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## Macroeconomic Consequences of Financial Crises

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### *1. Lawrence H. Summers*

#### Planning for the Next Financial Crisis

It used to be said that a repeat of the depression of the 1930s was inconceivable now that governments better understood how to manage their economies. Yet, both Latin America and Europe have suffered economic downturns during the 1980s on a scale comparable to the 1930s. And, in 1987, the world's stock markets suffered the greatest one-day drop in their history. It is little wonder that the possibility of financial crisis with major economic consequences has again emerged as a major cause for concern.

The problem of planning for financial crisis has much in common with the problem of planning for war. We are fortunate in that the worst disasters we can contemplate are much worse than those with which we have had experience. While certain principles may be robust, technological changes reduce the relevance of historical experience and create new threats. With financial crisis as with war, prevention is much better than cure. But in neither case can prevention and cure be cleanly separated. Credible government commitments to defend financial institutions can deter speculative attack just as credible threats of reprisal can discourage military attack. But, policies that deter attack also encourage reckless behavior. Thus critics argue that excessively strong military force breeds adventurism and that excessively generous de-

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posit insurance leads financial institutions to take unwarranted and dangerous gambles.

Because of their inability to do experiments, and the paucity of relevant precedent, military planners make extensive use of war games. By following out the logic of various constructed scenarios, they evaluate the efficacy of alternative strategies. I use a similar mode of analysis here in considering appropriate government policy once financial crisis comes. For the most part, I ignore issues of maintaining a stable and sustainable policy environment and issues relating to the prudential regulation of financial institutions. Instead, I concentrate primarily on lender-of-last-resort strategies. Only in so far as commitments made by lenders of last resort affect the likelihood of crisis do I touch on the issue of crisis prevention as opposed to crisis cure.

The paper is organized as follows. Section 3.1 describes and tries to dramatize the three stages of the canonical “Kindleberger” (1978) crisis and considers its relevance in the current environment. I conclude that technological and financial innovation have probably operated to make speculative bubbles which ultimately burst more likely today than has been the case historically. However, other institutional changes have made it less likely that financial disturbances will be transmitted to the real economy. The most important are the presence of automatic stabilizers and deposit insurance, and the Federal Reserve’s recognition of the potentially disastrous consequences of a major decline in the money stock.

Section 3.2 takes up the critical issue of lender-of-last-resort policy. I distinguish four positions on the appropriate behavior of public lenders of last resort. The first *laissez-faire* position, which has enjoyed a mild revival in recent years, holds that there is no reason for public intervention in financial markets, that private institutions could and would perform the lender-of-last-resort function if there was no public interference. The second, *monetarist* position holds that the only appropriate role of the government is to insulate the money stock from developments in asset markets. In large part, this can be done through open market operations directed at maintaining a stable money stock without any need for the authorities to intervene on behalf of specific institutions. The third, *classical* position follows Bagehot (1873) in seeing a clear but limited role for a public lender of last resort. On the classical view, last-resort lending is appropriate only to solvent banks, at a penalty rate, for short time periods according to a preannounced plan.

The fourth, *pragmatic* position is the one embraced implicitly if not explicitly by policymakers in most major economies. It holds that central banks must always do whatever is necessary to preserve the integrity of the financial system regardless of whether those who receive support are solvent or can safely pay a penalty rate. This position concedes that some institutions may become too large to fail. While lender-of-last-resort insurance, like any other type of insurance, will have moral hazard effects, I argue that these may be

small when contrasted with the benefits of protecting the real economy from financial disturbances.

Section 3.3 asks how a financial crisis could affect the real economy in the presence of a sufficiently aggressive lender of last resort. This would be most likely if the provision of liquidity was itself destabilizing. Suppose foreigners lose confidence and rush to get out of dollar assets in U.S. financial institutions. Such a situation would be difficult for the authorities because the actions necessary to preserve the health of financial institutions would conflict with the goal of preventing a currency collapse. Conversely, the high interest rates necessary to avert a collapsing currency would tend to create financial distress.

Section 3.4 concludes by assessing the magnitude of the crisis risk and by suggesting steps that might make financial crisis less likely.

### **3.1 The Canonical Crisis**

Perhaps the best definition of a financial crisis is the one offered by Goldsmith (1982) in commenting on Minsky (1982). He defines a financial crisis as “a sharp, brief, ultra-cyclical deterioration of all or most of a group of financial indicators—short term interest rates, asset prices, (stock, real estate, land) prices, commercial insolvencies and failures of financial institutions.” On this definition, even very sharp declines in asset values such as the two-thirds decline in U.S. real stock prices between the beginning of 1973 and summer of 1974 does not represent a financial crisis. Nor do widespread financial institution failures such as the S&L crisis unless they occur suddenly and lead to widespread failures of financial institutions.

On a narrow definition, the incidence of financial crisis has surely diminished over time. After noting that “a disinflation or a deflation may be long drawn out. Nominal wealth may decline, real debts may rise, but these are not financial crisis,” Anna Schwartz (1986) goes so far as to claim that “no financial crisis has occurred in the United States since 1933, and none has occurred in the United Kingdom since 1866. All the phenomena of recent years that have been characterised as financial crisis—a decline in asset prices of equity stocks, real estate, commodities; depreciation of the exchange value of a national currency; financial distress of a large non-financial firm, a large municipality, a financial industry, or sovereign debtors—are pseudo-financial crisis.”

The issue of what constitutes a financial crisis is semantic. But Schwartz is clearly correct in her implication that the financial stresses of recent years have had relatively little effect on real economic activity. The situation is very different than that of a century ago, when financial panics and sharp declines in economic activity often coincided. Perhaps the critical question about financial crises is whether financial instability no longer affects the real econ-

omy in the way that it once did, or whether in fact there is a risk that the next financial disturbance will turn out to have a major impact on the real economy. One way of trying to get some insight into this question is to try to construct a scenario where financial crisis leads to disaster and then to evaluate its plausibility. This should either lead to a rejection of Schwartz's view or to the identification of the crucial differences that make crises less likely today than they were in an earlier era.

### 3.1.1 Prelude to Crisis

Here is a scenario that poses many of the issues that come up in historical discussions of the onset of financial crisis. In this section, I use this scenario as a vehicle for expositing Kindleberger's model of the canonical crisis and considering its current relevance. Then in the next section, I use it as a vehicle for considering various positions about the appropriate behavior of the lender of last resort. Finally, in the third section, I consider possible new genres of financial crisis. It goes without saying that the scenario presented here is employed as an analytic device and does *not* represent a forecast of the future in either broad outline or detailed particular.

The year was 1991. The world economy had been growing for 9 consecutive years. Widespread fears that the U.S. economy would land hard after the twin deficits of the Reagan years had proven false. The notion that recessions were a thing of the past took hold. Analysts explained that because of the increasing diversity and internationalization of economic activity, poor performance in a single sector of the economy was no longer enough to drag the whole economy down. They also argued that the market itself had supplanted the Fed as a controller of inflation. Whenever inflation loomed, interest rates rose automatically, slowing growth down to a sustainable level. The competitive problems of the 1980s and the Reagan administration's anti-union policies exerted a continuous restraining influence on wage demands, allowing corporate profit rates to rise to levels not seen since the 1960s.

Reduced concern about inflation and strong earnings were good news for the stock market. Three other fundamental factors also buoyed the market. First, with the Nikkei index at 55000, Japanese investors began to diversify on a large scale. At last, the Tokyo offices of major American financial institutions began to pay off. Predictions that the flow of Japanese money into the American stock market would rise from \$75 billion a year to \$250 billion a year by 2000 became commonplace. Second, junk bond investors who were fortunate enough to buy during the fall 1989 slump earned spectacular returns. With a vindicated Michael Milken back in business, the pace of corporate restructuring increased. Nearly \$200 billion in equity was withdrawn from the market during 1990. Third, reduced capital gains taxes, lower taxes on dividend income through adoption of Treasury Sec-

retary Brady's corporate tax integration program, and newly enacted IRA accounts also contributed to the demand for stocks.

With the Dow Jones average above 4000 by 1990, the small investor returned to the market. The argument that, over a 15-year period including the crash up to the end of 1990, investors in stocks had earned an average real return of 11 percent, and that, with a reduced cyclical element, the future would be even brighter, proved persuasive. With the baby bust of the 1980s, fewer families needed to invest in purchasing a larger second home. Instead, the money went into stock market. Mini-stock-market future contracts invented by a major brokerage firm that enabled individuals to put up just \$2,000 and control \$35,000 worth of stock were approved by the CFTC and proved to be a major hit. A distinguished group of economists and financial experts convened early in 1990 and recommended that, given new economic realities, universities and other nonprofit institutions should hold 75 percent of their endowments in equity, since over the long term if not the short term, the stock market provided an extremely attractive risk return ratio.

During the first half of 1991, the Dow Jones average rose from 4000 to 4800. Investors in mini-stock-market futures saw their initial \$2,000 stake rise to \$9,000. Most reinvested their proceeds. Lawyers and dentists explained to one another that investing without margin was a mistake, since using margin enabled one to double one's return, and the risks were small given that one could always sell out if it looked like the market would decline. By mid-September, the Dow had reached 5400.

This account has the three major elements that Kindleberger stresses in his account of the prelude to crisis.<sup>1</sup> First, there is a displacement, a change in fundamental values that leads to a fully justified increase in asset prices. Here it is an increase in earnings, and there is an appropriate expectation that the variability of economic performance may have decreased. Further arguments, (the Japanese, the tax cuts), lend support to the idea that an asset price increase is justified.

Second, the increase in asset prices and the confidence it brings about leads to an increased use of leverage. This takes place both at the firm level, as firms lever themselves much more highly, and at the individual level, as the use of the futures markets permits individuals to lever their purchases of stock. In one description, this increased demand for credit pushes interest rates up, leading to an increase in the velocity of money. In another, a proper definition of money should include the credit extended by brokerage firms to individuals and so the money supply has increased. Either conception suggests that the increase in asset values leads to increased liquidity, which in turn increases the demand for goods and services and leads to economic expansion.

1. Kindleberger's account places more emphasis than this one on the presence of fraud and corruption. Perhaps this deserves to be treated as a separate major element.

Third, the boom is fueled by the *positive feedback behavior* of some investors.<sup>2</sup> Individuals who emulate the strategies that have fared well in the recent past, and so buy stock following price increases and sell following price declines, are displaying positive feedback behavior. So are the institutions who use recent history to set their investment strategy. Investors who rush to sell out when they get margin calls, or to cover short positions when the market moves up are also positive feedback investors. By increasing the demand for shares when prices are rising and reducing it when prices are falling, positive feedback behavior increases market volatility.

Kindleberger is not entirely clear on what determines when good news is followed by enough use of leverage and enough positive feedback behavior to create a mania or a bubble. Surely institutional factors matter. It may also be that it takes a long run of good news to create enough confidence for conventional inhibitions about leverage to erode, and for sluggish households and institutions to get the word that a new era has begun. The accident of what catches the public's fancy is relevant as well.

Has anything happened to make this sort of prelude to crisis less likely now than it might have been in earlier times? It seems unlikely. First, financial innovation has greatly increased the use of leverage in the economy. This may be seen in many ways. At the broadest level, the ratio of high-powered money (currency plus bank reserves) to GNP has fallen from 6.9 percent in the 1920s to 5.7 percent today, and much of today's high-powered money is held outside the country. The ratio of household debt to disposable income has risen from 36 percent to 92 percent today. The ratio of corporate debt to corporate equity has risen sharply, especially in recent years. And the importance of cross-border lending and borrowing on both a net and gross basis has increased spectacularly.

Second, the Depression and even the sharp stock market declines of 1973–75 recede from memory. There was of course the crash in 1987, but the recent performance of the American market and, even more strikingly, several foreign markets, suggest that its lesson may have been double-edged. Some were scared away. But others concluded that a market that could prosper following the crash was basically sound and safe. While portfolio insurance strategies of the type that were popular before the crash have become less fashionable, little else has changed, and other types of market-timing strategies have taken their place. Recall that markets crashed in other countries where portfolio insurance was not in widespread use.

Third, the steady decline in transaction costs and the increase in trading volumes has surely increased the perception of liquidity in asset markets. The perception is a valid one in normal times. As long as one's desire is not uni-

2. This type of behavior may be even more important in real estate markets than in the stock market. Kindleberger cites evidence suggesting that at the height of the Boston real estate boom, nearly two-thirds of condominiums purchased were intended for resale.

versally shared, it is easier to liquidate a position than it would have been in the past. Of course, when everyone wants to move in the same direction, no technological improvement in the organization of the market can increase liquidity.

The view that bubbles could again emerge in asset markets is supported by statistical evidence on speculative prices. Cutler, Poterba, and Summers (1989) document that in the markets for stocks, bonds, foreign exchange, and precious metals there is positive serial correlation over periods of weeks and months. This implies that there is logic to short-term, positive feedback trading, which seeks to catch and ride trends. On one estimate (*The Economist* 1989), almost four-fifths of foreign exchange trading is driven by technical systems that give rise to positive feedback. A different sort of evidence comes from the work of Barsky and De Long (1989) who, in studying the American stock market, find clear evidence that stock prices rise much more than proportionately with dividends, as would be predicted by any theory emphasizing the market's eventual overreaction to good news.

Can anything be done to make the type of prelude to crisis described here less likely? There is the problem that bursting a balloon is much easier than gradually letting the air out. Seeking to talk the market down will not work if the government's statements are not credible and may work too well if its statements are too fully credible. Perhaps there is scope for regulation to combat the growth of leverage or the illusion of general liquidity. Suggestions range from increased margin requirements to taxes that would disproportionately fall on short-term traders.<sup>3</sup> All such regulatory approaches are probably becoming more difficult for any nation to implement unilaterally because of the ease with which financial activity can be relocated.

If financial crisis is less likely today than it once was, the reason is probably not a reduction in the likelihood of a bubble starting. I turn next to the bubble's burst and its consequences for the real economy.

### 3.1.2 The Panic Begins

Here is how the scenario described in the preceding subsection might continue:

In October of 1991, problems began to surface. The widely admired 1990 leveraged buy out (LBO) of a Fortune 20 company got into serious trouble and the price of the publicly traded 'stub equity' fell by 75 percent. One major Wall Street firm was forced to merge with another after a poorly supervised trader lost \$500 million by failing to properly hedge a complex position in the newly developed foreign-mortgage-backed securities market. Economic forecasters were confounded by a drop in the demand for

3. For a discussion suggesting that transactions taxes would probably not have large effects on volatility one way or the other but might increase economic efficiency in other ways, see Summers and Summers (1989).



durable goods as both consumers and businesses were saturated after a decade of strong demand. Yet another hot summer reduced the wheat crop. At the same time, the U.S. government had reluctantly concluded that making a substantial amount of wheat available to the Soviet Union was necessary in order to reduce the risk of Stalinist backlash against Mikhail Gorbachev. Investors got jittery even as the 1.3 percent Consumer Price Index (CPI) increase in September was dismissed as an aberration due largely to agricultural prices.

These jitters were compounded when trade frictions between the United States and Japan heated up. Recognizing that a large bilateral trade surplus would, as a matter of arithmetic, continue for as long as Japanese investors invested heavily in the United States, MOF quietly offered administrative guidance calling for reduced investment in American stocks. Given congressional pressure for new withholding taxes on capital gains received by foreigners, this guidance was effective. Confronting problems of both unemployment and inflation, American policy-makers made it clear that monetary policy would be used to try to keep the economy growing steadily not to support any particular level of the dollar exchange rate.

Articles urging the proposition that no one had gone broke and many had prospered selling out too soon became ubiquitous. The realization that the Japanese had shifted from being net buyers of stock to being net sellers gradually spread. On the Wednesday before Thanksgiving, the Dow fell 172 points. Experts cautioned that this was a decline of 3 percent, and that there had been several dozen previous occasions when the market had fallen as much. But the markets in London and Tokyo were off almost 10 percent on Thursday and Friday, with American securities declining the most.

On Monday morning the floodgates opened as a huge number of individuals and institutions decided that the market had become too risky for them. During the day, selling pressure was increased as the intraday margin systems instituted after the crash of 1987 forced many traders in both Chicago and New York to liquidate their positions. An effort to get firms to prop up the market by buying their own shares failed, as firms complained to the authorities that they were so levered already, that they could not part with any cash or take on new debt. Institutions learned from the experience of the 1987 crash and avoided making margin payments to customers until they had received the cash their customers were owed, putting pressure on the payments system. Circuit breakers kicked in when the market was down 200 points and again when it was down 400. But as rumors swept the floor, that, off the floor, large blocks were being sold at large discounts to past market prices, the panic only increased. By the end of the day, over 1.3 billion shares had changed hands as the Dow Jones average declined by 1153 points.

Again, the main elements in Kindleberger's model are present. First, at some point, an event occurs that raises doubts about the future. Some insiders

decide to take their profits and get out. Second, the market hesitates. The pool of new speculators dries up. The possibility of a panic becomes real. Third, the prophecy becomes self-fulfilling as investors rush to get out while they still can. As always in troubled times, there is a flight to quality.

As with the first stage of Kindleberger's crisis model, there is little reason to believe that this second stage has become less likely over time. *Mutatis mutandis*. The scenario here is very much like the one played out on 19 October 1987. In the wake of that event, a vast effort has gone into seeking regulatory changes that would make market meltdowns less likely or at least less violent. It is doubtful that much has been accomplished. The observation that the market had a 66-hour circuit breaker before the Monday crash raises questions about the efficacy of closing the market during a panic. So does the experience of Hong Kong, where the market was closed and not permitted to reopen.

Raising margin requirements may well help stop bubbles from starting but it is unlikely to be helpful in controlling bubbles once they start. Indeed, it creates positive feedback by accelerating the selling out of positions of those caught by price declines. As Garcia and Plautz (1988) note, this is what happened during the 1980 silver episode. Raising margin requirements also makes it more difficult for venturesome speculators who want to buy at what they regard as low prices.

Increasing capital requirements for specialists or broker dealers may, as discussed below, protect the integrity of the payments system, but it is unlikely to do much to stabilize prices in a rapidly falling market. Specialists can create liquidity but they cannot stabilize a market where everyone wants to sell. The reality is that little has happened to make the second stage of a Kindleberger crisis less likely than it was historically. Nor are there plausible regulatory actions that would achieve this objective.

### 3.1.3 Crashes and the Real Economy

So far, the scenario that I have constructed represents what Schwartz labels a "pseudo crisis." The disturbance has not yet affected the health of financial institutions or been transmitted to the real economy. The important institutional and attitudinal changes that have taken place in the last 50 years have been directed much more at containing the damage that financial problems might cause than at preventing speculative bubbles from starting. As I argue in the next section, which is directed at the appropriate behavior of lenders of last resort, this makes a very big difference. In order to illustrate the importance of these changes, I complete my scenario by assuming the authorities behave in the way they did in the 1930s. Needless to say, this is not what I would anticipate.

One major brokerage house had been very eager for business. As a consequence, it treated the investor suitability requirements for trading futures and writing options as a formality. When the market fell more than 1000 points, many of its customers could not meet their obligations. Those who

could hear the rumors that the firm might fail and decided to delay making their payment. Worried about the firm's continued ability to function, one of the major clearing houses did not make its payment but instead held on to it as collateral. By the end of the day, it was clear that the brokerage firm would not survive.

Once rumors that a major brokerage house might fail looked right, suspicion fell on the clearing house of which it was a major part and on the banks with which the clearing house did business. One major Chicago bank was rumored to have lent very heavily to purchasers of stock and options. On Tuesday morning a queue formed outside its door before it opened. Seeing the line outside the bank on "Good Morning America," many other people decided they were better off taking money out of their banks. Many foreign holders of American bank assets remembered what had happened to the dollar after the crash of 1987 and worried about the health of the American banking system and did not roll over their CDs.

With the chairman of the FDIC at his side, the president went on TV and announced that the small depositors had nothing to fear, since deposits of up to \$100,000 were fully insured by the FDIC, which would surely meet all its obligations. The chairman of the Federal Reserve announced that the Federal Reserve would not allow liquidity problems to bring down any major bank. The effect was not the intended one. Holders of large CDs, both foreign and domestic, as well as those who were owed money by securities companies, interpreted the announcement as saying that the government would not necessarily meet their obligation if the institution holding their obligation was not solvent.

As credit contracted, the level of M2 declined by 4 percent in a two-week period, even though the stock of base money increased slightly. Forecasters called for recession and for a sharp decline in the rate of inflation. With inflation expectations way down, real interest rates rose sharply. Banks froze loans to builders until they had a chance to see which way the economy would head. Businesses held out on new plant and equipment spending until they saw how the situation shook out. Firms whose bank had been liquidated had an especially difficult time getting credit of any kind, because no one knew them. Fearful that the political pressures caused by recession would generate legislation that would make it more difficult for them to lay off workers, they rapidly downsized their work forces.

Those who had warned about budget deficits claimed that the wolf was here at last. Political leaders extracted the message that increases in budget deficits would have disastrous consequences for business confidence. As a consequence, the provision allowing the repeal of the Gramm-Rudman targets if the economy went into recession was suspended. Spending was cut, and even some minor taxes were increased, in an effort to prevent the budgetary situation from deteriorating.

The result was the worst recession since the Depression. Unemployment

rose to 11 percent and real GNP declined by 7 percent. For the first time since the war, there was a decline from year to year in the consumption of nondurable goods.

Could this really happen? For the most part, it depends on how the government carries out its lender-of-last-resort responsibility, an issue discussed in the next section. Here I comment on two other aspects of the scenario. Both address the macroeconomic policy response to a weakening economy.

As table 3.1 demonstrates, a major difference between the pre- and post-World War II economies is the presence of *automatic stabilizers* in the postwar economy. Before World War II, a \$1-drop in GNP translated into a \$.95 decline in disposable income. Since the war, less each \$1 change in GNP has translated into a drop of only \$.39 in GNP. This change is largely the result of the expansion of government's role in the economy. When the economy slumps, government tax collections decline and government transfer payments increase, both of which cushion the decline in disposable income. The mirror image of stability in disposable income is instability in the government deficit. Hence, automatic stabilizers cannot work if the government seeks to maintain a constant budget deficit in the face of changing economic conditions.

The other fundamentally important change over the past 50 years regards monetary policy. Quite apart from whatever it does or does not do to back up financial institutions that get in trouble, the Federal Reserve has the ability to alter the money stock through open market operations. In the face of a deflationary crisis like the one described above, it is hard to see why it would not be appropriate to pursue an expansionary monetary policy that would prevent the expectation of deflation from pushing real interest rates way up. The use of such a policy would at least limit the spillover consequences of financial

**Table 3.1**                      **Relation between National Income and Disposable Income**

Period	Effect of \$1 Change in National Income on Disposable Income	$\bar{R}^2$
1898–1916	.76 (.16)	.54
1923–40	.95 (.24)	.61
1949–82	.39 (.06)	.59

*Source:* J. Bradford De Long and Lawrence H. Summers. 1986. The changing cyclical variability of economic activity in the United States. In *The American business cycle: Continuity and change*, ed. Robert J. Gordon, 679–719. Chicago: University of Chicago Press.

*Note:* The table shows regressions of the change in annual disposable income on the change in national income. Standard errors are in parentheses.

institution failures. Whether it would be enough to fully contain the damage is the issue of whether a lender of last resort is necessary, the subject of the next section.

### 3.2 The Lender-of-Last-Resort Function

Most treatments of financial crisis assign a central role to what is or is not done by the lender of last resort. In its 1984 submission to the Bush Commission on Financial Deregulation, the Federal Reserve highlighted the primacy of its lender-of-last-resort function:

A basic continuing responsibility of any central bank—and the principal reason for the founding of the Federal Reserve—is to assure stable and smoothly functioning financial and payments systems. These are the prerequisites for, and complementary to, the central bank’s responsibility for conducting monetary policy as it is more narrowly conceived. . . . What has not changed, and is not likely to change, is the idea that a central bank must, to the extent possible, head off and deal with financial disturbances and crises.

To these ends the Congress has over the last 70 years, authorized the Federal Reserve (*a*) to be a major participant in the nation’s payments mechanism, (*b*) to lend at the discount window as the ultimate source of liquidity for the economy, and (*c*) to regulate and supervise key sectors of the financial markets, both domestic and international. These functions are in addition to, and largely predate, the more purely “monetary” functions of engaging in open market and foreign exchange operations and setting reserve requirements.

Accepting Congress’s goal of maintaining a smoothly functioning payments and financial system, there remains the question of what public actions can best achieve this objective. I consider here four positions regarding the appropriate behavior of the lender of last resort, each of which has received substantial support in the history of thought on this subject.

#### 3.2.1 Free Banking

The case for free banking, without a public lender of last resort, has undergone something of an intellectual revival in recent years. But as Goodhart (1985) stresses, it goes back to Bagehot (1873) and before. While Bagehot is remembered for his views on how a central bank should carry out the lender-of-last-resort function, he actually preferred a system of free banking. Thus he wrote:

A large number of banks, each feeling that its credit was at stake in keeping a good reserve, probably would keep one; if anyone did not, it would be criticized constantly, and would soon lose its standing and in the end disappear. And such banks would meet an incipient panic freely and generously. They would advance out of their reserve boldly and know at such periods, it must show strength, if at such times it wishes to be thought to

have strength. Such a system reduces to a minimum the risk that is caused by the deposit. If the national money can safely be deposited in banks in any way, this is the way to make it safe. (Bagehot 1873, 104)

There is considerable controversy as to how well free banking worked during the historical periods in which it was tried. It is a fact, though, that the institution has not endured. A number of market failures associated with a free banking system may suggest the reasons why. Each ultimately relates back to problems of information asymmetry that call banking institutions into existence in the first place. The niche of the banker is his ability to assess creditworthiness, an ability borne of general experience and experience with particular borrowers. If a bank's assets could readily be evaluated by the public, there would be little need for banks as institutions.

The fact that the value of a bank's loan portfolio is private information has two important implications. First, it means that the bank cannot mark its portfolio to market continuously. This means that it must offer depositors fixed dollar repayments, creating the possibility of runs. Whenever a bank gets into trouble, the depositors who get their money out first do best. The situation is very different from that of equity holders in a company, who gain no advantage from moving quickly when public information suggests that their company is in trouble. Second, it means that bank assets are illiquid. If all bank assets could readily be traded on a secondary market, the need for banks would be greatly reduced. Firms could simply sell securities to the public without the need for an intermediary.

As the model of Diamond and Dybvig (1983) suggests, these two features of banking institutions are likely to lead to instability in the absence of public actions. More precisely, prophecies about a bank's health are likely to be self-fulfilling. A bank may be perfectly healthy as long as it is expected to remain perfectly healthy. But if it is expected to fail, depositors will demand their money. If the bank is forced to liquidate its asset portfolio at distress prices, because of the difficulty outsiders have in evaluating its components, the bank may become insolvent.

The instability associated with self-fulfilling prophecies is magnified by three further considerations. First, there may be "reputational externalities," where one bank's failure affects the public perception of the health of other banks.<sup>4</sup> This might be because of concern about the consequences of the failed bank's default, because of a perception that other banks hold portfolios similar to the portfolio of the bank that just failed, or because of concern about the macroeconomic ramifications of bank failures.

Second, bank failures will have an adverse impact on the firms that depend on them. To the extent that established relationships represent a kind of capital, beneficially owned by both borrower and creditor, both will suffer losses when a bank fails. To some extent, firms can avoid this problem by forming

4. I owe this term to Richard Zeckhauser.

relationships with a number of banks, but this obviously imposes costs of its own.

Third, bank failures and failures of the firms that depend on banks may have a pronounced impact on the level of aggregate demand. As banks contract credit, the supply of money declines. Especially if the price level does not react immediately, the result will be higher real interest rates, which will tend to discourage spending as well as increase the pressure on financially fragile institutions. This transmission mechanism figures prominently in many accounts of the onset of the Depression (e.g., Friedman and Schwartz 1963).

All of these factors suggest that economists' traditional presumption in favor of free and unregulated markets cannot be reflexively applied to financial institutions. This is especially the case when there are already substantial interventions in the market, through deposit insurance and through the tendency of market actors rightly or wrongly to suppose that the government is likely to bail out institutions that get into trouble. However, establishing that the market's functioning will be impaired by information problems does not demonstrate that improvements are possible, given that governments also lack complete information. I turn next to the consideration of possible active lender-of-last-resort strategies.

### 3.2.2 A Monetarist Lender of Last Resort

Historical accounts of panics always emphasize the effect of failing financial institutions on the money supply and the adverse effects of a falling money stock on economic performance. A minimalist view of the function of the central bank would hold that, in the face of a major disturbance, it should use open market operations to make sure that the money stock, somehow defined, is not allowed to decline precipitously; a more activist view would seek to insure that it rises rapidly enough to offset any decline in velocity associated with financial panic. On this monetarist view, there is no need for the Fed to make use of the discount window or moral suasion in the face of crisis. It suffices to make enough liquidity available.

Goodfriend and King (1988) argue that "banking" policy as distinct from monetary policy is unnecessary. Providing emergency loans to institutions suffering liquidity problems is similar to the line-of-credit service that the private sector already provides. It is not obvious why the Fed is more efficient than the private sector at the monitoring and supervision that is required. A policy of maintaining liquidity but not helping out specific institutions has the virtue of avoiding political pressures to bail out insolvent institutions and of making it more difficult for institutions that are in trouble to exploit the protection provided by deposit insurance in order to take on excessive risks.<sup>5</sup> These features help *ex post*, *ex ante*; they also discourage risk taking.

5. This could be done by pledging a bank's best collateral to the Fed, and then using the proceeds to pay off uninsured depositors.

Is this approach sufficient to contain the damage that financial crisis might otherwise cause? Relevant experience is scarce, since the modern Federal Reserve has taken a more active role in times of crisis, and crises in earlier times usually coincided with sharp declines in the money stock. But the analysis of the potential difficulties with a free banking system suggests that support of specific institutions, rather than just the money stock, may be desirable. Declines in the money stock are just one of the potential adverse impacts of bank failures. Bank failures, or the failure of financial institutions more generally imposes external costs on firms with whom they do business and through the damage they do to the reputations of other banks. Private lenders have no incentive to take account of these external benefits, and so there is a presumption that they will lend too little.

The point here may be put in a different way. Because of the relationship-specific capital each has accumulated, reserves at one bank are an imperfect substitute for reserves at another. Maintaining a given aggregate level of lending is not sufficient to avoid the losses associated with a financial disturbance.

There is one reasonably clear lesson from the crash period. It would not have been sufficient for the Fed to keep the money stock growing steadily. As table 3.2 illustrates, their successful action, involved rapid money growth. By almost any measure, monetary policy turned highly expansionary during the crash period. Had there been no market break, it is extremely unlikely that monetary policy would have been so expansionary. In this sense, the Fed did more than avoid the transmission of the financial disturbance to the real economy through a declining money stock.

**Table 3.2 Federal Reserve Activity and the Crash of 1987**

A. Money Supply							
Monetary Measure	% Growth Rate (Annualized)						
	October 1987	Average 1987					
Monetary Base	11.9	7.0					
M1	15.2	3.1					
M2	7.0	3.3					
M3	7.8	4.8					
<i>L</i>	10.1	5.0					

  

B. Federal Reserve Credit (Billion \$US)							
Measure	October 7	October 14	October 21	October 28	November 4	November 11	November 18
Credit	237.9	239.5	243.5	251.3	236.1	240.4	237.9
Loans	1.4	.9	3.2	.8	.6	.5	.7
Float	1.3	2.1	1.1	2.0	.6	.6	1.5

Source: Federal Reserve Board. Various issues. *Federal Reserve Bulletin*.



Journalistic accounts (e.g., Metz 1988) leave the impression that, in addition to the provision of liquidity, moral suasion (arm twisting?) was a major element of the Fed's response to the crash as it sought to convince major banks to support other financial institutions. Evaluating its importance for the ultimate outcome is difficult. However, an alternative elaboration of the scenario developed in the previous section makes it plausible that it might have been quite important.

Stung by continuing criticisms of policies that had led the government to incur a \$400 billion dollar S&L bailout, policymakers were skittish about standing behind ailing institutions of any kind. Following the advice of the Shadow Open Market Committee, who issued a report in 1990 urging that the Federal Reserve confine its lender-of-last-resort role to preventing the money stock from falling below its 'normal growth path' and avoiding any sharp run-up in real interest rates, the Fed announced its intention to provide liquidity to the system, but made it clear that the choice of what banks did with their increased reserves was entirely up to them.

Bankers considered the risk-return ratio on short-term loans to several major firms caught out by differences in the settlement periods between different markets. They realized that it did not take much of a risk that their loans would somehow go bad, to offset the opportunity to earn premium interest rates over a period of days or weeks. There were limits on the interest rates banks could charge, since the willingness of a customer to pay a high interest rate indicated the depth of its problems. After rumors began to circulate that one major investment house had failed to properly hedge a major underwriting commitment, the banks pulled in their lines of credit. While the Federal funds rate fell by 350 basis points overnight, several major securities firms had difficulty getting credit, and one went under, bringing down a major clearing house.

The markets were closed for a day as the damage was sorted out. When an attempt was made to reopen them, it was impossible to find buyers. Fearing that the markets might close again, locking them in, no major buyers came forward even as prices fell. The panic continued . . .

The crucial point here is that driving down the federal funds rate is not likely to be sufficient to stop prophecies that predict the failure of banks or securities firms from proving to be self-fulfilling. A more ambitious set of lender-of-last-resort policies would seem to be necessary.

### 3.2.3 The Classical Lender of Last Resort

The classical view of proper behavior of the lender-of-last-resort dates back at least to Bagehot (1873). It may be stated briefly as follows: central banks should adopt, announce, and follow a policy of lending freely and aggressively but at a penalty rate to all sound but no unsound borrowers in time of

crisis. Thus Bagehot writes “in wild periods of alarm, one failure makes many and the best way to prevent the derivative failures is to arrest the primary failure which causes them” (25). He continues, “If people could be convinced that utter ruin is not coming, most likely they would cease to run in such a mad way for money” (64). And he recognizes that “the way to cause alarm is to refuse someone who has good security to offer” (97).

Bagehot was well aware of the potential adverse incentive effects of providing insurance. This awareness accounted for his admonition that the lender of last resort should “never lend to unsound people” (97). He also insisted that loans in time of crisis be made at a penalty rate. This was intended to discourage regular reliance on the lender of last resort, to discourage risk taking by financial institutions, and to enable the Bank of England to make profits. Bagehot regarded it as critically important that a lender-of-last-resort policy be preannounced in writing: “Until we have on this point what loans will be made in times of crisis, a clear understanding with the Bank of England, both our liability for crisis and our terror at crisis will always be greater than they would otherwise be” (101).

Bagehot’s approach is appealing. It offers the promise that panics will be controlled, but that excessive risk taking will be penalized. His admonitions amount to asserting that the central bank should be wise and should prevent panics but not interfere when institutions are on the verge of failing for fundamental reasons. But, they beg the fundamental question of how liquidity and solvency problems are to be distinguished in the very short time in which a lender of last resort must act. If no one doubted an institution’s solvency, it is hard to see how it could experience liquidity problems.

As the scenario developed in the previous subsection suggests, the steps that Bagehot recommends the central bank take to avoid encouraging excessive risk taking also compromise its effectiveness in time of crisis. The reputation externalities, loss of relationship-specific capital, and the macroeconomic fallout of the bank failure do not depend on whether it failed for liquidity reasons or because it was fundamentally insolvent. High interest rates on government loans make it more difficult for banks to meet their other obligations. And banks that pay them send signals that they are in serious trouble, signals that will be destabilizing in times of panic.

#### 3.2.4 The Modern Pragmatic View

Garcia and Plautz (1988) carefully compare the behavior of the American Federal Reserve with the classic lender-of-last-resort concept. Four important differences stand out. First, current practice is to make loans only to depository institutions and only indirectly to other financial institutions. During the crash, the Fed did not make direct loans to clearing houses or to investment banks that experienced liquidity problems, but instead encouraged banks to loan to them while maintaining their prudential standards. Depending on just

how hard arms are twisted, the distinction may be immaterial. But as other institutions take on more and more of the attributes of banks, the risk that they too will face runs increases.

Second, the extent of the government safety net has not been explicitly spelled out. It is clear that deposit insurance extends *de facto* more widely than it extends *de jure*, but its exact extent has never been made clear. This probably reflects concerns about moral hazard. Preserving the possibility that the government will not step in encourages depositors to scrutinize financial institutions and institutions to reduce their risk taking. This virtue of ambiguity must be traded off against the increase in the risk of panic that it creates. It is noteworthy that the Fed waited until Tuesday morning, 20 October, to reaffirm its commitment to providing liquidity.

Third, the Federal Reserve under some circumstances does support institutions that are insolvent, as the Cleveland District Bank explicitly recognized in its 1985 report. This practice obviously runs the risk made all too real by the S&L experience of encouraging excessive risk taking. But it may be necessary if stability is to be preserved. The definition of solvency in a situation where the value of bank assets depends on how rapidly they must be liquidated is ambiguous.

There is one additional aspect of the problem, a detailed discussion of which is beyond the scope of this paper. Instantly closing insolvent institutions may wreak havoc with the payments mechanism. As a Federal Reserve memorandum of May 1985, quoted in Humphrey (1986) notes: "Total daylight overdrafts average \$110 to \$120 billion per day. . . . On any given day about 1600 to 1700 institutions are in overdraft." Humphrey contemplates the possible impact of the failure of a single institution. He shows what would happen if a randomly selected large participant in the CHIPS system failed on a random day. In his simulation, the consequence would be that 24 other institutions would then be unable to meet their commitments. This in turn would lead to the failure of another 26 institutions.

Fourth, the Federal Reserve has in the past provided support at below rather than above market rates. When it supports nondepository institutions indirectly by making funds available to the banking system as it did during the crash, it does not charge a penalty rate. Even in the Bank of New York episode described by Volcker (1986) when the Fed made a \$23 billion loan because of a computer problem the bank was experiencing, assistance was extended at a rate well below the Federal funds rate. Again, the conflict between the goal of discouraging risk taking and resolving the crisis is apparent.

The modern pragmatic approach has the very substantial virtue of having prevented the financial disruptions of recent years from having had substantial consequences for the real economy. It is difficult to gauge the price of this success. Almost certainly, the subsidy provided by the presence of a lender of last resort has led to some wasteful investments and to excessive risk taking. I am not aware of serious estimates of the magnitude of these costs. Estimates

of the cost of bailouts, which represent transfers, surely greatly overestimate the ex ante costs of inappropriate investments. If the presence of an active lender of last resort has avoided even one percentage point in unemployment sustained for one year, it has raised U.S. income by more than \$100 billion. It would be surprising if any resulting misallocation of investment were to prove nearly this large.

Lender-of-last-resort policy is probably an area where James Tobin's insight that "it take a heap of Harberger triangles to fill an Okun gap" is relevant. It may well be that the moral hazard associated with lender-of-last-resort insurance is better controlled by prudential regulation than by scaling the insurance back. This at least is the modern pragmatic view that has worked so far.

### 3.3 How Might Crisis Come?

The primary adverse side effects associated with an aggressive lender-of-last-resort policy like the one advocated in the previous section involve moral hazard. In the presence of a Federal safety net, depositors will not scrutinize the loan portfolios of financial institutions. This will encourage excess risk taking. The problem is magnified because a few aggressive institutions can put pressure on the rest by offering premium interest rates. Safe institutions that do not desire to take unfair advantage of lender-of-last-resort protection then must choose between raising the rates they offer and accepting fewer deposits. Just as bad money drives out good, there is a tendency for bad financial institutions to drive out good ones.

The question of how best to manage the moral hazard effects of lender-of-last-resort activity is beyond the scope of this paper. Raising bank capital requirements would seem to be an obvious approach. In this section I ask a different question. Are there any circumstances in which excessively aggressive lender-of-last-resort behavior could exacerbate rather than mitigate financial crisis? Here is a continuation of the scenario developed above that may be instructive in considering this question.

As the market declined sharply and the Federal Reserve promised to provide all necessary liquidity to the system, the Federal funds rate dropped very sharply. Market participants thought back to the experience of the crash of 1987. They recalled that between October of 1987 and the end of the year, the dollar fell by almost 15 percent against the yen and other major currencies. Given that, the financial distress was greater this time around than it had been in 1987, the U.S. external debt and underlying inflation rates were greater than they had been in 1987, and that experience in the late 1980s suggested that exchange rate intervention was both less efficacious and less frequently practiced than it had been earlier, speculators concluded that the dollar was likely to drop further than it had after the October 1987 crash.

The dollar dropped 4 percent as daily volume in the foreign exchange market approached \$1 trillion. As the dollar fell, technical trading systems, which by some estimates drove 80 percent of all trading activity, picked up the downward momentum and sent signals that the dollar was to be sold. Recognizing the possibility of a dollar collapse, many firms rushed to hedge their holding of dollar assets by purchasing long-term dollar puts. As the issuers of these puts moved to hedge their position, the dollar came under further selling pressure.

No one doubted that the U.S. government would meet its obligations on Treasury bills. But a rumor started in Tokyo that the FDIC and the Federal Reserve Bank were looking at ways of standing behind Americans but not foreigners in troubled American banks. The realization spread that foreigners accounted for more than half of deposits at several major American banks, just as they had at Continental Illinois. Many foreign investors rushed to sell dollar assets. The remainder refused to roll over CDs issued by heavily exposed American banks and instead purchased Treasury bills. Banks that depended on foreign deposits started experiencing very heavy withdrawals.

The Federal Reserve received conflicting advice. Some argued that the generous provision of liquidity was exacerbating the crisis. They argued that by driving down U.S. interest rates and by suggesting that the Fed was not concerned about the exchange rate, the policy of generously providing liquidity to financial institutions was actually counterproductive. Capital outflows caused by the expectation of a rapidly falling dollar actually were exceeding government capital infusions. Others claimed that, without a clear lender-of-last-resort commitment, the payments system would collapse and, at that point, flight from the dollar would accelerate.

Both arguments were correct. With a single instrument—the provision of liquidity—at its disposal, the Federal Reserve was unable to hit both a liquidity and an exchange rate target. American officials frantically sought international cooperation to reduce interest rates, so that U.S. rates could be reduced without causing a dollar panic. But they were refused. The Germans feared that inflationary consequences of the ongoing pre-1992 investment boom. The Japanese were not eager to help out and were especially reluctant to reduce interest rates at a time when the ratio of their land value to GNP was at an all time high.

After several weeks of chaos, an emergency monetary summit was convened. It was agreed that the major nations would fix the dollar exchange rate at a new parity level of 80 yen and 1.3 marks. U.S. monetary policy sought to maintain interest rates at a level consistent with these targets. Several large banks, but none of the largest banks, failed. Consumer confidence reached a record low. Nervous about the future, businesses curtailed their investment plans. Inflation increased sharply as import price increases fed through the system creating doubts about the Federal Reserve's ability

to defend the 80 yen exchange rate. The economy sank into a deep recession . . .

The crucial point here is that the international dimension greatly complicates the problem of the lender of last resort. While sufficiently activist lender-of-last-resort policies can always contain a liquidity crisis, there is the risk that they will set off a currency crisis. Kindleberger (1973) suggests that this is what occurred during the Austrian Credit Anstalt crisis in 1971. In the face of crisis, the authorities need a second instrument so that a measure of stability can be maintained in both the foreign exchange market and the banking system.

There are two related strands in the argument that a combined liquidity-currency crisis could handcuff the monetary authority. First, if foreigners lose confidence in U.S. financial institutions at the same time they lose confidence in the dollar, simultaneous crises will occur. Beyond the possibility of a loss of confidence, they may simply, at some point, stop being willing to prop up a financial system in which they have already lost confidence. Koo (1989) makes a persuasive case that Japanese support for the dollar in 1987 was politically motivated at least in part and cost in real terms as much as the Marshall Plan. Second, apart from any fears foreigners may have about U.S. institutions, there is the risk that the lower interest rates that are part of the response to a domestic financial crisis will bring on a currency crisis.

One possible additional instrument for the authorities in time of crisis is fiscal policy. But it is hard to see what could be accomplished beyond some stabilization if aggregate demand started to decline. Excessive deficit increases are not likely to reassure foreigners who are fleeing from dollar assets. Nor are the higher interest rates that would result likely to reduce pressure on financial institutions. Reducing the deficit in the face of a major downturn is hardly the right response to crisis either. Realistically, changes in budget policy are not likely to be made or implemented quickly enough to have an immediate impact in time of crisis.

Yet another possibility is direct intervention to prop up asset prices. If this is possible, it will serve to increase confidence in the financial system and reduce the need for reductions in interest rates that would otherwise lead to a currency collapse. Journalistic accounts such as Stewart and Hertzberg (1987) suggest that manipulation of a minor but crucial futures market played an important role in preventing a further meltdown on Tuesday, 20 October 1987. They also assign a prominent role to orchestrated equity repurchases by major companies. Hale (1988) argues that the primary thrust of Japanese securities regulation in general, and especially in the aftermath of the crash, is raising the value of stocks rather than maintaining a "fair" marketplace in the American mode.

The difficulty here is that it is very uncertain whether interventions to prop up the market will work. Accounts of the crash period all suggest that the

point of greatest danger was at midday on Tuesday, 20 October, after the Federal Reserve had made it clear that it would provide all necessary liquidity, and after a significant market rally. The situation was turned around, but if a misstep had been made, or if the MMI contract had not mysteriously rallied by the equivalent of over 300 Dow points within a few minutes, the market might have fallen much further.

The scenario alluded to a final possible additional instrument—foreign monetary policy. If it can be dedicated to the foreign exchange market, then domestic policy can concentrate on the domestic objective of providing liquidity. In a sense though, this just pushes the problem back one stage. If other nations dedicate their monetary policy to achieving a foreign exchange target, they lose the ability to conduct monetary policy with a view to domestic objectives. They may therefore be unable or unwilling to cooperate when crisis comes. Perhaps this is an argument for fixing exchange rates or at least institutionalizing the principle of cooperation to insure that they do not move too rapidly.

Notice that the argument in this section strongly supports the conclusion of the last one that there is a case for direct lender-of-last-resort policies beyond the general provision of liquidity. Targeted assistance can presumably restore confidence in financial institutions with less of a reduction in interest rates than would be necessary with general monetary policies.

### **3.4 Conclusions**

Could the United States again experience a financial crisis like those that so frequently disrupted the real economy before World War II? As with the problem of assessing the risk of major war, one is fortunate that there is not enough relevant experience to permit an accurate judgment. But there is cause for concern.

Kindleberger's preconditions for crisis are as likely to be satisfied today as they ever have been in the past. It is probably now easier to lever assets than ever before and the combination of reduced transactions costs and new markets in derivative securities make it easier than it has been in the past for the illusion of universal liquidity to take hold. Asset price bubbles are now as likely as they have ever been. Bubbles eventually burst. The increased speed with which information diffuses and the increased use of quantitative-rule-based trading strategies make it likely that they will burst more quickly today than they have in the past.

The suggestion is sometimes made that the 1987 experience may have encouraged more prudent behavior and so made bubbles less likely. There is little concrete evidence to support this hope. There have been only minor regulatory changes since the crash. While the usage of portfolio insurance has declined since the crash, various dynamic trading strategies, some of which rely on momentum and so give rise to positive feedback, continue to be widely used. Offsetting these stabilizing responses is the reality that the payments

system has probably become more fragile than before as institutions have recognized the risks that their normal procedures exposed them to in times of crisis.

If financial crisis is less likely now than it used to be, the reason is the firewalls now in place that insulate the real economy from the effects of financial disruptions. Most important in this regard is the federal government's acceptance of the responsibility for stabilizing the economy. Automatic stabilizers that are now in place cushion the response of the economy to changes in demand conditions. At the same time, it is now nearly inconceivable that there would be no active lender of last resort in time of crisis. This makes crisis caused by contagious bank failures much less likely than in the past. It also means that whatever happens to financial institutions, the money stock will not be allowed to collapse.

These factors must be balanced against the difficulty of providing liquidity in time of crisis when exchange rates are flexible and expectations are extrapolative. Because the risk of a currency collapse is now greater than it was when exchange rates were fixed and the world's capital markets are tightly interconnected, the monetary authority's scope to act as a lender of last resort has surely been reduced.

## References

- Bagehot, W. 1873. *Lombard Street*. London.
- Barsky, R., and J. B. De Long. 1989. Dividend growth and stock prices. Harvard University. Mimeograph.
- Cutler, D., J. Poterba, and L. Summers. 1989. Speculative dynamics. Mimeograph.
- Diamond, D., and P. Dybvig. 1983. Bank runs, deposit insurance, and liquidity. *Journal of Political Economy* 91, no. 3 (June):401-19.
- Friedman, M., and A. Schwartz. 1963. *A monetary history of the United States*. Princeton, N.J.: Princeton University Press.
- Garcia, G., and E. Plautz. 1988. *The Federal Reserve: Lender of last resort*. Cambridge, Mass.: Ballinger.
- Goodfriend, M., and R. King. 1988. Financial deregulation, monetary policy, and central banking. In *Restructuring banking and financial services in America*, ed. W. S. Haraf and R. M. Kushmeider. Washington, D.C.: American Enterprise Institute.
- Goodhart, C. 1985. *The evolution of central banking*. London: London School of Economics and Political Science.
- Goldsmith, R. 1982. Comment on Minsky. In *Financial crises: Theory, history and Policy*, ed. C. Kindleberger and J-P. Laffargue. New York: Cambridge University Press.
- Hale, D. 1988. Market regulation and the crash. In Kansas City Federal Reserve Board Conference on Financial Market Volatility.
- Humphrey, David. 1986. Payments finality and the risk of settlement failure. In *Technology and the Regulation of Financial Markets*, ed. Anthony Saunders and Lawrence J. White. Lexington, Mass.: Lexington Books.



- Kindleberger, C. 1973. *The world in depression, 1929–1939*. Berkeley: University of California Press.
- . 1978. *Manias, panics, and crashes: A history of financial crisis*. Basic Books. (Rev. ed., 1989).
- Koo, R. 1989. Testimony before the Joint Economic Committee.
- Metz, Tim. 1988. *Black Monday*. New York: Morrow.
- Minsky, H. 1982. The financial instability hypothesis: Capitalist production and the behavior of the economy. In *Financial crises: Theory, history and policy*, ed. C. Kindleberger and J-P. Laffargue. New York: Cambridge University Press.
- Schwartz, A. 1986. Real and pseudo-financial crises. In *Financial crises and the world banking system*, ed. F. Capie and G. Wood. New York: St. Martin's.
- Stewart, J., and Hertzberg, D. 1987. How the stock market almost disintegrated a day after the crash. *Wall Street Journal* (November 20), 1.
- Summers, L., and V. Summers. 1989. When markets work too well: A cautious case for securities transactions taxes. *Journal of Financial Services Research*.
- Volcker, P. 1986. Statement before the Subcommittee on Domestic Monetary Policy, House Committee on Banking, Finance, and Urban Affairs. Reprinted in *Federal Reserve Bulletin*.
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## 2. Hyman P. Minsky

### The Financial Instability Hypothesis: A Clarification

The background papers refer to Minsky's financial instability hypothesis without filling in the details. I thought that we might as well hear about the hypothesis from the horse's mouth, although we all know that an author is not necessarily an authentic interpreter of a work.

The financial instability hypothesis was advanced as an interpretation of Keynes's General Theory when issues of interpretation were deemed important (Minsky 1975, 1982, 1986). The conceit is that Keynes was aware of the great contraction and wholesale collapse of the financial and economic system of 1929–33 as he was developing the General Theory. In particular, I assumed that Fisher's debt-deflation theory of great depressions (Fisher 1933) was known to Keynes.

The financial instability hypothesis is addressed to this economy rather than to an abstract economy. Our economy is taken to be a capital-using capitalist economy with complex, sophisticated, and ever-evolving financial institutions and usages. The model focuses on the relations between finance, asset values, and investment. It can be characterized as a Wall Street view of the world: the principal players are profit-seeking bankers and businessmen.

I will briefly examine how the financial instability hypothesis addresses five issues: asset pricing, financial flows, the relation between financial and economic crises, why it has not yet happened, and what it might take for it to happen.

## Asset Pricing

In chapter 17 of the *General Theory*, in the rebuttal to Viner's incisive review (Viner 1936; Keynes 1937a) and in the contribution to the Fisher festschrift (Keynes 1937b), Keynes treated liquidity preference as determining the price level of capital and financial assets.<sup>1</sup>

I take Keynes's fundamental insight to be that there are two price levels in a capitalist economy and that the proximate determinants of these price levels are quite different. One is of current wages and output, which, when combined with financing conditions, yields the supply conditions for investment output. The other is of capital and financial assets, which, when combined with financing conditions, yields the demand for investment output. The supply prices of investment output can best be viewed as a markup on labor costs, whereas the prices of capital and financial assets are capitalizations of future expected cash flows, of future gross profits in an uncertain world.

For a skeletal no-government capitalist economy to be prosperous, the price of a large enough set of capital assets needs to be greater than the price at which similar assets can be produced by a large enough margin so that an investment large enough to sustain an acceptable level of profits and thus of employment and output takes place.<sup>2</sup> Financial mechanisms enter into determining investment by affecting the prices of capital assets, production costs of investment output, and the leverage on internal finance.

Following Keynes, each asset yields expected, though uncertain, cash flows through time,  $q$ , has expected carrying costs,  $c$ , and has a liquidity premium,  $I$ , which will vary as institutions and circumstances change.<sup>3</sup> The  $I$  of a particular asset reflects the ease with which it can be turned into money either by being pledged for loans or by being sold: this  $I$  depends upon the structure and performance of markets and institutions. Developments that have an impact on the way markets and institutions function change the  $I$  embodied in an asset.

Money is the asset that is transferred when financial commitments are fulfilled. In this construct money does not yield a cash flow, has minimal carrying costs, and has the maximum liquidity. The price per unit of money is always 1. Money prices of other assets are such that the utility of the expected cash flows net of the carrying costs plus the utility of the liquidity of the asset, as conditioned by the ever-evolving financial system, are equal on the margin to the utility of the liquidity embodied in money.

1. Jan Kregel (1987) traces Keynes's treatment of money as determining capital asset prices to Sraffa's (1932a, 1932b) discussion of own rates of interest in his refutation of Hayek's natural-rate-of-interest argument.

2. In a complex big-government capitalist economy, investment can be supplemented by a government deficit to yield an acceptable level of profits.

3. The  $q$ 's that capital assets, as collected in firms, yield are gross profits. The  $q$ 's that financial instruments yield are stated in the contracts. What are  $c$ -carrying costs to debtors are  $q$ -expected cash receipts to creditors.

An increase in the quantity of money lowers, on the margin, the utility of a dollar. In order to lower on the margin the utility of a dollar invested in assets whose value is derived mainly from the expected  $q$ 's, the dollar price of such  $q$ -yielding assets needs to rise. As assets possess different mixes of  $q$ ,  $c$ , and  $l$ , a change in the quantity of money will change the relative prices of assets and the price levels of assets and investment output: both the amount and the composition of investment will be affected. In this construct money is never a mere veil, it is never neutral.

For the purposes of the financial instability hypothesis, the  $c$ 's, the carrying costs, incorporate the cash costs imposed by the liabilities that are used to finance positions in capital and financial assets. As the liabilities of a unit are financial assets of other units, the prices of the  $c$ -yielding instruments that are used to finance positions are determined by the same expected cash flows, carrying costs, and liquidity concerns that determine the values of  $q$ -yielding instruments. A rise in the subjective valuation of liquidity, a fall in the expected profit flows, or a rise in the carrying costs of capital and financial assets will lower the prices of capital and financial assets.

### Financial Flows

Liabilities are commitments to pay money at some date, on demand, or if specified contingencies occur. These payment commitments are for both the repayment of principal and income. Cash to meet these payment commitments is obtained either as: (1) income due to contributions to production (gross profits, or profits, wages, and taxes when the model is opened), (2) the fulfillment by some other agent of contractual commitments; (3) the result of borrowing or selling assets, or, trivially, (4) initial cash on hand.

Liabilities in a balance sheet can be read as generating a time series of cash payments, and assets can be read as generating a time series of expected receipts. I classified the structure of these time series as hedge, speculative, and Ponzi finance.<sup>4</sup>

A unit is hedge financing if the expected cash flows from operations or from contract fulfillment over the relevant horizon always exceed, with some margin of safety, the expected contractual, demand, and contingent payments. A firm whose liability structure is heavily weighted by equities is almost always hedge financing. Only if a large shortfall of income below expected income occurs will a hedge unit have difficulty meeting its payment commitments.

A unit is engaged in speculative finance when its expected cash receipts on income account and contract fulfillments exceed the income (interest) payments, but it is not able to pay all of the principal due on its debts. A specu-

4. I have been criticized for this terminology, especially for the use of the label "Ponzi" for a financing posture that can be the result of honest error.

lative unit needs to roll over some of its debts, to issue new debts in order to repay maturing debts. Speculative financing units have a position that they have to refinance periodically. A bank has to continually refinance its position.

A Ponzi financing unit does not earn enough on its income account to fulfill its income account payments and so issues debts to meet these payments: its deficit is capitalized. A Ponzi financing unit debits its equity account even as it increases its indebtedness. As recent experience with S&L's has shown, sharp increases in financing charges can transform speculative units into Ponzi units. The present budget position of the United States can be interpreted as an example of Ponzi financing.

Ponzi financing can be accepted as long as it is believed that the situation is transitory and that projected incomes will make the present value of the entire stream of earnings positive. Ponzi units are vulnerable to changes in what is believed about future income prospects and to increases in the cost of funds.

### **Financial and Economic Crises**

This meeting is a roundtable on reducing the risks of economic crisis. The three background papers are on financial, not economic, crisis; furthermore, the papers are not clear on how financial and economic crises are related. The financial instability hypothesis is designed to throw light on the relation between financial and economic crises.

The financial instability hypothesis relates finance and aggregate demand through the impact of financial market events upon investment and the impact of investment upon income and on the flows that are capitalized into the price level of capital and financial assets and that are used to fulfill payment commitments.<sup>5</sup> One way financial market events affect investment is by affecting the subjective valuation placed upon  $I$ . A rise in the subjective value of  $I$  leads to a decline in the money price of capital and financial assets, which are valued mainly for their  $q$ 's, the money income they yield. A fall in these prices lowers the difference between the prices of capital assets and the supply prices of investment output. This will tend to lower investment. Furthermore, a fall in the price of financial assets means that investing units will have to pledge larger future payments in order to obtain a given amount of investment financing. Such a change in the terms of financing tends to constrain investment.

There are two sources of liquidity: (1) the cash flows from operations or the fulfillment of contracts and (2) the cash flows that can be generated by selling or pledging assets—those assets which it is believed can be readily sold or pledged to raise cash in case the need arises carry lower interest rates.

5. In the version I prefer, investment leads to an aggregate of profits and the competition of firms for profits leads to output, employment, and the wage bill. Alternatively output and wage and profit incomes can be considered as the result of a multiplier process upon investment and other autonomous spending.

When the successful performance of the economy increases the subjective assuredness of the cash flows from operations, the felt need by businessmen and bankers for liquidity through asset holdings decreases. A lower valuation of liquidity in assets leads to a rise in the price of assets that are valued for the  $q$ 's they yield. Similarly, if the felt "unsuredness" of the flow of  $q$ 's increases, bankers and businessmen will move to increase the assets they hold that are valued for the  $l$  they yield.

A special proposition of the financial instability hypothesis is that over a protracted period of good times, when the aggregate of the cash flows from operations (aggregate profits) continuously increases, the value of portfolio liquidity declines. Both borrowers and lenders feel that they can safely decrease their holdings of assets that are valued for their liquidity through marketability. In particular, if hedge financing dominates then, as good times roll along, financing costs become such that profit-seeking units that were hedge financing will introduce speculative or rollover financing into their liability structures. The mix of hedge and speculative financing shifts over protracted periods of good times so that the weight of hedge financing decreases and the weight of speculative financing increases. Income shortfalls and interest rate increases transform speculative financing units into Ponzi financing units. In addition, the "euphoria" induced by protracted good times leads to de nova Ponzi financing arrangements that can be validated only if rather optimistic prices can be obtained for assets. As a result the vulnerability of the financial structure to rising interest rates and to shortfalls in gross profits increases with protracted good times.<sup>6</sup>

A concept worth introducing is the making of position by selling out position. When a unit has payment commitments and has been stripped of the assets that can readily be sold or pledged to acquire cash, a shortfall of income from operations or a rise in market interest rates can lead to an attempt to make position by selling or pledging assets that are not usually sold or pledged. The making of position by selling position may be feasible as an isolated incident, but any generalized attempt to make position by selling out position leads to a collapse of asset values. A financial crisis occurs when there is a generalized need to make position by selling out position, which results in a wide and large fall in asset values. As a result, the solvency, on a mark-to-market valuation, of a wide array of financial institutions is compromised. This leads to a spread of refinancing problems.

A financial crisis leads into an economic crisis when investment declines so that a decline in profits as well as output, employment, and wages takes place. The decline in profits leads to both a further fall in asset values (the numerators in the capitalization relation fall) and a further decline in the ability of

6. In early versions I had a "nice" accelerator-multiplier process always working. When the financial structure was robust the normal cyclical pattern took place. As the time without a deep and long depression increased, the financial system evolved and became fragile so that a normal downturn was amplified by financial repercussions.

units to meet their financial commitments. In such an environment a sharp fall in commitments for the financing of investment takes place. Further declines in employment, output, wage incomes, and profits follow.

With a lag, unemployment and idle capacity lead to a fall in wages and the prices of investment output. But in a world where debts denominated in money are large, declines in wages and prices may make things worse, not better (Caskey and Fazzari 1987).

### **Why “It” Hasn’t Happened Yet**

Apt intervention can abort the process I have sketched at two points. One is that units can be refinanced, so they have no need to try to make position by selling out position. This prevents a sharp and generalized fall in asset prices. The spread of mark-to-market insolvency to units that are not in an immediate need for refinancing will not take place. Refinancing banks and key financial market players that are having trouble making position is the basic central bank lender-of-last-resort operation. Presumably such refinancing takes place when dire systemwide repercussions are believed to be imminent if refinancing is not undertaken.

In various embryonic financial crises since the 1960s the Federal Reserve, specialized agencies such as FDIC and FSLIC, and the U.S. Treasury have refinanced units that otherwise would have had to make position by selling position. Furthermore, in the incipient crises the Federal Reserve has furnished reserves on a generous scale to markets. (Giordano 1987). Because of these measures no generalized or long-lasting interactive process that led to a wide and deep decline of asset prices has taken place during the postwar period.

The second intervention point is profit flows, the aggregate of the  $q$ 's that come from the income generating and production system. The model for aggregate profits that I use is derived from Kalecki. In the simple heroically abstract version, aggregate profits equal investment; in a version that is a bit less heroic, aggregate profits equal investment plus the government deficit.

The federal government was some 3% of GNP in 1929. The federal government is say 25% of GNP now. The 1929 government was not large enough to run a deficit that would offset the impact that the massive decline of investment between 1929 and 1933 had upon aggregate profits.<sup>7</sup> Today's government is large enough that the automatic and policy response increases in deficits that occur when income decreases sustain aggregate profits.

The combination of lender-of-last-resort interventions, which abort the development of debt-deflation processes, the generalized increase in liquidity as the Federal Reserve reacts to an embryonic crisis, and the deficits that big government runs when income turns down explains why a serious, long-

7. It is worth noting that, because of the fall in nominal GNP, the relative size of government doubled between 1929 and 1933.

lasting and deep depression has not taken place up until now. Big government and a central bank that is willing and able to intervene explain why it has not happened yet.

### **What It Might Take for It to Happen**

The United States had a great deal of what we can call “fiscal autonomy” over almost all of the postwar period: there was no need for American policy-makers to be much concerned about adverse foreign reactions to the steps that were taken to contain and reverse episodes of embryonic financial instability and to the deficits that sustained domestic profits.

The situation may well be different now. The United States no longer is as autonomous or as powerful as in the past. Scenarios in which cooperation in maintaining global asset values and profit flows is necessary but not forthcoming can be sketched.

It is only necessary to examine an elaboration of the income accounts à la Kalecki to understand what is at issue. A rather full statement of the profit equation is: profits equal investment plus the government deficit minus the deficit in international trade plus consumption financed by incomes derived from profits minus savings out of wage incomes.

The U.S. deficit on trade account is a drain on domestic profits. Furthermore, the accumulated deficits have led to large foreign holdings of U.S. financial assets. The large U.S. government deficit in relatively prosperous times means that the deficit that is needed to sustain profits in the aftermath of even an aborted financial crisis may well be enormous. In the environment that now exists, the interventions needed to sustain the economy the next time may well be beyond the combined efforts of the Federal Reserve and the Treasury.

Countries with large positions in offshore assets possess fiscal autonomy. If global profits are to be sustained such countries need to maintain domestic profits even as they run an international trade deficit. This typically requires these countries to be high consumption economies.

Furthermore, these countries need to take a leading position in whatever lender-of-last-resort interventions are needed. It may well be that the next time national responses will not do, and the apt international response may require a profound restructuring of the high-saving export-based economies: containing future economic and financial crises may depend more on what Japan and Europe do than upon the Federal Reserve and the U.S. Treasury.

### **Addenda**

*Point 1.* The emphasis is upon the behavior of businessmen who manage the firms that “own” the capital assets of the economy and the banking community that arranges for the liability structure of these firms. Households are

in the background although savings out of wages and consumption financed by profit incomes are household behaviors. The view can be expressed by paraphrasing Orwell, "All agents are equal but some agents are more equal than others."

*Point 2.* The economy is envisaged as a nonlinear time-dependent system so that endogenous processes can generate "incoherent" states. Cycles and the crises are not the result of shocks to the system or of policy errors, they are endogenous.

*Point 3.* As Peter Albin put it, "Agents in the model have a model of the model; a model of the economy." The agents the financial instability hypothesis emphasizes are profit-seeking businessmen and bankers. The model of the economy they have includes the possibility of financial crisis and economic depressions. However, agents recognize that the institutional structure and the structure of possible interventions change, so that the past is an imperfect guide to the present and the future. We can assume that each agent has a contingency plan of how to react to an incipient financial crisis but is not sure as to when the contingency plan should be put in motion.

*Point 4.* Success in aborting incipient financial crises and in containing economic declines decreases the value of  $I$  in the subsequent expansion. If an incipient crisis is successfully aborted, then, after a pause, portfolio adjustments that reflect a greater assurance that crises will be contained take place.

*Point 5.* The  $I$  of our formulation is a characteristic of both assets and liability structures. Any change in the view of the future that lowers the value placed upon  $I$  also increases the willingness of units to lever their position, to increase their payment commitments relative to their expected cash flows, and the willingness of bankers to finance such levered positions.

*Point 6.* The financial instability hypothesis is pessimistic. Capitalism is flawed in that thrusts to financial and economic crises are endogenous phenomena. An institutional structure and a pattern of intervention may attenuate the thrust to malfunctioning, but each success in containment leads to a further elaboration of the financial and economic relations that make the system prone to crisis. Success is a transitory phenomenon, although as the era since 1946 has shown the time in transit can be quite long.

*Point 7.* Big government is necessary to contain depressions because only the deficits of big government can prevent a collapse of aggregate profits. Policy needs to be directed to constructing apt government: government that is resource creating and that provides real income outside of the fee-for-service markets. We all hope that we are entering a post-cold-war world. In this world the problem of political economy is to create an effective government tax-and-spending structure that can do the job of stabilizing profits. Unfortunately, successful capitalism requires government to be "big" and this, in turn, implies a need for taxes to be high.

*Point 8.* The recent refinancing of the FSLIC shows that lender-of-last-resort intervention ultimately depends upon the faith and credit of the govern-



ment. This faith and credit is worth something in the market only as government tax and spending programs lead to net cash flows in favor of government when the economy is functioning well. The government cannot be in a structural “Ponzi financing” posture: the in-place tax and spending programs need to show a surplus, not necessarily now but when things are going well. Thus, while the deficits that big government can run are necessary to sustain aggregate profits, and therefore to contain thrusts to depressions, the viability of lender-of-last-resort interventions depends upon government debt being acceptable in national and international portfolios. Such acceptability ultimately depends upon the government’s ability to force a net cash flow in its favor, that is, to run a surplus. Deficits therefore must be transitory and a response to well-defined conditions.

*Point 9.* There is nothing in principle nor in the facts of an economy with debts that says that the United States cannot become an Argentina—a country whose debts, whether denominated in its own or in foreign currency, are not marketable.

## References

- Caskey, John, and Steve Fazzari. 1987. Aggregate demand contractions with nominal debt commitments: Is wage flexibility stabilizing? *Economic Inquiry* 25:583–97.
- Fisher, Irving. 1933. The debt-deflation theory of great depressions. *Econometrica* 1:337–57.
- Giordano, R. M. 1987. *The Federal Reserve’s response to the stock market crash*. New York: Goldman Sachs Economic Research Group.
- Keynes, John Maynard. 1937a. The general theory of employment. *Quarterly Journal of Economics* 51:209–23.
- . 1937b. The theory of the rate of interest. In *The lessons of monetary experience: Essays in honor of Irving Fisher*, ed. A. D. Gayer. New York: Farrar & Rinehart.
- Kregel, J. 1987. The changing place of money in Keynes’s theory from the “treatise” to the “general theory.” In *Keynesian theory of planning models and quantitative economics*, ed. G. Gandolfo and F. Marzano. Padova: Guiffre.
- Minsky, Hyman P. 1975. *John Maynard Keynes*. New York: Columbia University Press.
- . 1982. *Can “it” happen again?* New York: Sharpe.
- . 1986. *Stabilizing an unstable economy*. New Haven, Conn.: Yale University Press.
- Sraffa, P. 1932a. Dr. Hayek on money and capital. *Economic Journal* 42:42–53.
- . 1932b. A rejoinder. *Economic Journal* 42:249–51.
- Viner, Jacob. 1936. Mr. Keynes on the causes of unemployment. *Quarterly Journal of Economics* 51:147–67.

### 3. *Paul A. Samuelson*

#### A Personal View on Crises and Economic Cycles

Economic science is prone to cycles of theoretical fads. Before 1929, pundits believed that prosperity in agriculture was necessary if the economy was to be prosperous. "Food will win the War and write the Peace." That was First World War boilerplate, still being muttered by Jeremiahs of the mid-1920s who warned that hard times on the farms would bring on a world debacle.

After 1929 the saying that Wall Street crashes cause Main Street slumps became dogma. As recently as 1962, when President Kennedy lost his patience with Roger Blough of U.S. Steel, the resulting crack in the Dow Jones indexes was feared to entail a National Bureau recession for the American economy. At least that is what you would have learned if, trapped in any Sheraton Hotel and having exhausted the Moody Bible, you read the autobiography planted there by Ernest Henderson, the founder of the Sheraton hostelry chain and a self-taught expert in macroeconomics. Henderson, exaggerating my Rasputin powers over J. F. Kennedy, called me in to say: "Tell your man that in six months time we'll be in a real bad recession unless he backs down from his business bashing." I solemnly recorded in my little black COOP book that a recession would arrive by November 1962. But such are my powers over the head of state that by that date the GNP was in a nice recovery from its mini-growth-recession of earlier 1962. The post-Blough hiccup in the production index, by the way, was about what Franco Modigliani's MIT-Penn-Fed model predicted ought to result from the realized loss in consumer wealth and from the increase in the cost in investment funds implied by the drop in price/earnings ratios of common stocks.

Flushed with this imposing sample of victory, I had to wonder when Stan Fischer and Bob Merton scolded us economists for not taking the stock market more seriously as a macroeconomic phenomenon. Lay people take it too seriously. But economists, Fischer and Merton complained, do not take it seriously enough. Nonetheless, Modigliani and I discounted after 19 October 1987 the dire predictions that a worldwide recession was in the cards. (So did *all* of the 50 consensus forecasters followed by Blue Chip Indicators.) True, the drop in share wealth in October 1987 was fully the equal of the drop in share wealth in October 1929; and, internationally, the crisis and price attrition was in 1987 even more uniform than in 1929. True also, after 1929 came the worldwide depression that was not to be exorcised completely until World War II itself. However, although Franco and Jim Tobin and Bob Solow and I knew that Model-T Keynesianism had to add wealth magnitudes to its flow determinants, we also knew that it was only vulgar journalists who believed that the 25 percent rates of unemployment in 1933 United States and Germany were Granger-caused by the exits of capitalists from the unleaning towers of Wall Street.

As hundreds of banks failed, runs on 15,000 banks caused many thousands more of them to fail. The velocity of high-powered money rationally nose-dived as people chose to hold more currency and less deposits; the result was that, despite the contrived increase in the total of high-powered money throughout the early 1930s, the total nominal GNP shrank by half from 1929 to 1933. Monetarists, wise in their later time, indicted the Fed authorities for not creating whatever high-powered money it would have taken to keep money  $\times$  velocity ahead of the eroding price level. Although no one could have beaten such a tautological rap, I concur in the view that departing militantly from orthodox finance in 1931 could have reduced greatly the historical decline in high-powered velocity and thereby saved much human suffering and economic waste.

### **Then, If Not Now?**

Was there ever a cogent case for the thesis that panics and crises play a key role in economic slumps of real output and employment?

If you read the early literature on good times and bad times, you will get the impression that panics and crises were more important in the mechanism of business cycles back in the nineteenth century than they are now or have been since, say, 1913. I doubt that this is a safe guide to reality. Much of the alleged change in the role of panics must surely be an artifact of economists' previous lack of statistical knowledge about true economic history.

John Hicks in his last book exemplifies the fallacy. In *A Market Theory of Money* (Oxford University Press, 1989), Hicks writes: "Nineteenth-century cycles (were) not statistical cycles but a succession of crises" (vii). "I want to insist that this [concept of a statistical cycle] is not what Jevons and his contemporaries can have had in mind. . . . They were thinking of the sequence of trade crises which had marked the preceding half-century, occurring in 1825, 1837 (especially in America), 1847, 1857, and 1867" (94).

The weight of the evidence to me points otherwise. If a Christina Romer were able to go back and construct a representative index for the nineteenth century of real production, employment, price levels, investment, and profits, Lombard Street would perhaps be no more important in understanding Mitchell-type business cycles than Wall Street was in the 1920s or in the 1945–89 period.

Schumpeter hailed Clement Juglar as a great business-cycle pioneer—and named the intermediate business cycle after him—because he was allegedly the first to move from the crisis paradigm to the Mitchell-Hansen paradigm.

Adam Smith prattled about the division of labor in *The Wealth of Nations* without showing in his text any appreciation that the Industrial Revolution was bursting out around him. Nor could he have learned better from his excellent library.

So it was with Henry Thornton and John Stuart Mill. Their chronicles lack power as evidence for my present query: If Wall Street crashes have limited

effects on Main Street in the last few decades of the twentieth century, was it truly different in 1929 and 1889 and 1839 and 1789?

I must be careful not to overstate my doubts. It may well have been the case that in earlier times the ratio of the value of stocks and bonds listed on bourses was *less* in relation to national wealth and GNP than in the post-World War II epoch. The Modigliani-Tobin partial derivatives, (consumption)/(wealth), may also have been smaller then rather than larger. And the effects of Lombard Street on the changes in the cost and availability of funds to finance investment may also have been limited the more we go back in history.

Nonetheless, I do not wish to deny—nay I want positively to emphasize—the fact that before 1930 we were in pure capitalism, whereas in 1987 we are a case of the mixed economy. The ability of a crisis/panic in Wall Street or Lombard Street to tip off a cascade of failures of unregulated banks was assuredly greater in history than it is or has been since 1933. The money supply itself in the old days tended to be a casualty of the crisis in a way that is no longer true. This is major.

Another way of putting things is this. In Gladstone's time, as in the time of Herbert Hoover, there was an effective political presumption toward long-run stability of the price level. Although Britain since 1688 never lived up to its presumption of balanced fiscal budgets, never was there acceptance by the official elite that the gold standard could be ignored as a constraint and that deliberate deficit spending was an admissible and admirable tool of policy.

Why was the prophet Hyman Minsky for so many decades a voice crying out in the wilderness? "A qualitative credit crisis is in the intermediate-term cards. Wolf! Wolf!"

The answer for his long wait has to be found in the laws of behavior of populist democracy in the "Age after Keynes." Every three years when I came to revise my textbook, two main charts would jump off the page to command my attention. One was the trendless behavior of real wages from about 1250 to 1750, followed by a sea change to a rising trend of the real wage rate in the "Age after Newton." The other was the trendless behavior of staple prices in Europe and North America, as postwar deflations undid the peaks of wartime inflation—followed, since 1932 and the "new deals" in America and Europe, by a remorseless upward trend in the cost-of-living index.

On every proper Richter scale, the 1987 crash rivaled that of the 1929 crash. By contrast with journalists, mainstream economists correctly computed that the late-1987 25 percent erosion of worldwide asset values was prone to reduce by about 1 percent per annum the likely 1987–89 growth in global output. Had you told those economists to factor into their IS-LM diagrams the worldwide acceleration of the money supply induced by the October 1987 crash, their regressions would have projected the continuance of the 1982 recovery that history has recorded in 1988–89.

I should not need to say it, but I will say it: Reacting and overreacting to each and every market crisis by macro policy can alter the historic pattern of GNP response to panics. But such Pavlovian responses cannot be guaranteed

to give us a pattern of economic history that is aptly described by the Good Fairy who says, “And they lived happily ever afterward, with minimal unemployment, price stability, and growth in output characterized by almost-unit roots.” There will return times when markets crash against a background of stagflation. Then engineering more money to prevent drops in real output will add to policy dilemmas connected with increases in prices.

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## 4. *William Poole*

### Macroeconomic Effects of Financial Crises

The problem with the title of this session is that so little is known about the subject. It may be that no government response is required to a market crash other than to maintain money growth and continue with whatever were the optimal policies before the crash. But I know of no one who wants to conduct such an experiment. The issue, then, is what the government’s response ought to be to minimize fallout from a crash without causing harmful side effects.

Let me start by noting that studying financial crisis is more important than most people recognize because the government is not nearly as well-prepared as it should be. I can illustrate one reason for this situation by adding a few sentences to the scenario spun out by Larry Summers.

Heavy selling pressure hit the market at the opening bell. Investors were jolted by an article in the *Washington Post* reporting that the Council of Economic Advisers (CEA) was well along in a secret study of what the government should do if a certain large money-center bank were to fail. The *Post* article was based on a background interview with a high Treasury official. Most Washington experts believed that the interview was with the Treasury secretary himself, who was known to be feuding with the CEA chairman. The president was reported to be furious given his press conference last week where he said that everyone in the administration had complete confidence in the banking system.

The situation may be better abroad, but in the United States, government-by-leak makes it extremely difficult for senior officials to engage in contingency planning. We should not be surprised when the U.S. government reacts to financial crises in a confused manner or in ways that set damaging precedents. We can agree that a good part of the problem is that the economists do not understand crashes, but having said that, it is important to emphasize what we do know. There are policies that can reduce the damage to the real economy from market crashes.

The most significant single fact is that companies and individuals with no debt rarely go bankrupt. There was no debt-deflation process in the severe recession of 1920–21 because there was so little debt after World War I. At an absolute minimum the government should not provide positive tax incentives as at present for firms and individuals to accumulate debt. For individuals, we should end the tax deductibility of all interest, and for firms we should put interest and dividends on an identical basis. These are old proposals, but we should not leave them out of this discussion simply because they are old and obvious.

Besides the tax law, the other fundamental condition that needs reform is deposit insurance. Deposit insurance worked in the 1980s; the economy has been little troubled by runs on insured banks and thrifts. The taxpayer cost, though, has been high. If deposit insurance is not reformed to provide better private incentives we will inevitably see extension of regulation in an effort to keep taxpayer costs down. Regulation will also be costly, but the costs will be hidden in the form of market inefficiencies. More important, however, I do not see how regulatory approaches can be easily effective in a highly competitive world financial market. There is also a danger that the budgetary damage inflicted by deposit insurance will lead to efforts that will compromise the contribution to stability of deposit insurance. It is for this reason that I do not favor proposals to scale back deposit insurance but instead favor extending coverage with reforms to assure that institutions with insured deposits face the correct incentives to control risk.

Even if Congress were to act today to reform the tax law and deposit insurance, there will necessarily be a long transitional period before reforms become fully effective. In the meantime, and probably permanently anyway, there will be times when the government must be prepared to act, to deal with or head off, financial crises. What should the principles of crisis management be? An important concern should be that crisis responses not set bad precedents.

First of all, we need to decide which markets deserve special emphasis. I believe that we should concentrate on the stock markets, investment-grade bond markets, and money markets. Commercial banks, of course, play the key role in the money markets and so stability of the banking system is of central concern. If we can avoid crashes (including banking panics) in these markets, or insulate the real economy from the effects of the crashes that do occur, then we will have solved the problem. I deliberately leave the foreign exchange market out of this list for reasons I will discuss in a moment.

With regard to crashes themselves, I see no reason why we should not make use of the public finance principle that we tax activities we want to discourage and subsidize activities we want to encourage. I am sympathetic with the idea behind the Tobin tax, but skeptical that this particular proposal is satisfactory. Perhaps a better approach would be to design a tax preference for securities purchased on any day on which a specified market average declines by more

than some trigger amount.<sup>1</sup> The argument against a tax incentive of this kind is that economic efficiency calls for prices to adjust rapidly to new information, but I find it hard to believe that much can be lost if the adjustment can be spread over several weeks rather than over a day or a few hours. As with more fundamental reforms to strengthen deposit insurance and to discourage debt, there is an important advantage to building more stability into the system rather than relying on skilled official responses to crisis situations. Building in more financial stability would extend the gains from automatic income stabilization, which Larry Summers rightly emphasizes as being of considerable importance.

Even if we do build more stability into the system we need to be prepared to deal with crisis situations. I agree with Larry's emphasis on what he calls "the modern pragmatic approach," but believe there is more structure in this approach than is apparent on the surface. There is, first, a commitment that the government, and especially the central bank, will do something to deal with a market crisis rather than let things progress "naturally." Second, the government's response will be as narrowly targeted as possible. There are several reasons for a targeted approach. One is that calming the markets often requires that the perceived source of the problem be directly addressed. Another reason is that a narrowly targeted approach has minimal effects in establishing precedents. There is not precedent from a special response to a highly unusual situation. Finally, what is often needed is a response to buy time. There are many problems that cannot be worked out over night but can be worked out over months or years. The difficulty when buying time is to use the time constructively to address the underlying problem, not to run from it. Unfortunately, given the way our political process works it is sometimes necessary to let things boil a bit before obtaining constructive action. I will discuss this point further in a moment.

I can illustrate these ideas with relatively minor market crises, or market "upsets" for those who prefer to use "crisis" for something really big. In June 1970 the commercial paper market had real problems when Penn Central de-

1. For the stock market a tax incentive might consist of a capital gains tax break on stock purchased on a day when Standard and Poor's 500 Index declines by a large amount. For example, when the index declines 3 percent the fraction of capital gains excluded might be zero and the fraction excluded might be 100 percent when the index declines 7 percent or more. The exclusion could rise linearly for index decline between 3 and 7 percent to prevent a situation in which investors would hold back from buying in the expectation that the index would fall by a trigger amount. A similar incentive could apply to the 30-year government bond. It is important that an incentive be continuous rather than discrete; current "circuit breakers" that involve trading halts when prices are down by trigger amounts may accelerate declines as investors accelerate sales and/or delay purchases in the expectation that the market will decline by the trigger amount. Much current discussion seems to assume that tax incentives, if any, should apply to long holding periods. Clearly, though, it is socially productive for speculators to engage in short-run trading that stabilizes markets, and the tax law should recognize that short-run trading as well as long-run investing can be socially productive.

faulted on its commercial paper. The Fed responded by suspending interest rate ceilings on large negotiable CDs and by assuring commercial banks that they would have access to the discount window to obtain funds to lend to creditworthy borrowers who were cut off from the commercial paper market. The Fed made it clear that the banks would bear the credit risk. The Fed's response to this situation was narrowly targeted; no precedents were set, no one was bailed out except in the sense that some borrowers in the commercial paper market were saved from financial embarrassment, and there was no change in the Fed's overall monetary policy stance. Nor was there a market perception that the Fed would change its monetary policy. This latter point was very important at the time. The Fed was trying to reduce inflation, and the situation was touchy with capital flowing from the United States and the Bretton Woods system crumbling.

An earlier Fed crisis response worked much less well. In the credit crunch of 1966 the Fed supported emergency one-year legislation extending Regulation Q interest rate ceilings to thrift institutions. That step bought time, but the time was not well used. Extension of Regulation Q also set a bad precedent. It is always hard to know how things would have gone if a different action had been taken, but it seems to me that it would have been better if the Fed had stalled on extension of Regulation Q and let a few thrifts fail in 1966 before the government moved in to protect the industry. I realize that it is a lot easier to talk here of playing chicken than to actually play, but that is why we pay central bankers such high salaries.

The Fed's response to the October 1987 crash was successful precisely because it was well-tuned to the circumstances. The Fed reaffirmed its earlier sound precedents that it would provide liquidity to the markets as necessary. At the same time the Fed was successful in making clear that extra liquidity would remain only so long as necessary and would not lead to a change in the longer-run path of monetary policy. No one was bailed out; many lost a lot and some securities firms went out of business but the financial system itself was protected.

These comments bring me to an important issue neglected by all the authors of our background papers. At least some of the financial upsets we observe arise because the government is at war with itself. No one knows the importance for last Friday's [13 October 1989] market break of the position taken by the Department of Transportation restricting the amount of foreign investment in U.S. airlines, or of the wrangling in Congress over the capital gains tax, or of the dispute between the Treasury and the Fed over current monetary policy. Policy disputes occur all the time. The point I want to emphasize is that any policymaker who is unwilling to play chicken with the markets on the issues will be conceding a lot in Washington infighting over policy. This is another reason why it is so important to change the incentive structure in private markets to promote stability. Government policy involves conflict, and



conflict inevitably brings surprises and disappointments to the markets. We need to create an economic and financial environment that is robust to the normal course of governmental conflict.

I will finish with a few comments on the foreign exchange market. The managed float fails to provide the stability of either a credible fixed exchange rate system or of a freely floating system. Many exchange market uncertainties and instabilities are caused by unresolved policy conflicts over exchange market intervention and over monetary, fiscal, and trade policies. The major problem at present is the effort to use sterilized intervention to influence the exchange rate. This situation will be unstable until the authorities face up to the fact that sterilized intervention makes little difference and that the exchange rate can be influenced only through monetary and fiscal policy changes.

The issue, then, is how far we should go in changing domestic policy to influence the exchange rate. In my view, it is terribly important, for the United States anyway, that there be no compromise of domestic stability for the purpose of attempting to achieve an exchange rate target. There is no conflict whatsoever between international objectives and domestic objectives; achieving stability at home is the most important thing the United States can do to further the objective of international economic stability. The argument that we will have to pay increasing attention to the exchange market as the amount of foreign-owned capital in the United States rises does not make good sense to me. U.S.-owned capital is just as mobile as foreign-owned capital. Capital flows respond to relative risks and returns; policy constraints from international capital flows have changed little over the last decade.

In sum, while economists do not have a lot to offer as yet in explaining market crises, we do have a lot to offer in explaining how to minimize the risk of crises and how to deal with them in constructive ways. In both endeavors we rely on economic fundamentals that the profession understands pretty well.

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## *5. Paul A. Volcker*

### Financial Crises and the Macroeconomy

Martin Feldstein asked me to explain today why I was so worried about financial crises, and I confess to some historical worries about them. I indeed think that the economy is becoming more crisis-prone, more overextended, as Ben Friedman suggested. However, we also have more and more devices for dealing with incipient crises—the FDIC, the FSLIC and its successors, the Federal Reserve—and we seem to be on something of a hair trigger in using these

tools. This leaves me with the disturbing question of whether by using these tools repeatedly and aggressively we end up reinforcing the behavior patterns that aggravate the risk in the first place. That is the dilemma that we face. I did not expect to find much sympathy for that point of view, but the background papers at the conference seem to support it. Some people think that if the money supply is more or less stable, then the lending officers will keep pouring it out. However, I will defend the social utility of worrying about financial crises even in a friendly audience.

Ben Friedman, Larry Summers, and Paul Krugman set out my case more eloquently than I can, and more impressively, and I do not want to repeat all of that. I think that they set out a vision of what may be called the “stabilization” crisis, where there are no “right” answers, because the general tools that one uses to deal with the crisis, particularly easing the money supply, may undermine confidence. Further, the international financial repercussions can lead to a depreciation of the dollar which feeds back to internal inflation. So all of these crises inevitably push the Federal Reserve toward an inflationary posture. I think that is the most likely scenario that one has to guard against in terms of the translation of actual and potential financial crises into the real economy.

I woke up this morning and had the *Boston Globe* delivered to my hotel room, as the rest of you did, and I was interested in the editorial page. After the 200 point drop in the stock market on Friday [13 October 1989], there were press reports about an anonymous Federal Reserve spokesman saying that there would be an increase in the money supply as and when necessary over the weekend. Today there was a cartoon titled “Federal Reserve Issues Money to Calm Nervous Markets.” It had a caricature of a dollar bill with President Bush on it, the name “United States of Amnesia,” and the slogan, “A penny leveraged is a penny earned.” Not only Federal Reserve chairmen, but other people as well, worry about this confidence effect translated into external depreciation and then giving rise to an inflationary recession that is very difficult to deal with. We are not quite Argentina, but I think the Latin American model is not irrelevant to concerns about how financial crises affect the real economy.

During these remarks, however, let me mostly ignore the external dimension in discussing my concerns about financial crises. How realistic are these concerns? Let us assume that we stabilize the money supply, which is what everybody says we ought to do in response to financial pressures. The first question I have to ask is, “*What* money supply is being stabilized?” That question sounds very easy *after* a crisis but is hard to answer during one. Say that the rule is high-powered money, which is very fashionable with the Shadow Open Market Committee and many other monitors these days. By this rule, the Federal Reserve did a superb job in the Great Depression, and it is only in retrospect that one can say, “Well those dumb bunnies, why didn’t they recognize that velocity was going way off course; why didn’t they react more

intelligently?" Milton Friedman says that normally velocity is very stable, that it changes once every 40 years. The question is, how can policymakers recognize that change until the 40 years have gone by? I think it is very likely that with a severe financial crisis affecting confidence in the banking system, there would be quite different behavior between high-powered money, narrow measures of the money stock, and broad measures of the money stock.

My second question is, "Even if we could figure out exactly what money supply was right, does that solve the problem?" I think what Larry Summers's paper said was that the amount of money needed to provide reassurance and to properly reduce real interest rates may be too much not only to stabilize the currency externally but to stabilize prices internally. That is a little bit what the cartoonist in the *Boston Globe* is worried about. There may be no correct answer as to what the money supply should be, or, at best, policymakers may be on a knife edge—if they go a little too far they are inflating, and if they do too little they have a financial crisis translating into problems in the real economy. If we are on the edge of a knife for too long—if correct policy requires such fine and precise judgments over a period of time—then it is not surprising that mistakes will be made in one direction or another. Perfection is not in this world, and we will have a translation, therefore, of the financial pressures into problems in the real economy.

Let me try to arrive at a little more constructive position as to how we can approach this problem by looking at a little bit of experience. In one case, I will overlap what Bill Poole said, and with a slightly different conclusion, which shows that different observers can arrive at different answers. From 1945 to roughly 1970, there was literally no worry about financial crises, that I am aware of, in this country or in most other countries. The system was very liquid, there was a lot of equity relative to debt, interest rates were low, and there were few real pressures. In my judgment, it did not make any difference whether we had deposit insurance or not in terms of maintaining confidence in the banking system.

That was first questioned in 1970 with the Penn Central crisis, which had two aspects. First, the judgment was made in the end by Hasbrett not to rescue Penn Central directly but to take the risk and let it go bankrupt. There was a lot of fear of letting this happen, though. It is strange to think of a railroad being big, but in 1970 Penn Central was still a fairly important and diversified company, and it had a lot of commercial paper outstanding for those days. Whether it should be rescued was debated for two weeks, and the owners almost saved it with an extraordinary interpretation of Defense Department loan authorities. The second aspect was that the Federal Reserve issued a lot of reassuring statements and, I thought, eased policy a little bit. I differ from Bill a little bit in thinking that psychologically they overdid it. They did a little more than was necessary to provide reassurance, and I think they did create something of a precedent out of what was, in retrospect, a pretty limited experience.

I say that with a certain humility, because as the financial system became more clearly overextended by the late 1970s, and I found myself as president of the Federal Reserve Bank of New York, I often said to myself, "What this country needs to shake us up and give us a little discipline is a good bank failure. But please, God, not in my district." I think that is the typical attitude of a regulator. My district became somewhat larger shortly thereafter.

This brings me to the silver crisis in 1980 that people sometimes forget about. This crisis broke very suddenly in its financial ramifications one Wednesday afternoon. The price of silver had fallen \$38, and it seemed clear that if the price fell \$2 more (as I recall), one of the leading brokerage houses in the United States, which held a lot of uncovered silver positions, would have to close its doors and go bankrupt. That firm would have failed to meet its capital requirements with the SEC and probably would have failed to meet its obligations more generally. We had great emergency meetings and all of the confusion normal in government, and whether by good judgment or by failure to make a decision, we decided not to have a "circuit breaker" in the form of closing the markets, which was of doubtful legality in any event. So the markets stayed open, the price stayed \$1 above the critical point, the brokerage house liquidated its position, and shortly thereafter it reported record earnings for the quarter, which galled me. There was really no official action taken except a blessing afterward by the Federal Reserve of a consolidation loan in the banking system.

What was at stake in this situation? There was the big brokerage house immediately and another, even larger, brokerage house that would have been in trouble with a drop in price of a few more dollars, all after a \$38 decline. There was at least one large money market bank that was heavily exposed in silver directly, and others who, because of the silver speculation, were considered (not today, but in the context of those days) to have impaired capital. The rest of the scenario was never played out and not much was done in fact by the government, except blessing this consolidation loan, which seemed fairly straightforward. We went on to the next crisis more or less happily.

The next crisis, I think, was Penn Square, and then the rescue of the depositors and creditors of Continental Illinois in 1984 that was discussed earlier. What was the rationale for that reaction? Well, at that point there was concern about a systemic crisis, because the banking system in general was commonly understood to have some weak assets in various directions, including most explicitly Latin American loans. Having a big bank's depositors lose money was judged to present too large a risk to the rest of the banking system and too large a risk to the real economy, to which I will return in a moment. Further, this crisis occurred during the ongoing international debt crisis (which began in 1982), a crisis that could have impaired the capital of all of the 10 or so leading banks in the United States and most of the leading banks in the rest of the world. Was that a situation that really justified what would have indeed been extraordinary official efforts to maintain stability? Would it have been

enough to simply maintain the money supply of the United States and other countries, let the banks take their losses, and go on about our business? What would have happened?

Well, it is very hard to describe what would happen in these counterfactual situations. There would have been very low interest rates for very high grade pieces of paper, but the real question is what would have happened to the kind of lending activity, and indeed in the stock market itself, that really drives the economy over a period of time. I think that the risk premiums would have been enormous on private paper of all kinds and particularly of greater maturity. Consider the complaints that I hear from Texans about the banking system in Texas following the rescue (or in another sense, the debacle) of the Texas savings and loan system. The complaints are that the banks and savings and loans had lubricated the growth of Texas, and today people cannot get credit. Credit is unavailable because everybody is scared to death after going through a crisis or potential crisis that was resolved favorably from the standpoint of the depositor, most lending officers, and almost everybody *except* the stockholders of the institution. If that kind of crisis had occurred on a wider scale, would the resulting climate have supported continuing economic activity in the fairly regular way that we have seen in recent years? I doubt it, but I think the mechanism would have been very high risk premiums, not all of which can be captured in interest rates with some refusal to lend for private credit.

Finally, let me discuss the stock market crash in 1987. There was great concern about the wealth effects of the crash, and the Federal Reserve reaction was to provide some assurance of liquidity in the economy. I would say, not so unexpectedly, that this potential crisis was reasonably well absorbed and did not really affect the continuing growth in the economy. The wealth effects were offset by monetary and other changes. I think that the central reason this potential crisis did not develop more fully is that there was no institutional discontinuity in the crash. In this way, the crash was similar to the silver crisis in 1980 but different from other potential financial problems.

After the crash a leading banker asked, "Where was the blood on the street?" which I think was apropos. A lot of stockholders lost money—endowment funds, universities, and individuals. However, they are not the kind of people who create a systemic problem in the financial system. In contrast, there is quite a different potential for crisis when one thinks about banks and the interconnections between banks, because then not only is the money supply at stake, but also the payments system, transfers of credit, and the whole lending apparatus.

What are the implications of this distinction for policy? I think that what we have said in the past is that we must protect the core of the depository system, using the FDIC, the FSLIC, and the Federal Reserve as the lender of last resort. It is important that the protected part of the system be big enough, be a critical mass, to maintain stability in the system, but it is not good to protect everybody in the whole system. We make a choice as to what to protect and what not to, and the strategic element to protect is essentially the

banking system. Some of the discussion this morning was about how to accomplish that. I believe that we need to restore a greater sense of risk than we have had recently, but obviously we need that greater sense of risk within a structure of stability and resiliency—and it is awfully easy to say that and awfully hard to do.

On a practical level, it is appropriate to emphasize capital, as was mentioned this morning. There could be a much larger role for subordinated debt, which was also discussed earlier. I would like to see some experimentation with marginal coinsurance for bigger deposits. I do not think that this coinsurance can be very substantial, but it ought to be possible to at least put the interest earned at risk. Then maybe, if we became progressively bolder and the system seemed to improve in stability, we could consider insuring only 99% or 95% of the deposit. I think that if we moved much below that, we might as well not insure it at all, because the depositor will act as if it is uninsured. We could insist upon deposit of preference so that we get some discipline from other creditors, and there are a variety of devices of this sort.

I think also that we need some reinvigoration of regulation and supervision to the extent that it affects safety and soundness. I wonder, however, whether that is really a lesson for the 1950s and the 1960s rather than for the future. Can we exercise very careful supervision when people can be something very close to a bank without calling themselves a bank and being regulated like a bank? Or when international movement of bonds and international competition among financial institutions is as pervasive as it is now? Being successful in regulation and supervision requires pretty good agreement among a number of key countries, and the evidence is mixed on that possibility. We have taken a step to provide uniform capital requirements, which, looked at from one direction, is quite an achievement for the first time. Looked at from another direction, though, these capital requirements are the easiest, simplest, and most straightforward thing on which to get international agreement. What are the prospects for achieving the more diffuse and sophisticated kind of supervision that is probably required if we adopt this philosophy of focusing protection on the banking and depository system rather than on the rest of the markets? We need to move to a stable financial system partly so that monetary policy itself can be free to act more in response to concerns about inflation and the stability of the currency instead of in defense of the financial system itself.

## Summary of Discussion

*Summers* began by discussing the current views of some financial market participants affected by the crash of 1987. First, they report little change in their investment behavior. Second, they report that they paid out money during the crash before being paid themselves and were lucky not to lose their shirts as a

result. It is a bad sign for the future of the payments system that they say they will not act that way again. Summers continued by contrasting two views about the role of monetary policy and the value of the dollar in spurring the 1987 crash. Many economists believe that high U.S. interest rates designed to maintain an arbitrary level of the exchange rate reduced liquidity in the financial markets and led to the crash. The opposing interpretation of events in 1987 is that a fear of the dollar going into a free fall led to the crash.

*Bennett T. McCallum* raised two questions concerning the scenario analysis used in Summers's paper. First, does the lender of last resort need to use the discount window to direct loans to particular banks, or is it enough to control the magnitude of some monetary aggregate or interest rate? Second, is it appropriate to analyze events and policies during a crisis, in the design of policy, or must one study ongoing processes?

*Robert E. Hall* remarked that, as a general matter, governments turn socialist in crises, including for example the U.S. government's planned economic strategy after a nuclear attack. He believes that monetary policy is central to a free-market response to a financial crisis, but the Federal Reserve should not attempt to stabilize any particular monetary aggregate. Instead they should adjust monetary policy to maintain the same consensus forecast of nominal GNP (for one to two years in the future) as before the crash. In the 1987 crash, for example, the consensus forecast fell slightly but not by much, due to a vigorous monetary response. This policy has several advantages. First, the consensus forecast adjusts quickly to current events, as opposed to actual nominal GNP, which adjusts to both crises and monetary policy with a substantial lag. Second, the proposed policy would generate a big surge in liquidity during a crisis, but it does to require intervention on behalf of any particular institutions. Finally, a nominal GNP target is inherently noninflationary.

*Poole* wondered what would happen to the economy if forecasts were based on the assumption that the Federal Reserve would take some action that it does not in fact take. *Hall* replied that this uncertainty would be quickly resolved due to the short feedback loop.

*Friedman* responded to *Hall* that there is no more reason to think there will be an informative consensus forecast than to think that there is one useful measure of the money supply.

*Alan A. Walters* described the background of a possible currency crisis in Britain. From 1981 to 1986, British monetary policy maintained a growth rate of the monetary base between 2.5 and 5 percent. In 1987, policy switched to targeting the exchange rate, particularly in the Deutschmark-pound rate. Sterilized intervention was used in an attempt to offset the pressure for a pound appreciation but it failed. The exchange rate was contained only by lowering interest rates from 11 or 12 percent in early 1987 to about 7.5 percent in 1988. Inflationary pressures and resulting monetary tightening have since raised interest rates to roughly 15 percent today.

Now, as the next Parliamentary election approaches in 1991 or 1992, there

is a significant moral hazard problem for monetary policymakers. An increased probability of the Labor party winning the election will lead to more capital flight and downward pressure on the pound. The government will have to raise interest rates to prop up the pound, thereby increasing the probability of a recession and thus the probability of the Labor party winning the election. But this worsens the capital flight and so on. An attempt to peg the currency, in this political environment, risks generating a fierce monetary squeeze and a severe recession.

*Samuelson* warned the group not to be misled by the monetary policy successes of Paul Volcker in 1982 and Alan Greenspan in 1987, which he attributed to the “genius” of the Federal Reserve Chairmen.

*Robert J. Gordon* argued that the United States has recently conducted a controlled experiment of wild dollar gyrations and found, contrary to Summers’s scenario, that the effect on domestic inflation was minimal. He cautioned that this experience may not be generalizable to other economies, because U.S. imports have distribution systems that buffer the effect on prices of exchange rate changes. He concluded that monetary policy in crises should focus on domestic targets and not worry about international effects. Gordon contended that the virtues of nominal GNP targeting are irrelevant to the microeconomic allocation and intervention issues of the conference.

*Kindleberger* noted that not all crises are alike, and different policy responses are needed at different times. He agreed with Volcker and Krugman that contagion crises are the critical problem; nominal GNP targeting does not address this issue.

*Mussa* discussed the “non-crisis” of the financial system in late 1981 and early 1982, during which high interest rates left the banking system liquid but insolvent on a market-value basis. Because a major failure at that time could have produced a run on the system, policymakers would have had to put out any “brush fires” that occurred. Luckily, no serious fires broke out until the Federal Reserve’s anti-inflation credibility was established in 1982.

*Krugman* commented to *Hall* that society intervenes in free markets during crises to prevent massive income distribution effects, even though efficiency suffers as a result. *Hall* responded that the beneficiaries of the Continental Illinois bailout were at the top of the income distribution.

*Robert D. Reischauer* emphasized the important role of political dynamics in dealing with failing financial and nonfinancial institutions. The interests of these institutions will be defended by the political representatives for their geographic locations.

*Hall* reminded the group that a nominal GNP targeting procedure would have produced a *more* expansionary monetary policy in October 1987 than was actually pursued. This is a consistent framework of monetary policy that responds to crises effectively and thereby reduces the risk of “brush fires.” Further, it is “uncanny” how government bailouts go to the rich.

*Syron* pointed out that the income distribution effects of institutional bail-



outs depend critically on the importance of contagion in the economy. If the real economy falters, then people at the bottom of the income distribution are the most likely to lose jobs.

*Summers* concluded the session by stating that the cost of not fighting “brush fires” probably exceeds the cost of fighting them excessively. In particular, the allocative inefficiency resulting from intervention is much smaller than the output loss from a slowdown in the real economy. Further, the argument against bailouts depends on being entirely credible that one will not engage in such bailouts, which is a difficult point to make convincingly. Finally, reputational externalities clearly exist in precarious financial situations, so contagion can be an important problem that is not internalized by individual firms.