and, particularly, the IMF use bank failures and bailouts as an important crisis indicator.

The alternative sources are more supportive of the timing of distress shown by our new measure: they match up very well with the evidence from the *OECD Economic Outlook* that distress was highest in the second half of 2008 and the first half of 2009, and then receded rapidly. They are not at all consistent with the view of the alternative chronologies that there was a systemic crisis that continued until at least the end of 2010.

***Central Bank Reports*.** The Dutch central bank annual reports are both detailed and relatively frank in their assessment of financial conditions.[19] In discussing the international financial crisis, the 2008 *Annual Report* said: "Even solid financial institutions became vulnerable in the autumn because market sentiment had lost its moorings. For Dutch institutions too, access to liquidity and capital has all but dried up. In the Netherlands, the crisis made its mark mainly in the acute problems at Fortis and the collapse of Icesave" (p. 33). The report described the liquidity shortage at Fortis as "an acute threat to its stability and to confidence in the financial system in the Benelux" (p. 36). In the chapter on financial stability,

[19] The full title of the source is *De Nederlandsche Bank Annual Report*.

the report described the initial problems in more detail. It wrote: "Parts of the Dutch banking sector came under heavy pressure during the review year, initially on account of liquidity risk. This risk increased across the board, owing to the market turbulence and the virtual standstill of the interbank money markets. Banks had difficulty finding longer-term financing at acceptable prices, securitisations were almost impossible to place in the market, and there was persistent competition for savings deposits" (p. 80).

The report discussed the many actions Dutch authorities took to "to ensure the stability of fundamentally sound and viable institutions" (p. 33). Among these were the increase in the coverage of deposit insurance (p. 38), guarantees on banks' liabilities (p. 40), and capital injections (p. 38). These capital injections included both the effective nationalization of some financial institutions and more limited injections in others. The *Annual Report* said that through these measures, "The authorities thus averted a total deadlock in the financial system" (p. 33).

Nevertheless, the report saw financial problems as having some effects on credit supply. It wrote (pp. 70–71):

> However, in the second half of the year producer confidence fell to its lowest level ever recorded. Enterprises were faced with markedly lower profit and sales forecasts. At the same time, surveys among Dutch banks showed that they tightened their acceptance criteria for new loans, notably through higher interest rates, so pushing up corporate financing costs. Owing to these supply and demand factors, bank lending has shown an abrupt reversal since August. In the last four months of 2008, growth in bank lending to non-financial corporations has all but completely come to a halt.

This description is unquestionably grim. However, the fact that demand factors also figured prominently in the bank's analysis suggests that the effects of the crisis through the cost of credit intermediation (and thus credit supply) may not have been dire.

The 2009 *Annual Report* described continuing financial problems, but also notable improvement. It wrote (p. 87):

> Drastic support measures by the Dutch State, of which use was also made in the year under review, contributed significantly to the regaining of confidence in the financial sector and the financial markets. Banks and insurance companies made efforts to improve their capital positions, both by raising capital in the financial markets and by improving their risk profiles. Banks' stronger capital positions created room for a partial repayment of the state support they received in 2008. Yet, the recovery is still fragile. In October, DSB Bank went bankrupt.

Another section elaborated on these developments, saying: "When the markets recovered later in the year [2009], institutions could raise capital in the market again and began to repay the public support they had received. In the Netherlands, Aegon, SNS Reaal and ING repaid a total of 45% of the aid given to them" (p. 44). It also said that while the guarantee scheme for banks' debt securities was still in place, "Dutch banks resorted less to this facility during 2009 ... because they were increasingly able to attract market funding independently. However, the situation has not stabilized and the Dutch government ... has extended the guarantee scheme until mid-2010" (p. 44). The report specifically mentioned that "A positive development for the Dutch financial sector is that the losses on Dutch mortgages were relatively low" (p. 41).

In the chapter on the Dutch economy, the *Annual Report* suggested that credit supply factors had become less important than they had been in 2008. It said (p. 79):

> The outstanding volume of bank loans to businesses also continued to increase in 2009 despite the recession, rising by nearly EUR 10 billion. Credit growth slowed in the course of the year, however. This was driven mainly by the reduced demand for credit as a result of the economic downturn. Businesses did not require loans for investments, stock building, working capital and other outlays. At the same time, the Dutch banks further tightened their lending conditions in 2009. They were prompted to do so in part by the heightened collateral risks, the macro-economic situation and business or sector-specific circumstances. Moreover, since the start of the financial crisis the banks' financial buffers have been under pressure and funding costs have increased. In the reporting year, however, these supply factors appear to have been overshadowed by the slump in demand for credit.

This description is consistent with significant financial distress—almost certainly more than the minor crisis–minus shown by our series, but perhaps not rising to the level of a full-blown systemic crisis. The timing of distress revealed by the central bank reports is also broadly consistent with our new measure. Our series shows notable distress in 2008:2 and 2009:1, which is when De Nederlandsche Bank (DNB) identified significant problems; it then shows much lower distress in 2009:2, which is when DNB described substantial improvement.

The 2010 *De Nederlandsche Bank Annual Report* again indicated substantial improvement in financial conditions. For example, it wrote: "the funding options for Dutch banks in the private market improved considerably in the year under review. More unsecured funding (with no collateral) was raised than in 2009. And no further call was made on the credit guarantee scheme offered by the Dutch State. Banks also attracted other forms of financing, such as securitisations and covered bonds" (p. 40). It went on to say (pp. 42–43):

> The state support to financial institutions was further reduced in 2010. After ING, Aegon and SNS had repaid part of the capital support in 2009, Aegon redeemed EUR 500 million of the state's capital injection in August. In total, almost half of the capital provided by the state (EUR 13.75 billion) was repaid by the end of 2010. In view of the persistent capital market volatility, the guarantee scheme of EUR 200 billion for medium-term debt securities, which was due to expire on 30 June, was extended until 31 December 2010. ... Dutch banks have not used this scheme since December 2009, and are now able to raise finance in the capital markets independently.

A later chapter discussed the fact that "The banking industry showed clear evidence of recovery in the review year. Profitability improved strongly and Dutch banks benefited from more favourable financing conditions. Still, the sector remains vulnerable. Persistent attention areas were firms' dependency on market financing and the need to strengthen their capital position" (p. 86). It also said that "Market financing conditions continued to normalise in 2010, although banks still hold more liquidity than in the past for precautionary reasons" (p. 88).

At the same time, DNB saw continued risks. It wrote (pp. 88–89):

> Despite improved market conditions, however, the review year saw high volatility in the financial markets caused by concerns over the government finances and public debt levels in some euro countries. The uncertainty over the debt crisis in

> Greece and, in its wake, other euro countries, escalated in the spring of 2010, pushing the stock prices of Dutch banks down by 12% in the space of one month. During that same period, from mid-April to mid-May, the risk premiums on Dutch banks, measured as CDS spreads, increased considerably. Upon the creation of a safety net for financially distressed euro countries, the turmoil subsided, though not entirely.

As in 2009, the 2010 *Annual Report* saw a mixture of supply and demand factors affecting credit growth—but with demand factors predominating. It said (pp. 74–75):

> Bank lending to non-financial undertakings increased during the reporting year by 3% as opposed to an increase of 15% in 2008. The sharp deceleration in lending growth was mainly attributable to the weaker demand for credit. But businesses also had difficulty meeting the more stringent lending conditions imposed by the banks in the aftermath of the financial crisis. However, an improvement occurred at the end of the year, when both the short- and long-term lending conditions for business were relaxed.

This description suggests that by 2010, the cost of credit intermediation had come down substantially.

IMF Article IV Reports. The 2008 Article IV staff report was completed in May 2008, and so predates the identification of a systemic crisis in the alternative chronologies. For this reason, we begin with the 2009 Article IV staff report, which was dated December 2009.

The 2009 staff report flagged important financial distress in the Netherlands around the time of the global financial crisis. For example, it wrote: "The financial sector has been hit hard. While the mortgage and housing markets have been relatively stable so far, banks have suffered major losses, particularly from foreign troubled assets and sizeable declines in asset prices, requiring massive state intervention" (p. 4). It also said: "Except for Rabobank, major banks' ratings have been cut repeatedly since October 2008. Both ABN AMRO and ING were downgraded, most recently in May, and remain on negative outlook" (p. 8). The report described the various actions taken to deal with problems in the banking sector and expressed approval. It wrote (p. 19):

> There was agreement that bank support actions are broadly appropriate and consistent with those by other industrialized countries .... The enlargement of deposit insurance and liquidity extension on full allocation basis were in accordance with EU-wide measures. Despite its nationalization, the authorities are not interested in long-term state ownership of Fortis and aware of the competitive distortions it may cause. The injections of capital in the form of preferred shares, linking preferred dividends to equity dividends, restrictions on equity dividends, and built-in incentives for quick redemptions are consistent with a sound "fix-it-and-exit" approach.

In discussing the implications of these obvious problems in the financial sector for economic performance, the report was somewhat unclear about the relative importance of effects working directly through the decline in the financial services sector and those working through credit supply. At some points, it seemed to emphasize the direct effects on the large financial services industry. For example, it said "The Netherlands has proven markedly vulnerable to the global crisis given its large financial sector and strong trade and financial linkages" (p. 4). Likewise, it wrote: "Financial tightening is likely to reduce significantly economic growth. The share of the financial sector in GDP at 7½ percent is higher than in most

EU countries. Thus, a financial contraction may materially hurt GDP growth" (p. 13).

In other parts of the report, effects working though credit supply were given more prominence. For example, the IMF staff wrote: "Private lending, especially for mortgages, has slowed down substantially, the result of deleveraging and cyclical weakening. Recession and poor producer confidence have dampened credit demand, while mounting conservatism of banks in the face of losses, soaring bankruptcies, and the triggering of adverse covenants in existing loans have weighed down on credit supply" (p. 13). It elaborated on this reduction in credit supply, saying: "Lending conditions have tightened substantially, especially for fixed-rate loans. Three-quarters of all banks reported tougher lending standards for corporates at end-2008, and the proportion has grown in 2009. Those for residential mortgages hardened markedly from the second half of 2008, with over 80 percent of banks restricting credit" (p. 13). This discussion indicates that credit supply reductions were present in 2008 and 2009.

At the same time, demand factors were clearly assigned a significant role in explaining the overall decline in credit and economic activity. This perspective was revealed again in a later section, which said: "staff endorsed the authorities' actions to facilitate the expansion of bank lending when credit demand picks up. Supervisors are taking steps to permit acceleration of lending in support of the budding economic upturn urging institutions to raise additional equity capital (also in anticipation of tightening capital standards) and long-term funding and limit appropriately dividend pay-outs" (p. 20). Thus, whether the IMF's description of financial conditions in the Netherlands rises to the level of a systemic crisis is debatable.

The next Article IV staff report was that for 2011 (dated May 2011). With regard to the financial system, the overarching message of the report was: "Banking system soundness has improved significantly since 2008, but fragilities persist" (p. 4). For example, it wrote: "Despite deterioration in asset quality in 2009, the NPL ratio remained at manageable levels (less than 3 percent of total loans) for the banking sector as of June 2010" (p. 4). Likewise, it said (p. 4):

> Bank profitability has recovered slightly but remains weak. Banks achieved a modest operating profit in 2009–10, driven by increased interest income, but hobbled by higher operating expenses and persistently large provisions due to servicing arrears. Liquid assets more than cover short-term liabilities; nevertheless funding risk remains a challenge given Dutch banks' reliance on wholesale market funding.

The report also described a gradual wind-down of emergency measures saying (p. 5):

> A strategy of gradual exit from extraordinary policy support is being implemented, amid continued restructuring of the financial sector. At the beginning of 2011, the authorities ended access to the bank credit guarantee program. Three Dutch financial institutions, AEGON, SNS Reaal and ING, have paid back part of the capital support provided by the government in 2008–09. The state guarantee for the mortgage portfolio of ABN Amro was terminated in October 2010, and ABN Amro is expected to complete its merger with Fortis Bank Nederland by end-2011.

The description of credit conditions also indicated that financial distress had waned considerably. The report said: "While credit demand remained subdued throughout 2009, credit supply recovered on the back of improved access to capital and a moderation in banking sector stress. Also the initial tightening in credit conditions was mitigated to some extent by an increase in financing via bond markets, where large corporation had ease in obtaining credit" (p. 9). This clear reduction in the cost of credit intermediation is consistent with the behavior of our new measure, which shows distress in the Netherlands returning to zero by 2010:1.

***Wall Street Journal*.** The *Wall Street Journal* was only moderately informative in this period. It provided considerable information about government interventions and problems at specific financial institutions. But it said much less about overall impacts of financial disruptions on credit supply or on the cost of credit intermediation in particular countries. For example, it often characterized the financial crisis as harming economies or specific companies without distinguishing between effects operating through declines in global demand and effects operating through reduced credit supply. As a result, the evidence from the *Journal* is more informative about the timing of the distress in particular countries than about the peak levels of distress.

In the specific case of the Netherlands, the evidence from the *Journal* is very consistent with the evidence from the *OECD Economic Outlook* about the timing of distress. It is less clear about the severity of the distress, but appears to point to somewhat higher distress at the peak than what we find from the *Economic Outlook*.

The *Journal*'s discussions of problems at financial institutions in the Netherlands began in the first half of 2008, when it reported on difficulties at Aegon (a Dutch insurance company), ING (a Dutch bank and insurance company), and especially Fortis (a Dutch-Belgian bank) (for example, 1/21/08, 1/26/08, and 5/15/08). The reports became much more serious in the second half of 2008, culminating in coverage of the government's nationalization of the Dutch portion of Fortis (10/4/2008) and capital injections into ING (10/20/08) and Aegon (10/29/08). The government committed a total of roughly 3 percent of Dutch GDP to the three companies. The *Journal* also described some modest broader government interventions in response to troubles in financial markets: a ban on short-selling of financial institution stocks (9/22/08) and liquidity injections into financial markets in conjunction with other central banks (10/14/08).

There were fewer reports of government intervention after 2008. The *Journal* reported that the government purchased 80 percent of ING's holdings of Alt-A mortgages in January 2009 (1/27/2009); described continuing losses at Fortis, Aegon, and ING, as well as another Dutch bank, Amro, but no further government support (1/23/2009, 2/18/2009, 2/19/2009, 3/27/2009, and 3/28/2009); and covered extensive litigation and continued uncertainty concerning the Fortis bailout (for example, 4/9/2009). In the second half of the year, its reports on the institutions' health were more mixed. For example, it reported additional losses at Amro and Fortis (8/27/2009 and 8/28/2009), but improvements at Aegon and ING and efforts on the part of those companies to pay back the government (9/10/2009). The *Journal* also reported a run on a small bank and its seizure by the government. It reported that the "seizure was described by the government as a one-off situation unconnected with last year's financial crisis. However, it dealt a further blow to a financial system hit hard by a global credit crunch" (10/13/2009). By 2010, the *Journal*'s tone was generally even more positive. There were no reports on major problems at individual institutions. Dutch banks were described as significantly exposed to Spain, and hence at some risk (2/12/2010), but as having little exposure to Greece, enhancing their safety (4/29/2010).

The *Journal* was largely silent about broader implications of the disruptions. There were of course numerous references to worldwide or Europe-wide financial problems, such as a statement that "[i]nterbank lending in Europe remains all but frozen" (9/29/2008) and the use of such phrases as "the global credit crunch" (for example, 10/10/2008). But discussions of credit supply in the Netherlands were sparse. For example, a long retrospective article on how

Dutch labor market institutions had mitigated the employment effects of the downturn was vague about the reasons for the downturn (12/28/09). A few articles about Fortis reported that it had cut back on lending (9/27/2008 and 1/14/2009), but most of the coverage of problems at particular institutions did not discuss repercussions for credit availability. In addition, articles about problems at specific Dutch nonfinancial companies appeared to attribute them more to low demand (for example, 10/17/2008, 12/19/2008, and 5/8/2009) than to problems obtaining credit (for example, 12/31/2008).

In terms of timing, this evidence is extremely consistent with the *OECD Economic Outlook*. The *Journal* described financial distress that began in early 2008, clearly peaked in the second half of the year, and then receded relatively rapidly but did not immediately disappear. Similarly, our reading of the *Economic Outlook* led us to identify a credit disruption–regular in 2008:1, a minor crisis–minus in 2008:2, then a return to the credit disruption range in 2009:1 and the disappearance of distress by 2010:2.

In terms of magnitude, because the *Journal* provided little information about the impact of the distress on general credit supply in the Netherlands or about the effect of the distress on the overall economy, it is difficult to reach firm conclusions. However, the *Journal*'s extensive coverage of important government interventions is most consistent with a peak level of distress higher than the minor crisis–minus that we identify from the *Economic Outlook*. At the same time, the absence of concrete discussions in the *Journal* of economy-wide problems or impacts could suggest a peak level of distress not dramatically higher than this.

NORWAY

Norway in the 2007–2009 period is the one case where our new measure identifies substantial distress, while the two alternative crisis chronologies do not identify a crisis of any kind. Our new measure shows mild distress in late 2007 and early 2008; significant distress in late 2008 and early 2009, and then a rapid return to no distress in early 2010. Our reading of the alternative narrative sources is that they also identify a significant rise in the cost of credit intermediation in 2008 and 2009, though perhaps somewhat less than our new measure derived from the *OECD Economic Outlook*.

***Central Bank Reports*.** The reports of the Norwegian central bank (Norges Bank) are reasonably substantive and frank in the 2007-and-after period.[20] The 2007 *Norges Bank Annual Report*, in discussing the turbulence in world financial markets in 2007, said: "The turbulence has also had an impact on Norwegian markets, but the effects have not been as strong as to constitute a risk to financial stability. There is little risk of Norwegian financial markets not functioning more or less normally in the period ahead" (p. 74). At the same time, it mentioned that "The spread between Norwegian money market rates and expected key rates increased considerably in autumn 2007 .... Norges Bank has supplied extra liquidity to banks through loan schemes, as other central banks have done. For a period, a number of Norwegian banks found that it was difficult to procure liquidity in USD" (p. 76). Such increases in funding costs are certainly consistent with the small rise in the cost of credit intermediation that we identify from the *OECD Economic Outlook* in the second half of 2007.

The 2008 *Annual Report* painted a decidedly more troubling picture of financial problems. It stated (p. 84):

[20] The full title of the central bank report for Norway is *Norges Bank Annual Report*.

> Norwegian financial markets and financial institutions were also affected by the international financial crisis in 2008. Banks owned by Icelandic banks experienced acute liquidity problems on the collapse of the parent banks. Other Norwegian banks were not hit as hard as banks in many other countries. However, the banks experienced greater difficulty in obtaining liquidity. Risk premiums on interest rates in US and European securities markets spread rapidly to Norwegian rates, since Norwegian banks raise loans in international markets. The spread between Norwegian money market rates and the Norwegian key rate was periodically very wide. Long-term borrowing also became more expensive for banks....
>
> The banks have several years of good profitability behind them, and have succeeded in maintaining their financial strength. The results in 2008 show that banks' profitability is still satisfactory. To date, the primary effects of the financial crisis on banks have been a sharp increase in funding costs and substantial losses on securities. Loan losses also increased sharply in the fourth quarter.

The report when on to say that "Banks' response to these negative prospects has been to tighten their credit standards in relation to enterprises and households .... A key question at the end of 2008 is whether banks will tighten their lending standards to such an extent that this will have a negative effect on the activity level in the Norwegian economy" (p. 86).

The report also detailed various actions authorities had taken to ease funding pressures. Among these were "extending Norges Bank's lending facilities and other measures. Collateral requirements for loans were eased somewhat so that banks could borrow more. In addition, longer loans were granted with terms of up to two years .... Norges Bank also facilitated a swap arrangement between the government and banks whereby banks receive government securities in exchange for covered bonds" (p. 88). The *Annual Report* concluded that "Norwegian banks have so far managed well. However, one subsidiary, one branch and two brokerage firms owned by Icelandic banks were sold or wound up" (p. 89). Overall, the description of financial conditions in the 2008 *Annual Report* is consistent with a significant level of financial distress. Whether it rises all the way to the level of a moderate crisis–plus, as in our new measure, is debatable. But it is clearly over the threshold for a moderate crisis of some sort.

The 2009 *Annual Report* said that "Throughout 2009, long-term money market premiums both in Norway and abroad were higher than usual .... As conditions in financial markets improved, premiums have fallen markedly and approached a more normal level" (p. 88). It discussed a swap arrangement to help "reduce banks' liquidity risk by providing access to long-term funding in a period when bond markets did not function as normal" (p. 89). The report's view was that (p. 88):

> The arrangement was an important prerequisite for banks' capacity to maintain normal lending to customers during the period of financial market turbulence. The measure has probably also contributed to keeping banks' lending rates lower than would otherwise have been the case. Through 2009 the price in the swap arrangement was gradually raised as long-term funding became more accessible in the market. The arrangement was phased out in December 2009.

The two quotes about interventions give somewhat mixed messages about the degree of financial distress in 2009: the first suggests that some financial markets were not functioning normally, while the second indicates that the swap arrangements helped maintain normal lending. Nevertheless, the discussion of the phasing out of emergency measures in late 2009, along with the discussion of spreads returning to more normal levels, is consistent with the rapid reduction in distress shown by our new measure in this year.

IMF Article IV Reports. The staff report for the 2007 Article IV Consultation for Norway (dated May 11, 2007) was very upbeat. It said: "The financial sector is thriving. Banks remain well capitalized and profitable, with low nonperforming loans and loan losses ... and NB's latest Financial Stability Report suggests that banks have the capital to absorb large interest-rate shocks, although some would need to shore up their capital" (p. 8). It did, however, add that "prolonged rapid credit growth, the steep rise in house prices, and increasingly aggressive mortgage lending practices pose increasing risks" (p. 8).

The next report, that accompanying the 2009 Article IV Consultation (dated January 5, 2010), was far more mixed. On the one hand, it repeatedly mentioned that "The financial sector has withstood the crisis well, although credit risks remain elevated" (p. 1). In an annex to the report entitled "Collapse Then—Calm Today: What Has Changed Since the 1988–93 Banking Crisis?" the IMF staff analyzed why "the banking system has avoided a solvency crisis this time" (p. 41). They concluded that aggressive macroeconomic stabilization policy was an important source of Norway's relatively mild post-crisis recession, and thus of reduced negative feedbacks on financial stability (p. 42).

At the same time, the IMF staff report gave several indications of significant financial disruption. It said (p. 10):

> Domestic financial institutions experienced a severe liquidity shortage, although there were no solvency issues. Norway's banks rely on US dollar interbank markets—they fund themselves through a combination of dollar loans and crosscurrency swaps. With the drying up of these markets in the wake of Lehman's bankruptcy, the availability of term funding diminished sharply and spreads surged. The domestic corporate bond market also became highly illiquid.

Norwegian authorities took numerous actions (described in detail in Annex 1 of the report, pp. 39–40), which IMF staff said had "helped stabilize financial markets" (p. 10). However, it made clear that these actions did not thoroughly mitigate the effects of higher funding costs and other financial disruptions. The IMF described some effects on credit supply. It said: "Norges Bank's survey of bank lending shows that credit standards for both households and corporations started to ease in the second half of 2009 after tightening considerably during the global crisis. The growth of credit to the corporate sector has declined sharply, partly due to weaker demand" (p. 15). This description, though tempered by the upbeat comments on the relative strength of the Norwegian financial system, suggests a significant rise in the cost of credit intermediation.

The timing of financial problems described in the IMF staff report also fits with both our new measure and the descriptions in the *Norges Bank Annual Reports*. It is clear that the distress rose markedly in the second half of 2008, following the collapse of Lehman Brothers. But by the time the IMF report was submitted (January 2010), it said that "Interbank lending spreads have come down, and demand for bonds has returned" (p. 10). The report also referred to the fact that "In September 2009, a number of institutions announced their intention to raise capital, both from private sources and from the State Finance Fund," and that "With the normalization of market conditions, most crisis measures have already been phased out" (p. 27). This suggests that by late 2009, financial distress had abated substantially.

Wall Street Journal. As described in our entry for the Netherlands, the *Wall Street Journal* was not highly informative about credit supply conditions in individual countries in this period. Nonetheless, the *Journal* did describe significant government interventions and financial distress in Norway, concentrated in the second half of 2008 and the first half of 2009.

In early October 2008, the *Journal* reported government actions to guarantee bank deposits (10/6/2008). Later that same month, it described the government's pledging of funds as part of "a coordinated effort to stabilize" European countries' financial sectors (10/14/2008); a later report gave the size of Norway's intervention as roughly 3 percent of GDP (10/24/2008). And in February 2009, the *Journal* reported, "Norway unveiled a $14.8 billion plan to inject capital into banks and lend to banks and other businesses by buying corporate bonds" (2/9/2009; $14.8 billion was about 5 percent of Norwegian GDP).

In addition (and in contrast to the Netherlands in this same period), articles in the *Journal* provided some evidence of a significant backward shift of the credit supply curve. Most notably, in October 2008, in an item on a cut in interest rates by the central bank, it reported, "Credit channels in Norway have dried up, the central bank governor said" (10/16/2008). The next month, it reported, "Earnings at Nordic banks will likely come under pressure as the five-year boom in shipping financing comes to an end and loan losses from that sector increase the pain already felt from the credit crunch, analysts say. Norway's DnB NOR ASA and Sweden's Nordea bank AB ... said this week they are tightening loan-to-value covenants" (11/28/2008). In March 2009, in a discussion of falls in house prices in Estonia, the United Kingdom, Ireland, and Norway, the *Journal* quoted an analyst as saying, "'The tightening in lending criteria by banks over the past year is now having a meaningful impact on a number of European housing markets'" (3/6/2009). It also described a particular Norwegian company that faced credit supply problems and ultimately declared bankruptcy (12/16/2008 and 1/26/2009).

Outside the period from 2008:2 to 2009:1, the *Journal* provided evidence of no more than minor credit supply problems. An article in August 2007 included Norway in a list of countries where "[c]entral banks pumped money into distressed markets ... to relieve strains in money markets" (8/11/2007). Later that year, it described a small Norwegian securities firm that failed because of exposure to the U.S. subprime market (11/27/2007). But we found no other references to financial distress in Norway before the second half of 2008. Similarly, after a report of big losses at Norway's largest bank in July 2009 (7/13/2009), the *Journal* did not describe any further financial distress in Norway.

Thus, the evidence from the *Journal* is consistent with the evidence from the *OECD Economic Outlook* that Norway suffered a short, sharp period of significant financial distress in late 2008 and early 2009. In terms of timing, the evidence from the *Journal* probably points to even more concentrated distress than the *Economic Outlook*: whereas we interpret the *Economic Outlook* as pointing to the minor crisis range in 2008:1 and 2009:2, the evidence from the *Journal* points to only very low levels of distress before 2008:2 and after 2009:1. In terms of magnitude, the evidence from the *Journal* certainly does not contradict the evidence from the *Economic Outlook* that at its peak, distress in Norway was in the moderate crisis range. But at the same time, because the *Journal* did not provide much detail, its evidence (with the possible exception of the reference to credit drying up) is not inconsistent with peak distress being in the upper end of the minor crisis range rather than in the moderate crisis range.