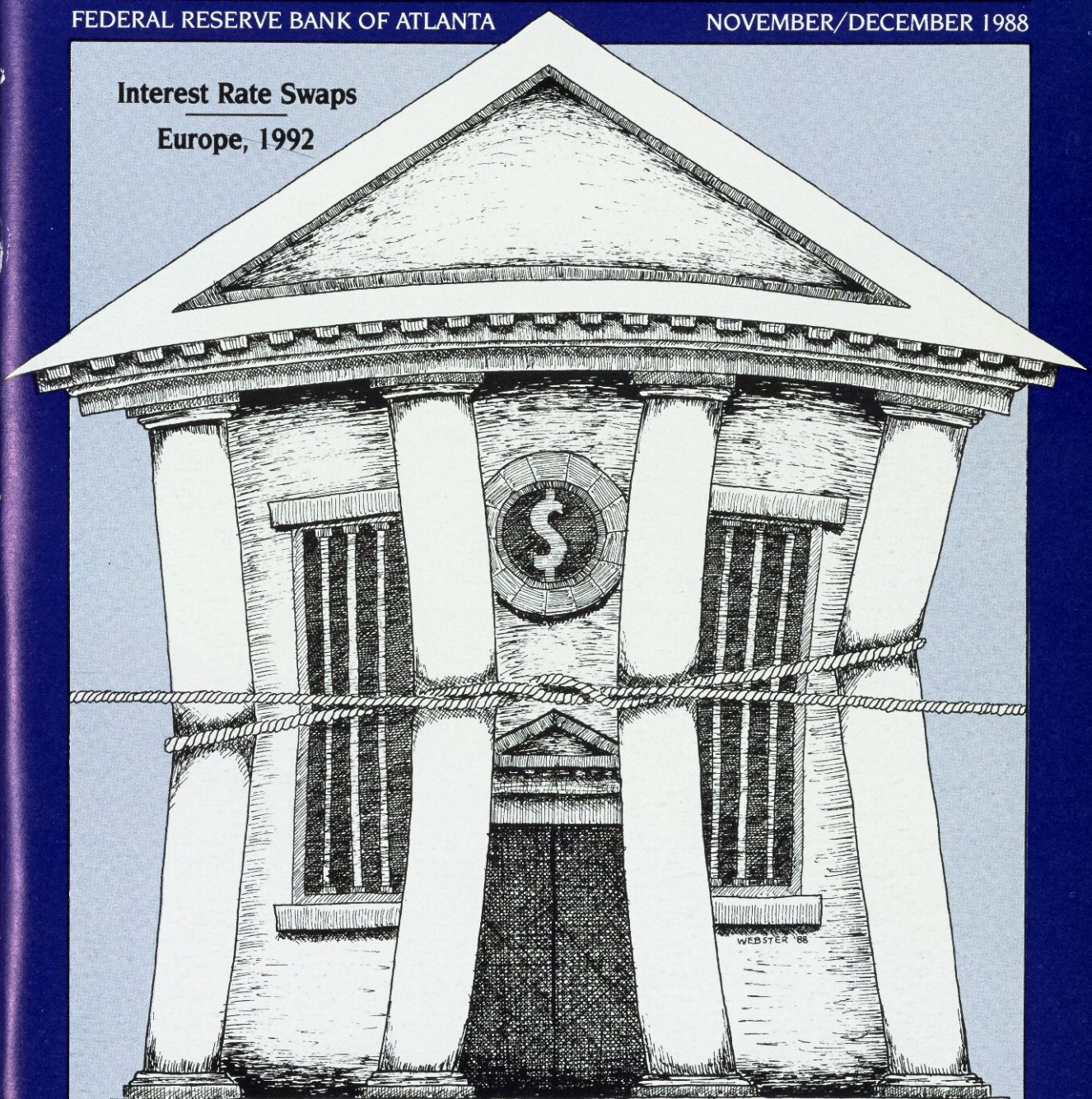
Economic Review

FEDERAL RESERVE BANK OF ATLANTA

NOVEMBER/DECEMBER 1988

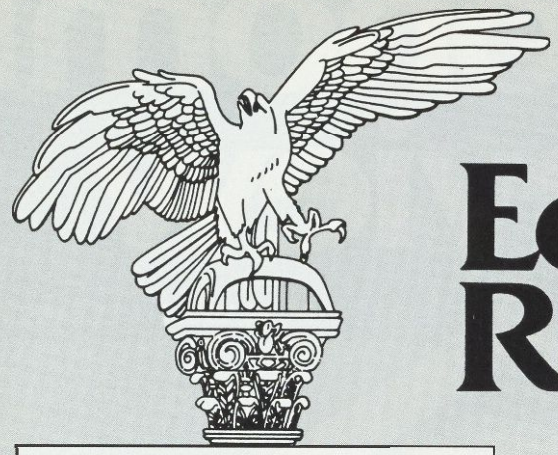
Interest Rate Swaps

Europe, 1992



Bank Panics:

Some Unanswered Questions



Economic Review

The **Economic Review** seeks to inform the public about Federal Reserve policies and the economic environment and, in particular, to narrow the gap between specialists and concerned laypersons.

Views expressed in the **Economic Review** are not necessarily those of this Bank or of the Federal Reserve System.

Free subscriptions and limited additional copies are available from the Public Information Department, Federal Reserve Bank of Atlanta, 104 Marietta Street, N.W., Atlanta, Georgia 30303-2713 (404/521-8788). **Change-of-address notices and subscription cancellations should be sent directly to the Public Information Department. Please include the current mailing label as well as any new information.**

ISSN 0732-1813

FEDERAL RESERVE BANK OF ATLANTA

Some Unanswered Questions about Bank Panics

Ellis Tallman

Though most economists agree that bank panics should be avoided, wide disagreement exists over how costly they have been in terms of their effect on macroeconomic performance. In this article the author examines the impact of this financial phenomenon and suggests a number of areas for further analysis.

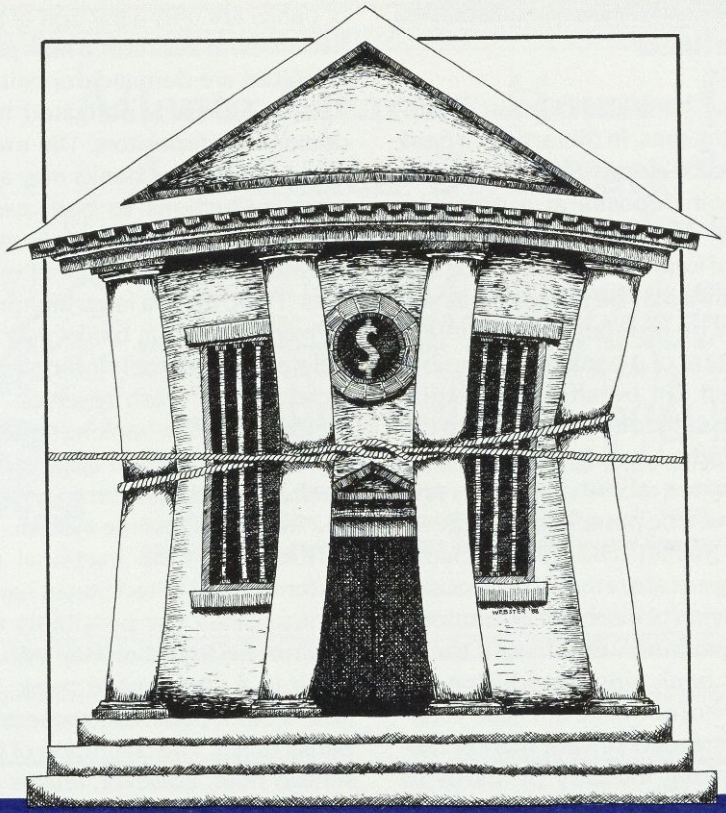
Recent experiences in the U.S. banking and thrift industry have brought to the forefront issues regarding the current extent of the government regulatory framework for depository institutions. Deposit guarantee legislation, beginning with the 1933 establishment of the Federal Deposit Insurance Corporation (FDIC), was enacted to prevent bank system failures like those during the Great Depression. Since deposits have been guaranteed, no nationwide bank panics have occurred. In that regard existing legislation has been successful. Thus, for many years, the federal deposit guarantee programs were perceived as inexpensive mechanisms to safeguard the banking system against bank panics; current experience, though, has altered the perceptions of deposit insurance costs. (For a related article on deposit insurance, see this issue's *Book Review* by William Curt Hunter on p. 52.)

Federal deposit guarantees distort the incentives of banks and depositors. In order to maximize the value of their deposit insurance, banks have an incentive to maintain an asset portfolio with more risk than might otherwise be assumed; depositors, meanwhile, have less incentive to monitor depository institutions, since insurance has greatly reduced the risk of capital loss on deposits. Thus, federal deposit insurance programs have produced "moral hazard" problems that contribute, along with other factors, to the imposition of substantial costs upon the intermediation system. These costs have become most apparent in the past several years.[1]

In light of possible federal insurance costs, economists are focusing renewed attention on the phenomena of bank runs and bank panics. Some economists question whether the bank panics that occurred from the National Banking Era through the Depression substantially dampened macroeconomic activity, but existing results from that period are ambiguous. Historically, major bank panics have been closely associated with recessionary periods in business cycles. Disagreement exists, however, on whether downturns in the business cycle created poor economic conditions, thus sparking pan-

---

The author is an economist in the macropolicy section of the Atlanta Fed's Research Department.



ics, or whether the occurrence of bank panics spurred economic contractions. Even the more moderate view, that panics exacerbated the amplitude of recessions, is unproven because no research has isolated the explicit economic costs of bank panics.

This article addresses the issue of whether bank panics have a large macroeconomic impact in addition to that caused by the contraction in the real economy. The macroeconomic characteristics of the bank panics that took place during the National Banking Era (1863-1914) are investigated to provide empirical focus for analyzing the divergent views of banking crises and their economic impact.[2] This study also examines the relationship between bank panics and economic contractions and describes the similar economic properties of panic periods, drawing from several studies that analyze these times. Data series of real economic activity are scrutinized, as is banking activity in general during the National Banking Era.

The measured macroeconomic impact of panics remains inseparable from the general economic downturn; thus, distinguishing clearly between the contraction effects of a panic and those of a concurrent recession is difficult with the present data set. The data reviewed in this article, however, are consistent with the view that bank panics themselves were not the cause of economic downturns and that the disruptions in the economy caused by these panics may have been less severe than once believed. Many discussions describe the Great Depression experiences as foremost examples of the cost and deleterious effects of bank panics. In comparing relevant economic measures of National Banking Era panics to those of the panics during the Great Depression, the results suggest that the events are not directly comparable.[3] A proper comparison would address the institutional differences and the respective responses of these institutions to the onset of panics. This paper contends that economists must perform additional research to determine more clearly the economic costs of bank panics. This research should be directed explicitly at delineating the costs incurred because of a bank panic from those costs resulting from an existing contraction in the real economy.

Bank Panics Defined

Any discussion of bank panics must distinguish them from bank runs. In this article, a *bank run* is characterized by depositors' attempting to liquidate all their deposits at a particular institution. A bank run does not necessarily imply the removal of funds from the banking system; since other banks may be perceived as solvent, the funds may be redeposited at another bank. In this definition of a bank run, a number of banks in a region can be affected simultaneously, but the run still does not extend to the entire banking system.

Economists disagree about the costs and benefits of bank runs. One perspective suggests that runs impose a market discipline on banks by threatening a large-scale removal of deposits and prompt suspension of insolvent institutions. Federal deposit insurance eliminates these positive aspects of bank runs by reducing the monitoring incentive of depositors. These economists advocate increased private market discipline for the banking industry primarily to reduce the cost of bank failures and the time it takes for them to run their course; runs provide quick resolution to bank insolvency and, in this view, subsequently improve the overall operation of the banking system.[4] Implicitly, from this perspective the social benefits of bank runs exceed the associated costs.

In sharp contrast, a number of researchers argue that bank runs are "contagious" and, as such, dangerous to the entire financial system because a run on an individual bank can not only spread to solvent banks but can threaten the collapse of the entire banking system through a bank panic. Thus, allowing bank runs to occur may increase the risk of bank panics.

A *bank panic* can be described as a widespread desire on the part of depositors in all banks to convert bank liabilities—their deposits—into currency. A bank panic entails the removal of bank deposits from the depository system, thus threatening the intermediation process. In contrast to bank runs, bank panics are basically systemic problems and can be viewed as systemic bank runs.

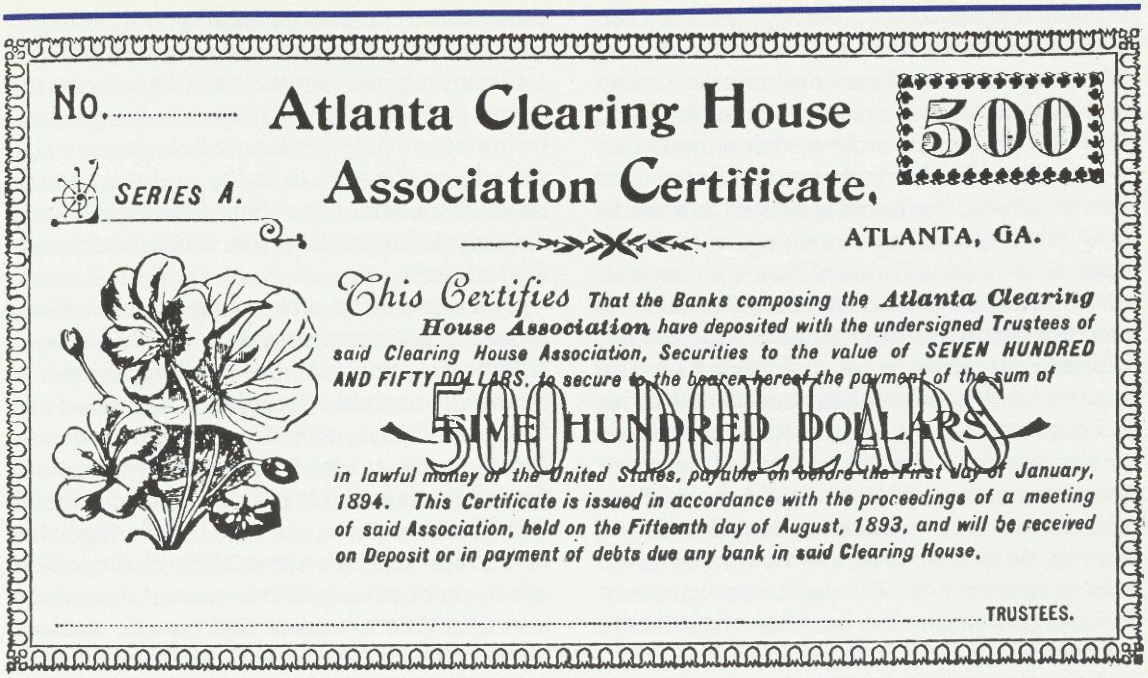
Throughout most of its history the U.S. banking system has operated on a fractional reserve basis, which is designed so that the cash reserves of banks are only a fraction of their outstanding liabilities. In addition, a high proportion of bank liabilities are demand deposits—that is, deposits that a bank is obligated to pay in cash on demand to depositors. The exchange of deposits for currency at banks may appear initially as equal reductions to both cash holdings and deposits. Banks, however, keep cash reserves at a reasonable percentage of outstanding liabilities. Thus, when a large amount of deposits are converted to cash, banks may be forced to liquidate some of their interest-bearing assets to increase their cash reserves. Bank panics are dangerous to the banking system because, without a central bank, a large-scale conversion of bank deposits into currency cannot be satisfied in a fractional reserve system.

Historically, the fractional reserve banking system in the United States has been subject to panics. Given the possibility that bank assets may not be liquid or may sell at less than face value in a systemwide panic (in contrast to a run), a bank panic can cause otherwise solvent banks to fail. The definition of bank panics presented here, however, leaves unanswered the question of how and why bank panics begin.

Crises during the National Banking Era

Prior to the creation of the Federal Deposit Insurance Corporation in 1933, bank panics were a periodic occurrence. Several institutional features of the banking system during the National Banking Era in particular make that time interesting for the empirical investigation of bank panics. First, the period from 1863 to 1914 preceded both the Federal Reserve System and the federal deposit insurance program. Also, six major bank panics associated with serious economic downturns occurred during that era (in 1873, 1884, 1890, 1893, 1907, and 1914). The period also has an abundance of relevant data for study.

In considering bank panics, the most notable features of the National Banking System are (1) the lack of a central bank, (2) the absence of deposit insurance, and (3) the inability to increase quickly the supply of currency (or reserves) in periods of extreme consumer de-



No..... **Atlanta Clearing House Association Certificate.** 500

SERIES A.

ATLANTA, GA.

This Certifies That the Banks composing the **Atlanta Clearing House Association** have deposited with the undersigned Trustees of said Clearing House Association, Securities to the value of SEVEN HUNDRED AND FIFTY DOLLARS, to secure to the bearer hereof the payment of the sum of

FIVE HUNDRED DOLLARS

in lawful money of the United States, payable on or before the First day of January, 1894. This Certificate is issued in accordance with the proceedings of a meeting of said Association, held on the Fifteenth day of August, 1893, and will be received on Deposit or in payment of debts due any bank in said Clearing House.

.....TRUSTEES.

Clearinghouse loan certificates, such as this one from Atlanta, were used during the National Banking Era to expand artificially the supply of banks' available reserves.

mand for currency in exchange for deposits. Given the fractional reserve banking system and the lack of a central authority to increase the monetary base (bank reserves and currency), the banking system suffered from chronic panics; the most notorious panics—in 1873, 1893, and 1907—were associated with the most severe business cycle contractions.

Bank panics during this period displayed similar characteristics.[5] In general, according to Philip Cagan (1965), bank panics followed business cycle peaks. Often, panics occurred in either spring or fall; this phenomenon can partly be explained by noting that, without a central bank, the seasonal movement of funds between the Midwest and financial centers in the East put strains on bank reserve positions. The failure of a large business or financial institution usually preceded a panic.

In addition, the stock market would frequently suffer substantial losses in the aggregate either prior to or during the panic. These could signal to depositors that bank assets might be riskier.[6] The length of panics varied; the most intense part of a panic typically took place in the span of a few weeks, and the remnants usually subsided within a few months.

Other characteristics associated with panics during the National Banking Era include the mechanisms that private bankers employed to survive the crises. Local clearinghouses provided the medium through which the mechanisms were instituted. Initially, the clearinghouse was a place where representatives of all banks in a city met to settle accounts with all associated banks by making or receiving payments, that is, "clearing" transactions. The clearinghouse role, however, grew in operational capacity. An insightful definition by James G. Cannon (1910) provides a good description of the fuller role of the clearinghouses:

> A Clearinghouse, therefore, may be defined as a device to simplify and facilitate the daily exchanges of items and settlements of balances among the (member) banks and a medium for united action upon all questions affecting their mutual welfare.

The two primary methods for responding to bank panics during the National Banking Era were (1) clearinghouse loan certificates (see sample above) and (2) the restriction or suspension of bank deposits' convertibility into currency.[7] (The box on page 18 provides more detail

on these mechanisms.) Clearinghouse loan certificates were extensions of loans for the purpose of forming reserves. These certificates were written for clearinghouse association members and were acceptable for settling clearinghouse accounts. Thus, the clearinghouse and its loan certificates offered the banking system an artificial mechanism to expand the supply of available reserves in order to prevent loan contraction.

When restricting the convertibility of deposits into currency, banks limited the amount of cash available or refused to pay cash in exchange for deposits as they were legally bound to do. This procedure reduced the outflow of bank reserves by slowing down the liquidation of deposits. Both mechanisms allowed banks to continue other operations such as making loans and clearing deposits, since restrictions applied only to conversions of deposits into currency. Transactions within the banking system were supported.

Oliver M.W. Sprague (1910) provides an excellent analysis of the events before, during, and after the bank panics of the National Banking Era. Sprague's work describes in detail the methods through which the banking system maintained a functioning transactions mechanism in the midst of a systemwide drain of deposits and reserves. Sprague is critical, though, of convertibility restrictions, especially during the panic of 1907 when, he felt, the severe strain in the banking system spread to all business sectors through this action. Yet, aside from increasing transactions costs, the ways in which restriction constrains business activity are unclear.[8]

The discussion in Sprague notes the degree of bank failures, the contraction of loans, and the general reduction in economic activity associated with the period of the panic. Sprague does not, however, attribute the source of the economic downturn to the panic; rather, the panic is seen as an outcome of the economic downturn. The banking crises arose from problems in other industries. Cagan supports the view that panics did not cause recessions.

Theories of Bank Panics

The economics literature provides two main approaches to bank panics and their causes; these views differ most notably in their explanations of why depositors convert their deposits into currency and exit the banking system. The formal models of bank panics examine the issue from a clearly different set of assumptions about the source of bank instability, and the relevant conclusions about the cost of bank panics are strongly influenced by the theoretical framework chosen.

One perspective on banking panics, referred to as the "sunspot hypothesis" by Gary Gorton (1988), suggests that the banking system is inherently unstable. Douglas W. Diamond and Philip H. Dybvig (1983) present this view in detail. In this model, banks provide a liquidity service by transforming illiquid financial assets (loans) into more liquid ones by offering liabilities (deposits) with a smoother return path. In effect, productive investments in the economy may take time to mature and provide a return, but depositors may require liquidity at different and unpredictable times. In order to exploit the opportunities created by this apparent discrepancy, banking intermediaries provide a transformation service so that depositors can have access to liquidity, since their liquidity demands may vary. Though banks improve the opportunities for the economy, theory suggests that the potential exists for bank runs to take place. Surprisingly, these bank runs occur despite the fact that bank assets in the model are not risky; rather, they are just illiquid.

The risk in banking in this model, then, results from the withdrawal behavior of depositors. Banks are subject to runs because depositors liquidate their deposits whenever they suspect a bank run will occur, if the theory imposes a first-come, first-serve rule for withdrawals.[9] Thus, according to this argument, no real economic information relevant to bank assets is necessary to provoke a systemic bank panic. Nonfundamental (noneconomic) causes may spark a bank panic since "anything that causes [depositors] to anticipate a run will lead to a run."[10]

In the sunspot theory, the bank run could occur as a result of anything from a run on another bank to a totally unrelated event like a sunspot. It is rational for agents (individuals), even those who prefer to leave deposits, to withdraw their deposits in light of the potential for capital loss if the bank fails. The inherent

instability in the banking system provides the opportunity for panics to occur randomly without a fundamental economic basis for the event. Bank runs are essentially random due to the risky behavior of depositors.

In this view, a single bank run is costly because of its potential to spark a bank panic and cause the collapse of the banking system. Bank panics in turn are costly because even solvent banks—those with loans to productive investment projects—can fail, thus causing the recall of the loans and termination of investments. Since the costs are imposed on the economy for no underlying economic reason, a strong rationale exists, from this perspective, to prevent banking panics and avoid these costly repercussions.

Sunspot theories provide a useful contrast to other explanations of bank panics in which depositors rely on real economic information in evaluating the financial condition of banks. In this context "real" information refers to data on the production sectors of the economy. Charles J. Jacklin and Sudipto Bhattacharya (1988) provide a formal treatment of how interim information affects depositor assessment of the value of risky bank assets. The information can lead to bank panics if it signals a bad prospective outcome for bank investments and a negative outlook for the real economy. Under these conditions, panics can be explained as rational economic phenomena within an economic model in which information on the intrinsically risky assets of banks may provoke depositors to liquidate their deposits. Information on real economic conditions is relevant insofar as it reflects upon bank asset quality and thus shapes depositor expectations.

In a similar vein, Gorton presents an economic model in which bank panics occur as a rational response by depositors to the expectation of a recession. In this model, depositors have incomplete information about the value of bank assets, and so they use aggregate macroeconomic measures as indicators of bank asset riskiness. Gorton shows that depositors choose to liquidate bank deposits when the perceived risk of bank assets exceeds a threshold level. The model also suggests that panics are not unique events, like sunspots. Rather, Gorton presents data that are consistent with a rational model in which economic agents form expectations of bank asset risk. A model explaining consumer behavior in nonpanic times consequently also explains consumer behavior when panics occur. However, such a model does not address the extent to which panics affect the severity of an economic contraction.

Several hypotheses regard real economic variables as the fundamental causes of bank panics.[11] The costliness of bank panics in these models, however, varies with assumptions about the value of the loans recalled by banks. If some of the recalled loans terminate an otherwise productive investment, a bank panic may worsen an already-existing economic contraction. If, on the other hand, a bank panic leads to prompt liquidation of loans whose long-term prospects are poor, the cost of bank panics may be minimal. Thus, even within a fundamental framework for bank panics, their cost reflects assumptions about the cost of loan contraction.

The theoretical explanations of bank panics exemplify how the choice of theory influences the conclusion about their cost. In the two general views, sunspot and fundamental (or "information-based") explanations appear to have clear contrasts.[12] The sunspot theories suggest that bank panics have high economic costs because they force banks to recall loans that would otherwise increase economic welfare. As a result, bank panics should be avoided if possible. The fundamental theories of bank panics also focus on the recall of loans as the main source of bank panic costs.[13] However, a variety of perspectives may be available on how the loan contraction affects economic output. Thus, the cost of loan contraction and the contribution of panics to contractions are central elements in the theoretical analysis of bank panics and their impact on economic performance.

Business Cycles and Bank Panics: Current Viewpoints

The previous overview of National Banking Era bank panics concentrated on their common characteristics and revealed two main features: (1) a widespread desire to convert bank liabilities into currency and (2) an association with serious economic contractions. In theoretical models, when a banking system lacks a central

bank, depositors can cause a solvent bank to fail by large-scale liquidation of deposits. Business cycle research is interested in determining how economic contractions relate to panics.

In the economics profession, the conventional view of bank panics is that they magnify the steepness of a business downturn.[14] Milton Friedman and Anna J. Schwartz (1963) (as well as Cagan) portray panics as distinct events that contribute separately to the severity of a business contraction. Friedman and Schwartz suggest that bank panics, by reducing the amount of bank deposits, contract the aggregate money supply. In their framework, reductions in the money supply adversely affect output.

In a more recent work, Karl Brunner and Allan H. Meltzer (1988) describe from a monetarist perspective the interaction between the financial sector and the real economy. They maintain that an increase in currency holdings relative to deposits—a typical occurrence in bank panics—reduces both the money supply and bank credit; the authors suggest that the relative reduction in loans is greater than that of the money supply. In their view, an unchecked run, that is, one which is not alleviated by adequate central bank provision of reserves, may lead to bank failures, excess demand for reserves, increases in interest rates, drops in asset values, and further contraction of the money supply and bank credit. Despite their belief that banking crises are basically due to existing economic conditions and the prevailing institutional framework rather than a catalyst of economic downturns, the authors ascribe a distinct economic cost to bank panics because of the disruption of credit markets and hence the exacerbation of already adverse business cycle conditions.

Gorton suggests that, since banks fail most frequently during a business cycle contraction, macroeconomic information may signal the severity of the downturn in the real economy to depositors, who in turn attempt to liquidate bank deposits before the worst of the recession. Bank panics thus occur as a rational response to exogenous economic conditions (factors "outside" the system like weather or the formation of a cartel of oil-producing nations) and do not represent unique events, that is, events that are unexplainable within a rational economic model consistent with "normal" time periods. This model is consistent with the predictions of a recent approach to business cycles referred to as real business cycle theory.

Real business cycle theory presents an extreme view of how monetary and banking services relate to real economic phenomena. The theory concentrates its analysis on real disturbances to the productive sectors of the economy, which may explain a large proportion of observed fluctuations in total output measures. From this perspective, the role of monetary and banking sectors in a theory of economic growth still remains an open area for research. Robert G. King and Charles I. Plosser (1984) present an economic model in which technological shocks directly affect only the real economy. A premise of real business cycle theory is that the financial sector is endogenous to innovations in the real productive sector. The banking industry in King and Plosser produces an intermediate good, transactions services, which is an input into production and the purchase of final goods by consumers. Thus, the researchers suggest that the observed positive comovement of real production, credit, and transactions services reflects exogenous shocks to the economy's real productive sectors. In essence, the movements of bank transactions services and credit measures result from movements in output. Banking services do not initiate any costly shocks to the real economy.

"In the economics profession, the conventional view of bank panics is that they magnify the steepness of a business downturn."

In this real business cycle view, the extent to which panic costs add to those of a recession is unclear. Bank loans, in this theory, should contract as a result of changes in expectations for the outlook for the real economy. The contraction of loans surrounding panic periods is viewed as a reflection of the altered prospects for the aggregate economy and for these bank assets.

From this perspective, the measurable costs of banking panics are of primary interest since such costs reveal whether panics exacerbate economic downturns. In a full-information framework, one would expect panics to contribute minimally to an economic contraction.

The factor which complicates the analysis is that panics are often associated with business cycle contractions, and disentangling the economic impacts of the two is difficult. From a casual empirical view, the fact that the more severe recessions are associated with bank panics suggests that bank panics are costly and worsen contractions. The two views expressed above, though, imply a different sequence of events with respect to bank panics and business cycles. A simplified description of both perspectives is provided below to help distinguish between the anticipated causal and temporal relationships among financial and real variables.

"In an alternative view . . . [t]he recession in the real economy causes the observed reduction in loans that occurs when banks call in bad loans."

A version of the conventional view suggests the following sequence: the bank panic occurs near the onset of (and directly worsens) a recession, as depositors exchange large amounts of deposits for cash. Banks attempt to satisfy consumer demand by paying currency, thereby reducing the aggregate money supply. In addition, banks are forced to call in loans to maintain adequate reserves and satisfy depositors' liquidity demands. Clearinghouses issue loan certificates to prevent further loan contraction. They also place restrictions on the convertibility of deposits into currency to stifle the liquidation of deposits. These actions impose higher transactions costs on the economy. Thus, the panic induces costs that lead to a more severe recession. The contraction of loans, then, should occur prior to a decline in output that is steeper than the initial downturn.

In an alternative view, consumers see signs of an oncoming severe recession and the associated loss in asset value. Currency has a higher expected return than bank deposits, and consumers withdraw deposits from the banking system. To prevent large-scale loan contraction and slow the liquidation of bank deposits, the local clearinghouse associations issue loan certificates and restrict convertibility at minimal costs to the macroeconomy. The recession in the real economy causes the observed reduction in loans that occurs when banks call in bad loans. Thus, problems in the financial sector mirror those in the real sector of the economy. In this case, financial sector crises, with continued intermediation, do not add significantly to the severity of real economic contraction. Temporally, advocates of this view expect to observe a real output decline prior to or simultaneous with the contraction of loans. Since loans move passively in response to real economic movements, this view does not expect loan movements to initiate disturbances to the real economy.

The difficulty, however, has been to assess the costs of reduced economic output caused by bank panics, either directly (through recalling loans) or indirectly (through lost loan opportunities or through the increased transactions costs associated with restriction of payments).[15] Restrictions increase transactions costs, but checks continue to be cleared, loans are made, and the process of intermediation continues. The degree to which these transactions costs reduce aggregate output remains unclear.[16] The source of the costs, however, is relevant only after significant costs of panics have been established. As emphasized above, whether panics worsened output declines remains ambiguous.

National Banking Era Panics: Data Analysis

Empirical research has focused on the National Banking Era, a period without an explicit central bank, to uncover evidence on the typical effects of panics. General evidence indicates that National Banking Era panics, in contrast to the conventional view, may have had effects on

Table 1.
National Banking Era Panics

NBER Cycle Peak to Trough†	Panic Date	Percentage Change in the Ratio of Currency to Deposits at Panic Date to Previous Year's Average*	Percentage Change in Pig Iron Production, Measured From Peak to Trough
Oct. 1873-Mar. 1879	Sept. 1873	14.5	-51.0
Mar. 1882-May 1885	June 1884	8.8	-14.0
Mar. 1887-Apr. 1888	No Panic	3.0	-9.0
Jul. 1890-May 1891	Nov. 1890	9.0	-34.0
Jan. 1893-Jun. 1894	May 1893	16.0	-29.0
Dec. 1895-Jun. 1897	Oct. 1896	14.3	-4.0
Jun. 1899-Dec. 1900	No Panic	2.8	-6.7
Sep. 1902-Aug. 1904	No Panic	-4.1	-8.7
May 1907-Jun. 1908	Oct. 1907	11.5	-46.5
Jan. 1910-Jan. 1912	No Panic	-2.6	-21.7
Jan. 1913-Dec. 1914	Aug. 1914	10.4	-47.1

**In cycles without panics, the percentage change is over year ending at cycle trough. Measured from peak to trough.*

†The National Bureau of Economic Research (NBER) determines the dates of business cycles.

Source: Gorton (1988).

the banking system not dissimilar to the usual effects that recessions themselves brought on banking.

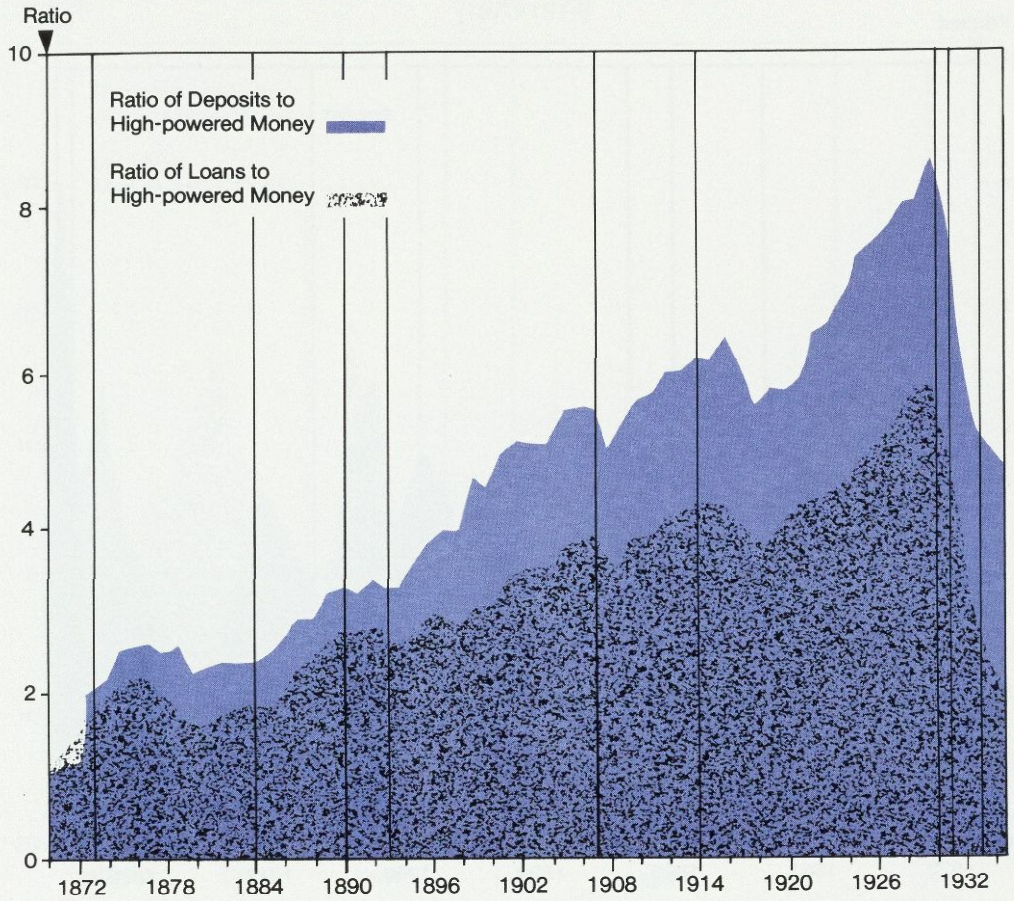
Table 1 summarizes the business cycle contractions experienced during the National Banking Era. The most severe bank panics were accompanied by sizable increases in the ratio of currency to deposits, evidence that bank deposits were liquidated for cash on a large scale. Notably, the panic dates follow business cycle peaks, and the recessions associated with panics exhibit the largest reduction, from peak to trough, in the production of pig iron, a proxy for industrial output.

In terms of degree, the panics of 1873, 1893, and 1907 are considered the most severe, especially because both clearinghouse tools—payments restrictions and clearinghouse loan certificates—were implemented to quell the crises. Also, the large contractions of pig iron production in these panics exceed the contractions in most other panics.[17] The duration of the recessions following the panics, however, were quite different. Both the 1893 and the 1907 panics were associated with brief yet severe recessions (one-and-a-half years and eleven months, respectively). In contrast, the business contraction following the 1873 bank panic spanned six years. In addition, most of the banking difficulties associated with the 1873 panic occurred several years after the panic. Sprague notes that few banks failed during the crisis of 1873 or during the subsequent months.

Measures of bank and real activity present the aggregate impact of panics on an annual basis. For some cycles, annual data fail to reflect adequately the extent of loan contractions—especially the possibility of temporary loan reductions during panics—that more frequently sampled data may present.[18] However, annual measures satisfactorily convey the long-term effects of recessions associated with panics as compared to business contractions without panics.

Chart 1 presents measures of intermediation, total bank loans and total bank deposits (each relative to "high-powered" money), from 1870 to

Chart 1.
Total Bank Loans and Bank Deposits Relative to High-powered Money
(1870-1935)



The vertical lines in each chart represent the occurrences of bank panics.

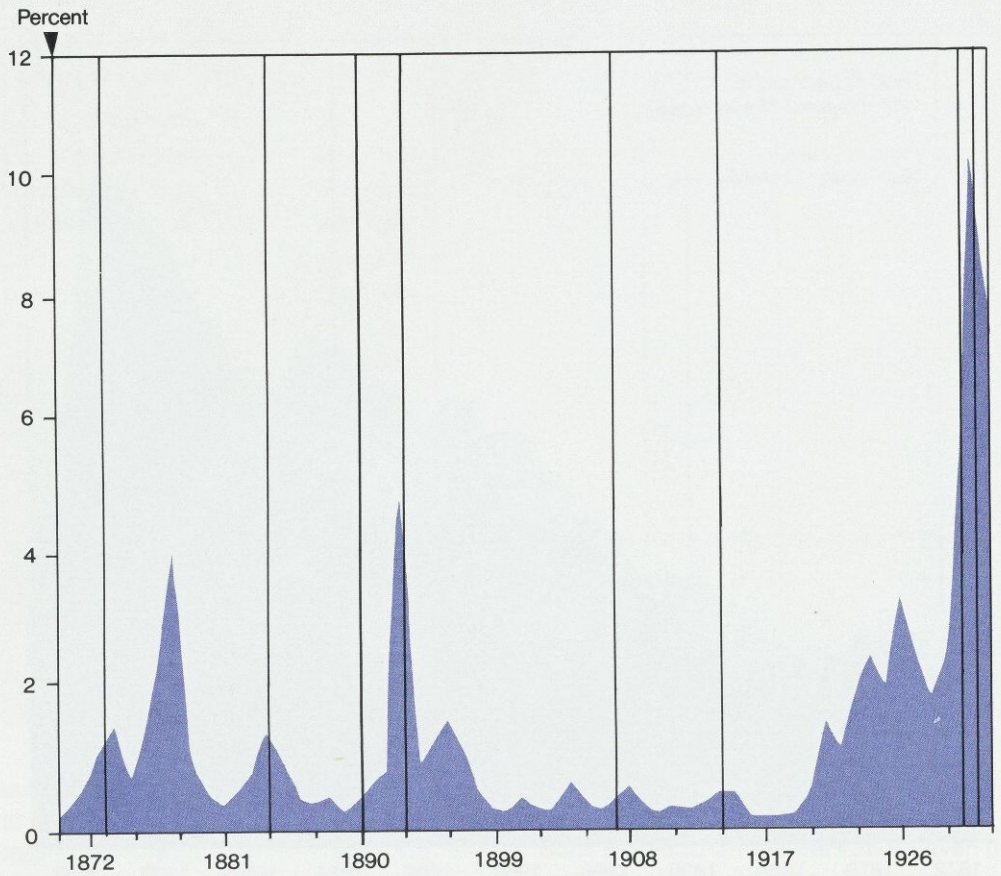
This chart shows the ratio of total bank loans and bank deposits, each relative to high-powered money, during the period 1870-1935. High-powered money represents the amount of money that may be employed as bank reserve assets.

Source for all charts: U.S. Bureau of the Census, *Historical Statistics of The United States from Colonial Times to 1970.* High-powered money data are taken from Friedman and Schwartz (1963).

1935.[19] (The vertical lines in Charts 1 through 6 denote years in which panics took place.) The measure of loan contraction in Chart 1 suggests that significant loan contraction of -10.3 percent and -14.1 percent occurred in the years following the 1893 and 1907 panics. Nonetheless, loan contractions of -1.4, -10.8, -9.6, and -7.8 percent, respectively, during the years from 1877 to 1880 reflected the worst period for the banking industry in the National Banking Era and were not directly associated with a panic.

Chart 2 depicts the bank failure rate over the period 1870 to 1932. The bank failure rate for 1893 (5.22 percent) was the highest in any year of the period; on the other hand, the next two highest rates, 4.34 percent in 1878 and 2.75 percent in 1877, occurred without a panic during the aforementioned business cycle contraction. The related panic was several years earlier, in 1873. The degree of output contraction in the 1873 cycle as well as in both the 1893 and 1907 business cycles, from peak to trough, was very large.

Chart 2.
Bank Failure Rates
(1870-1932)



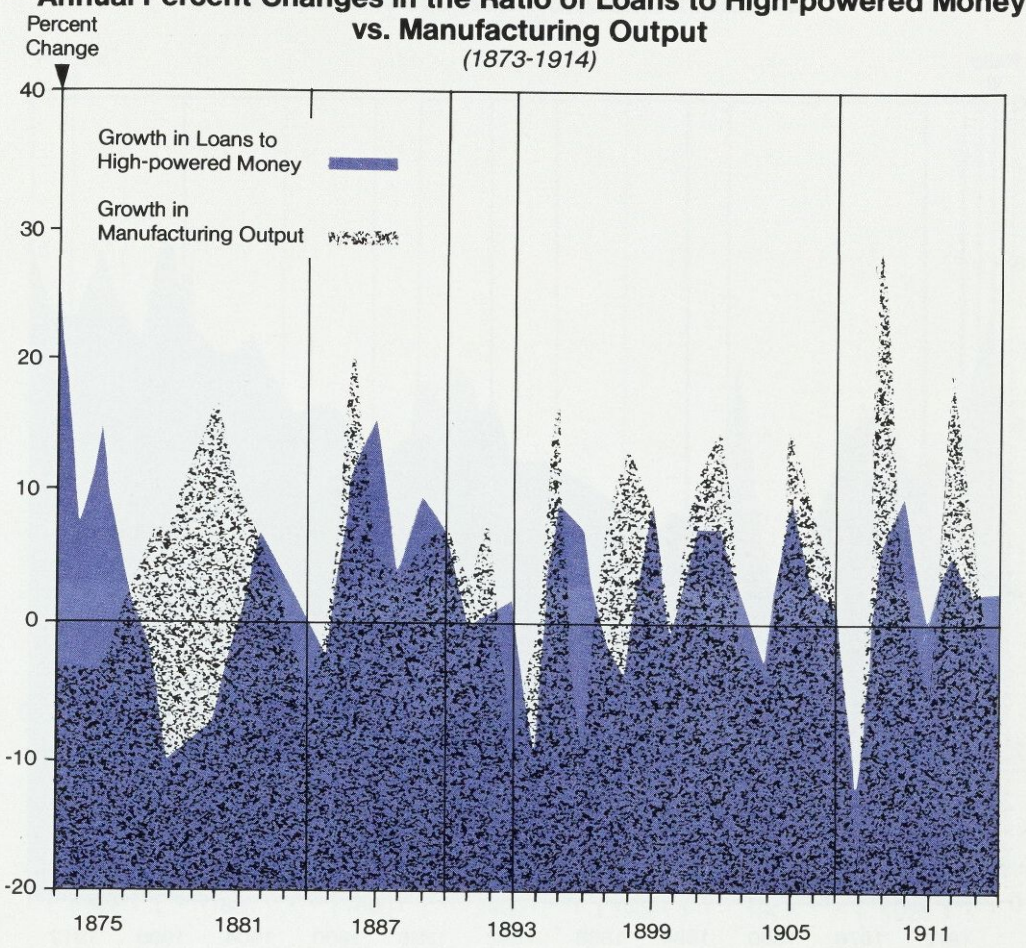
This chart shows the percentage of banks that failed from 1870 to 1932. The data for bank suspensions after 1921 were considered more reliable and not directly comparable to data of earlier periods. In addition, the series on total number of banks changes in 1896. Thus, the chart is most useful for detecting periods during which large proportions of banks failed.

One could argue that the severity of the associated recession was primarily responsible for the reduction in the loan measures, although the argument is inconclusive without further research.

Chart 3 shows the percent change in total loans relative to high-powered money in comparison to the growth rate of output from 1873 to 1914. The graph illustrates that the two measures follow similar paths over the business cycle, especially in the period after the resumption of the gold standard in 1879. These data suggest that the degree of loan contraction during the major National Banking Era panics was not much greater (and, in fact, usually was less) than the reduction in measured output in related years. In addition, the data pattern in the chart is consistent with the idea that the loan contraction occurred as an outgrowth of diminished loan demand. Real business cycle theory suggests that shocks to the real, or production, economy reduce business demand for loans, and that the financial measures contracted because of real economic conditions, not as a result of financial panic.

Chart 4 shows total loans relative to output from 1870 to 1914. The chart suggests that the level of loans relative to output increased prior to panics (note especially the panics of 1873, 1893, and 1907). Declines in the ratio are less

Chart 3.
Annual Percent Changes in the Ratio of Loans to High-powered Money vs. Manufacturing Output
(1873-1914)



Growth in manufacturing output and loans to high-powered money follow similar patterns over the business cycle.

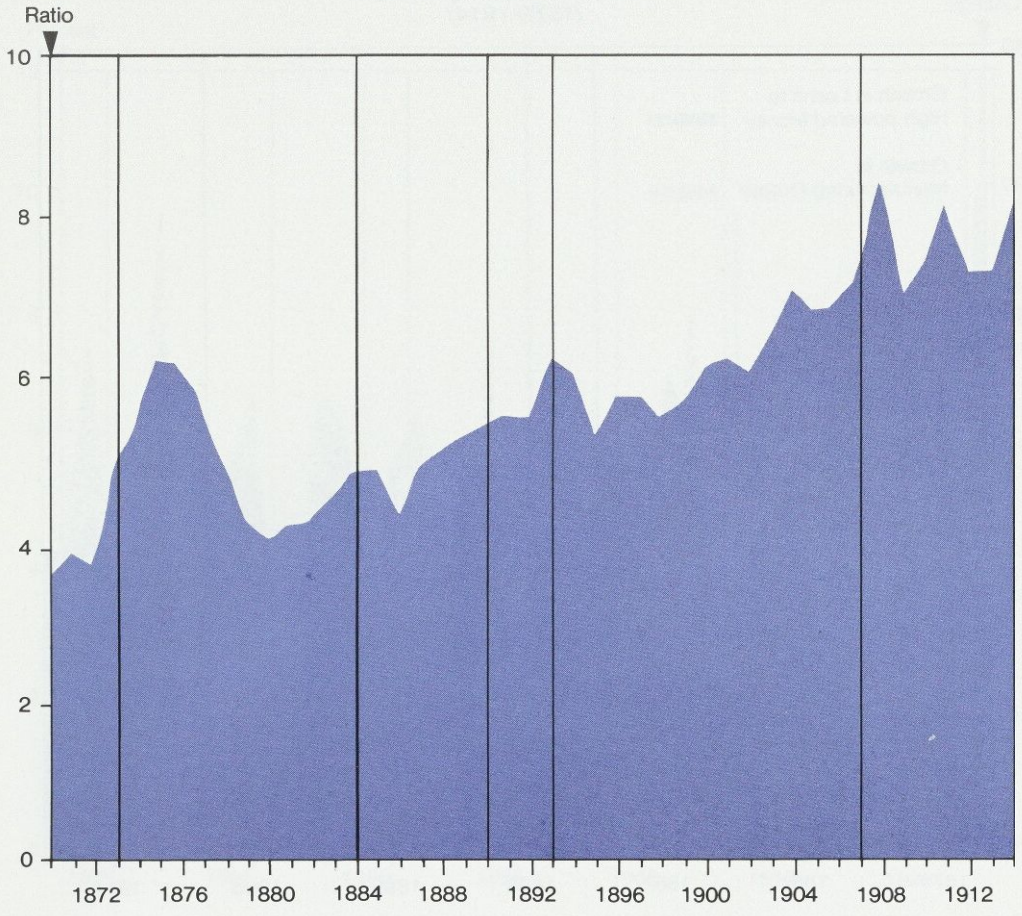
steep following panics than the conventional view might anticipate; the largest declines occur nearly two years following a panic. This pattern is consistent with the real business cycle view. That is, the ratio of loans to output increases before the onset of a panic. As the recession exerts an impact on the economy, loans contract, causing a slight decline in the measure. As the economy regains strength, output increases before loans increase, and the ratio falls again.

This interpretation of the charts and data is conjectural, of course. Yet it suggests no conclusive evidence in support of either view of the cost of bank panics. Thus, the data and the interpretation given above highlight the need for further research into the degree of loan contraction during recessions caused either by bank panics (that is, disintermediation effects) or by economic conditions (that is, diminished demand).

The Depression versus the National Banking Era: Are the Panics Similar?

Bank panics threaten the banking system with widespread bank failures, the collapse of intermediaries, and the contraction of mutually

Chart 4.
Total Bank Loans Relative to Output
(1870-1914)

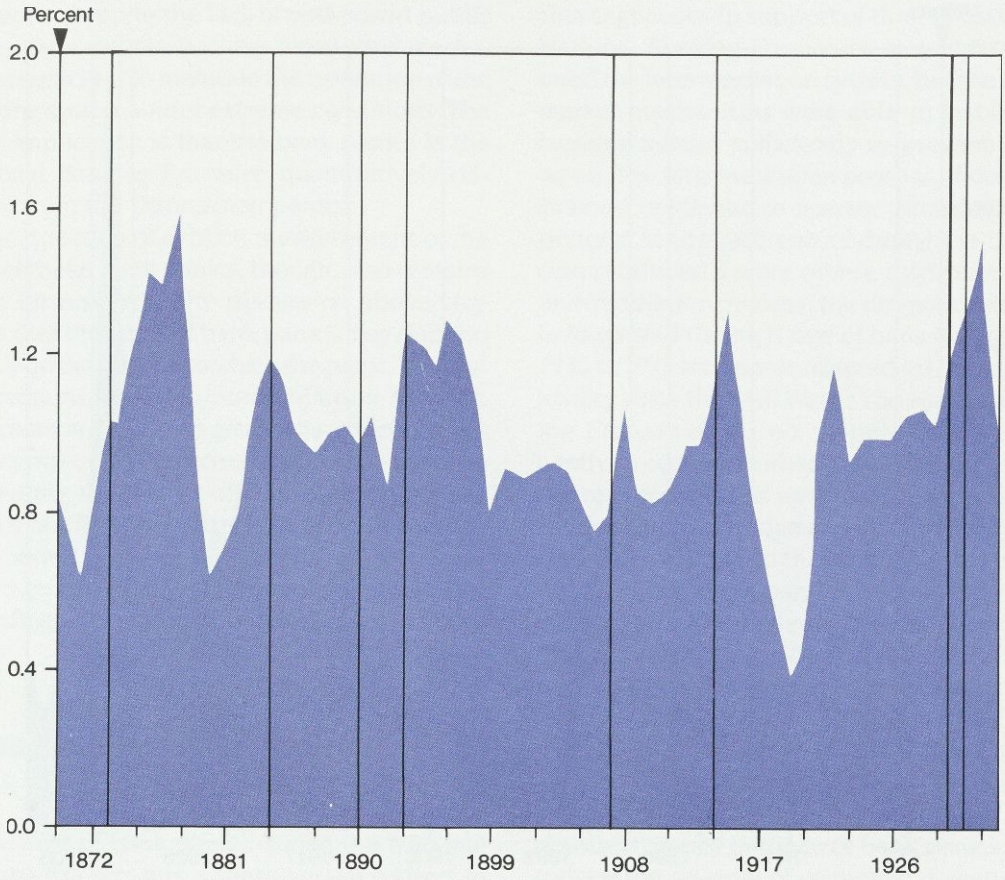


This chart shows the movement of the ratio of loans to output over the business cycle. The pattern suggests that output falls prior to a contraction in business loans.

beneficial loans. A number of economists suggest that the panics during the Great Depression provide an example of how panics can cause the banking system to collapse; the disintermediation during that period is the most frequently cited example of the cost of bank panics.[20] (Another reason for studying the Depression is that popular thought associates the term "bank panic" with the events of that period.) Yet, as suggested below, some doubt exists as to whether the panics of the Depression are directly comparable to those of the National Banking Era, especially with regard to the responses of the existing institutions to extreme liquidity demands. While the Depression occurred during a period when a central bank was in place, that bank—the Fed—was inexperienced in its role as lender of last resort and in dealing with stresses on the banking system. Nonetheless, the existence of the Federal Reserve System during the Depression provides a distinction between the institutional structures present in the panics of the two periods. In fact, the financial crises during the National Banking Era, particularly the panic of 1907, gave impetus to the establishment of the Fed in 1914.

The central bank's primary role, according to most economists at the time, was to provide an "elastic" currency, that is, to accommodate changes in depositors' liquidity preferences (as exhibited in extreme form by bank panics). In addition, central bank provision of funds to

Chart 5.
Failure Rates of Nonfinancial Businesses
(1870-1933)



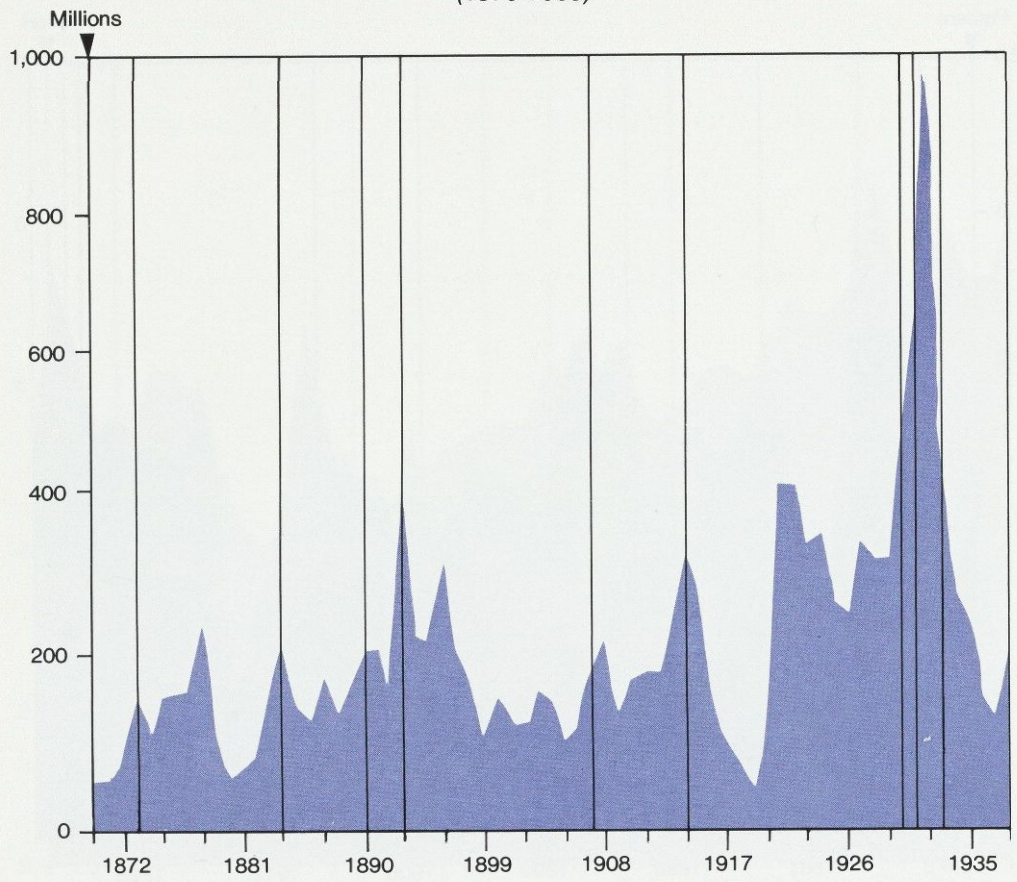
The Depression-era increase in nonfinancial business failures was not unprecedented.

establish an elastic currency would reduce the observed seasonal fluctuations in domestic interest rates during the agricultural harvest and planting seasons.[21] In theory, adequate central bank response to liquidity demands should quell panics. In fact, Friedman and Schwartz, in addition to James D. Hamilton (1987), suggest that during the Depression the Federal Reserve failed to provide adequate liquidity to the banking system.[22] Thus, the Depression-era panics may have caused a more dramatic contraction of banking services than those of the National Banking Era. Although the earlier period lacked a central bank, the behavior of private clearinghouses, which resembled a central bank's, was somewhat successful in stemming the dangers of bank panics.

A reexamination of Chart 2, which depicts bank failure rates, shows a significant increase in the rate of bank failures in the 1930s relative to the early 1920s. Most notably, Chart 1 shows that the contraction in intermediation measures during the Depression is far greater than any contraction in the pre-Federal Reserve Era. The Great Depression panics resulted in dramatically larger contractions in the banking system than the prior panics.

Nonfinancial business failure rates, plotted in Chart 5 for the period 1870 to 1933, show a serious contraction from 1930 to 1933. The rates during the Depression are comparable to those of the National Banking Era; in particular, they are quite similar to the rates during 1875-78, a period of severe banking difficulties as well.

Chart 6.
Constant Dollar Value of the Liabilities of Failed Nonfinancial Businesses
(1870-1938)



The liabilities of failed nonfinancial businesses increased prior to panics and increased to an unprecedented degree during the Depression. These liabilities have been deflated by the wholesale price index to reflect a real measure of the liabilities. The base period used in this chart is 1910-14 (1910-14 = 100).

However, the repercussions of the business failures, measured by the real liabilities of failed nonfinancial businesses shown in Chart 6, suggest that the real economic contraction during the Depression was far more serious than the prior recessions. To compare with Table 1, output of pig iron, measured from peak to trough, contracted 84.7 percent over 28 months. During the worst contraction of the National Banking Era, 1873-79, pig iron production contracted 51 percent. Thus, the data may be consistent with the idea that the severity of the real contraction led to the degree of failure in the banking system, suggested by Peter Temin (1976). This issue may be the topic of further research.

Thus, the Depression appears to present a set of bank panics with effects on the banking system much more serious than those of the National Banking Era. The panics during the time of the National Banking System do not exhibit similar degrees of bank failure or loan contraction. Despite the absence of the central bank, the banking system appeared to avoid collapse.

The discussion of the Depression suggests that bank panics, when unchecked, may have harrowing effects on the banking system that in turn may lead to substantial repercussions on the real economy. This implication, consistent with the findings of Ben S. Bernanke (1983), may

also be a topic for further research. However, the National Banking Era panics show much smaller effects on the banking system, which is likely the result of actions by private clearinghouse organizations. Despite the lack of authorized public policy tools, private bankers discovered mechanisms sufficient to maintain the operation of the banking system under extreme conditions. The main implication is that the bank panics in the National Banking Era were quantitatively different from the Depression panics.

The question of explicit measurement of the cost of these bank panics, though, also remains open for research. The discussion above suggests that the costs of bank panics may depend largely on the degree to which the panic "causes" contractions in bank intermediation services. The same approach to gauge the effect of bank panics on economic recessions may be useful in estimating the impact of Depression-era bank panics on the real contraction in output during that period. Empirical evidence on this issue would go far toward resolving ongoing debates regarding the Depression as well as bank panic costs.

Bank Panics: Unresolved Issues

The cost of bank panics during the National Banking Era remains a controversial subject in economic research. Though panics are associated with the most severe recessions, the extent to which panics reduce output needs to be quantified before their actual costs can be determined. In particular, further work on bank panics should analyze their costs apart from that of economic contractions.[23]

The evidence presented here suggests that bank panics in the National Banking Era did not approach the severity of those in the Depression, especially with respect to the effects on financial intermediation. During the National Banking Era the macroeconomic impact of banking panics appears to have been minimized by clearinghouses in support of their industry. The National Banking Era panics may have threatened the intermediation system, but the private market mechanisms were able to insulate the banking system sufficiently to prevent its collapse. The intermediation process, though constrained, continued to operate throughout panic periods. In contrast, panics during the Depression produced a more severe disruption in the intermediation process; the dramatic reduction in loans and the high rate of bank failures from 1930 to 1933 are unprecedented in United States history since the Civil War.[24] The National Banking Era panics do not appear to have been nearly as costly to either the banking system or the real economy as were the Depression panics, despite the fact that no explicit public sector institution to expand the money supply existed during these prior panics.[25] From the experience of the pre-Federal Reserve panics, the existing empirical evidence at least calls into question current perceptions of the costs of banking panics.

At the time of the National Monetary Commission (1910), experts believed that a central bank, which would increase the supply of high-powered money in times of bank panics, could reduce the severity of economic downturns by removing the costs associated with bank panics. However, the central-bank behavior of the clearinghouses during panics appeared to minimize the effect of these events on the banking system, given their limited formal central bank-like powers. With reference to our present system, central bank provision of high-powered money to extreme liquidity demands should sufficiently insulate the banking system from potential disintermediation.

Private Market Mechanisms in Response to Bank Panics

During the National Banking Era, private market innovations developed both to assist the banking system through panic-related liquidity difficulties and to moderate the economic impact of bank panics. The clearinghouses evolved as a private collective entity to ensure the survival of the banking system.[1]

Clearinghouses executed actions to preserve the continuity of the banking system and provided protection to the system as a unified group. At the onset of a systemic panic, the clearinghouse suppressed bank-specific information—that is, the publication of individual bank balance sheets was suspended. Instead, the balance sheet of the entire clearinghouse association was published to signal the clearinghouses' united effort to preserve the banking system.

Clearinghouse Loan Certificates

Bank panics threatened the entire system in the National Banking Era because, when one occurred, the widespread desire to convert demand deposits into currency could not be satisfied in a fractional reserve system without a central bank. The reserves of solvent banks could be depleted by large-scale transformation of deposits into cash, and banks could be forced to call in, or liquidate, their loans. To prevent loan contraction, the clearinghouses issued loan certificates, which were temporary loans to banks upon receipt of sufficient collateral. (See example from Atlanta on page 5.) These certificates could be used to settle clearinghouse balances, that is, to act as reserves.[2] The clearinghouse loan certificates were substituted for currency in clearinghouse settlements so that currency could be used to satisfy depositor demands for cash or meeting other obligations.

Such certificates were used extensively for settlement. For example, in June 1893, 78 percent of all clearings in New York were settled with clearinghouse loan certificates; by August 1893, they constituted 95 percent of clearings.[3]

The largest issue of clearinghouse loan certificates and other currency substitutes occurred during the panic of 1907. At that time, these certificates and other substitutes for cash such as certified checks made "payable through the clearinghouse" passed as forms of payment for transactions.[4] The 1907 panic had approximately $500 million in monetized bank assets traded as currency, nearly 4.5 percent of the measured money stock. Like deposits, however, the cash substitutes traded at a discount in comparison to currency.

If a bank failed and the collateral of that bank was insufficient to cover its clearinghouse loans outstanding, the loss was shared by all clearinghouse members in proportion to their capital. Thus, members of a clearinghouse had a strong, self-interested incentive to look carefully at collateral securities before issuing loan certificates, which amounted to as much as 75 percent of the collateral's value. Clearinghouses reserved the right to require more collateral. Also, interest rates on loans were set high enough to ensure that certificates were redeemed promptly after panics subsided.

Restriction of Convertibility of Deposits into Currency

Another mechanism employed by banks to stem panic was the restriction of bank deposits' convertibility into currency. This action impeded the ability of depositors to withdraw their deposits from the banking system. Among area banks, clearinghouses coordinated these general restrictions of convertibility, which took the form of dollar limits on conversions and cash payments only for wage disbursements, among other ways. Despite the imposition of such convertibility restrictions, the intermediation process continued in other forms. Clearinghouses continued to settle deposit accounts among banks, for example, and banks were able to undertake loans. Thus, the banking system remained operational, though in a restricted manner, to quell the threat of disintermediation.

Convertibility restrictions essentially allowed the price of currency to increase relative to deposits, thus reducing currency demand during the panic period. While the benefits of this mechanism are clear, the macroeconomic costs of convertibility restrictions remain an unsettled issue. Sprague blames restriction, or "suspension of payments" as he refers to it, for worsening economic downturns, particularly during the panic of 1907. Friedman and Schwartz note that the 1907 economic contraction appeared to worsen at about the time of the restriction. However, they suggest that the restriction of payments was a useful tool which may have prevented widespread bank failures.

One noteworthy feature of clearinghouse loan certificates and the restriction of payments is that both were illegal.[5] However, in only a few instances were these mechanisms opposed by banks, courts, or depositors.[6]

Assessing the overall role of clearinghouses, their efforts appear to have prevented serious disintermediation and contained panics in terms of costs to the banking system. The clearinghouses had a direct interest in maintaining the smooth operation of the banking system. Despite the potential for collapse in the midst of bank panics, the implementation of private market innovations preserved the fractional reserve banking system.

Notes

[1] For a more intensive examination of clearinghouses see Gorton (1985b) and Timberlake (1984).

[2] The extension of clearinghouse loan certificates is similar to a federal open market purchase of securities in that it increases "reserves" available for clearings.

[3] Myers (1931): 415.

[4] See Andrew (1908).

[5] Clearinghouse loan certificates were illegal if they were employed as a transactions medium, like currency, as they were in 1907.

[6] See Timberlake (1984) for a discussion of clearinghouse loans; see Gorton (1985a) for a discussion of suspension of payments.

Notes

[1]Currently, a substantial proportion of thrifts in the savings and loan industry operate with negative net worth, that is, their liabilities exceed their assets. Rough estimates of the cost for liquidation or merger of the insolvent institutions is approximately $50 billion.

[2]The National Banking Era is that period following the 1863 passage of the National Banking Act, which established conditions under which banks could obtain a federal charter and issue currency. During this period, and prior to establishment of the Federal Reserve System in 1914, there was no official central monetary authority, although the Independent Treasury System actively participated in the money market on occasion. For further information, see Timberlake (1978).

[3]The existence of an explicit central bank during the Depression provides a major institutional difference between these eras' panics.

[4]Kaufman (1987) presents an economic argument that bank runs help the banking system to operate more efficiently. The research does not deal explicitly with the macroeconomic effects of bank panics.

[5]Table 1 gives a quantitative description of the panics.

[6]The relationship between stock prices and depositors' perceptions of a bank's risk is as follows: since stock prices reflect the present discounted value of a business's future cash flows, a fall in stock prices indicates a perceived reduction in these flows. Depositors may view the stock price decline to imply lower cash flows to firms, which might affect the ability of bank debtors, particularly corporate borrowers, to pay their debts in a timely fashion. Thus, at a time when stock prices are declining, banks' outstanding loans may be viewed as riskier.

[7]Restrictions occurred in 1873, 1893, and 1907; clearinghouse loan certificates were used in 1873, 1884, 1890, 1893, and 1907.

[8]The conventional view of the 1907 event is that a mild business downturn became a severe recession because of the bank panic and related costs. Friedman and Schwartz (1963), Cagan (1965), Mitchell (1941), and Gilbert and Wood (1986) reflect this view. However, research to date has not compared the costs of panics against those of a recession in a manner adequate to provide conclusive evidence. Evidence on the separate costs of the panic in 1907 would be particularly useful in resolving the issue.

[9]In a first-come, first-serve framework, deposits are converted to currency at par, one depositor at a time, until bank assets are depleted.

[10]See Diamond and Dybvig (1983). In theory, depositors would not open an account at a bank if, prior to their entry into the bank, they anticipated a run.

[11]See Gorton (1988).

[12]Chari and Jagannathan (1988) present a model in which panics can occur as a result of either explanation. When long lines appear at banks, the uninformed agents in the model are unable to distinguish between an information-based run and a substantial number of agents requiring liquidity. Thus, depending upon the true reason for long lines at banks, bank panics may be either information-based or a sunspot outcome.

[13]However, determining whether an event credited as a proximate cause of the panic is considered a fundamental or nonfundamental source of the panic is difficult. For example, Sprague (1910) suggests that the failure of certain large business concerns triggered panics; these failures were viewed as fundamental causes. In the case of a bank run, the failure of a large bank or financial business may signal a general economic downturn since the size of the concern itself suggests a well-diversified portfolio. Hence, their demise indicates a reduction in the value of assets in the aggregate. An economist who believes in sunspots might consider the announcement of a large failure as nonfundamental, in the sense that it has no unambiguous impact on the economy besides shaking depositors' confidence in the banking system. Proponents of this view suggest that something special occurs during panic periods, that is, the reaction of economic agents to some external phenomenon, captured under the rubric of sunspots.

[14]See note 8.

[15]See Sprague (1910).

[16]The restriction of convertibility, however, has been credited with stifling the massive losses of deposits during the most severe panics so that the benefits might have outweighed the unmeasured costs. Friedman and Schwartz (1963) conjecture that, had a restriction been imposed in 1930, the severity of the contraction in 1929-33 might have been reduced. Restrictions, as described above, did not occur during the Depression.

[17]The panic in 1914 is less comparable because of the issue of emergency currency as provided by the Aldrich Vreeland Act of 1908. The institutional framework for this panic differed from the earlier ones as well as from Depression-era panics.

[18]Gilbert (1988) makes the point that the effects of bank panics occur within a short time frame. Accordingly, loan measures at high frequency are necessary to discern the impact of panics.

[19]*High-powered money* represents the amount of money which may be employed as bank reserve assets. Loans and deposits are measured relative to high-powered money as a way of highlighting the extent to which loans contracted (adjusted for potentially available reserves).

[20]Bernanke (1983) argues that the collapse of the banking system extended and deepened the degree of economic contraction from 1929 to 1933.

[21]Miron (1986) shows that the founding of the Federal Reserve reduced significantly the seasonality of nominal interest rates; Clark (1986) presents a conflicting viewpoint.

[22]For a contrasting view, see Temin (1976). This article does not attempt to assess the Fed's role; rather it emphasizes only that the 1930s panics were different from prior panics in the effects on the banking system.

[23]To determine whether loan reduction preceded output declines, such research should employ data of higher frequency, that is, monthly observations, to try to distinguish empirically between panic-initiated versus recession-related contractions of loans.

[24]The nearest equivalent is the three successive years of loan contraction from 1878 to 1880, as the United States resumed the gold standard, though these years were not associated with a panic.

[25]The Independent Treasury System was evolving as a monetary authority over this period. See Timberlake (1978) and Friedman and Schwartz (1963).

References

Andrew, A. Piatt. "Substitutes for Cash in the Panic of 1907." *Quarterly Journal of Economics* 23 (August 1908): 497-516.

Bernanke, Ben S. "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression." *American Economic Review* 73 (June 1983): 257-76.

Bordo, Michael D. "Explanations in Monetary History: A Survey of the Literature." *Explorations in Economic History* 23 (October 1986): 339-415.

Brunner, Karl, and Allan H. Meltzer. "Money and Credit in the Transmission Process." *American Economic Review* 78 (May 1988): 446-51.

Cagan, Philip. *Determinants and Effects of Changes in the Stock of Money 1865-1960.* National Bureau of Economic Research. New York: Columbia University Press, 1965.

Cannon, James G. *Clearing-Houses.* National Monetary Commission. Washington, D.C.: U.S. Government Printing Office, 1910.

Chari, V.V., and Ravi Jagannathan. "Banking Panics, Information and Rational Expectations." *Journal of Finance* 43 (July 1988): 749-61.

Clark, Truman A. "Interest Rate Seasonals and the Federal Reserve." *Journal of Political Economy* 94 (February 1986): 76-125.

Diamond, Douglas W., and Philip H. Dybvig. "Bank Runs, Deposit Insurance, and Liquidity." *Journal of Political Economy* 91 (June 1983): 401-19.

Federal Deposit Insurance Corporation. *Federal Deposit Insurance Corporation Annual Report 1940.* Washington, D.C., 1941.

Friedman, Milton, and Anna J. Schwartz. *A Monetary History of the United States: 1867-1960.* Princeton: Princeton University Press, 1963.

Gilbert, R. Alton. "A Re-examination of the History of Bank Failures, Contagion, and Banking Panics." Paper presented at the Federal Reserve Bank of Chicago Conference on Bank Structure and Competition, May 11, 1988.

Gilbert, R. Alton, and Geoffrey E. Wood. "Coping with Bank Failures: Some Lessons from the United States and the United Kingdom." Federal Reserve Bank of St. Louis *Review* 68 (December 1986): 5-14.

Goodfriend, Marvin, and Robert G. King. "Financial Deregulation, Monetary Policy, and Central Banking." Federal Reserve Bank of Richmond Working Paper 88-1 (April 1988).

Gorton, Gary. "Bank Suspensions of Convertibility." *Journal of Monetary Economics* 15 (March 1985a): 177-93.

_____. "Clearinghouses and the Origins of Central Banking in the United States." *Journal of Economic History* 45, no. 2 (1985b): 277-84.

_____. "Bank Panics and Business Cycles." *Oxford Economic Papers* (forthcoming, 1988).

Hamilton, James D. "Monetary Factors in the Great Depression." *Journal of Monetary Economics* 19 (March 1987): 145-69.

Jacklin, Charles J., and Sudipto Bhattacharya. "Distinguishing Panics and Information-Based Bank Runs: Welfare and Policy Implications." *Journal of Political Economy* 96 (June 1988): 568-92.

Kaufman, George G. "The Truth About Bank Runs." Federal Reserve Bank of Chicago Staff Memoranda 87-3, April 1987.

_____. "Bank Runs: Causes, Benefits, and Costs." *Cato Journal* 7 (Winter 1988): 559-87.

King, Robert G., and Charles I. Plosser. "Money, Credit, and Prices in a Real Business Cycle Model." *American Economic Review* 74 (June 1984): 363-80.

Miron, Jeffrey A. "Financial Panics, the Seasonality of the Nominal Interest Rate, and the Founding of the Fed." *American Economic Review* 76 (March 1986): 125-40.

Mitchell, Wesley C. *Business Cycles and Their Causes.* Berkeley and Los Angeles: University of California Press, 1941.

Myers, Margaret G. *The New York Money Market Volume 1: Origins and Development.* New York: Columbia University Press, 1931.

Neal, Larry. "Trust Companies and Financial Innovation, 1897-1914." *Business History Review* 45 (Spring 1971): 35-51.

Schwartz, Anna J. "Bank Runs and Deposit Insurance Reform." *Cato Journal* 7 (Winter 1988): 589-94.

Sprague, Oliver M.W. *History of Crises Under the National Banking System.* National Monetary Commission. Washington, D.C.: U.S. Government Printing Office, 1910.

Temin, Peter. *Did Monetary Forces Cause the Great Depression?* New York: W.W. Norton, 1976.

Timberlake, Richard H. *The Origins of Central Banking in the United States.* Cambridge: Harvard University Press, 1978.

_____. "The Central Banking Role of Clearinghouse Associations." *Journal of Money, Credit and Banking* 41 (February 1984): 1-15.

U.S. Bureau of the Census. *Historical Statistics of the United States: Colonial Times to 1970.* Washington, D.C., 1975.

Interest Rate Swaps: A Review of the Issues

Larry D. Wall and John J. Pringle

Interest rate swaps have gained considerable importance in capital markets in the six years since they were introduced. This article questions some of the conventional views regarding the use of interest rate swaps and presents information on swaps' pricing, risks, and regulation.

In the last two decades a myriad of new instruments and transactions have brought about significant changes in financial markets. Some of these innovations have attracted considerable publicity; stock index futures and options, for example, were an important element in the studies of the October 19, 1987, stock market crash.[1] However, not all of these new developments are well-known to the public. One recent innovation that is quietly transforming credit markets is interest rate swaps—an agreement between two parties to exchange interest payments for a predetermined period of time.

The interest rate swap market began in 1982. By 1988 the outstanding portfolios of 49 leading swap dealers totaled $889.5 billion in principal, of which $473.6 billion represented new business in 1987.[2] Reflecting their rapid growth, swaps have gained considerable importance in the capital markets. Thomas Jasper, the head of Salomon Brothers' swap department, has estimated that 30 to 40 percent of all capital market transactions involve an interest rate, foreign-exchange, or some other type of swap.[3]

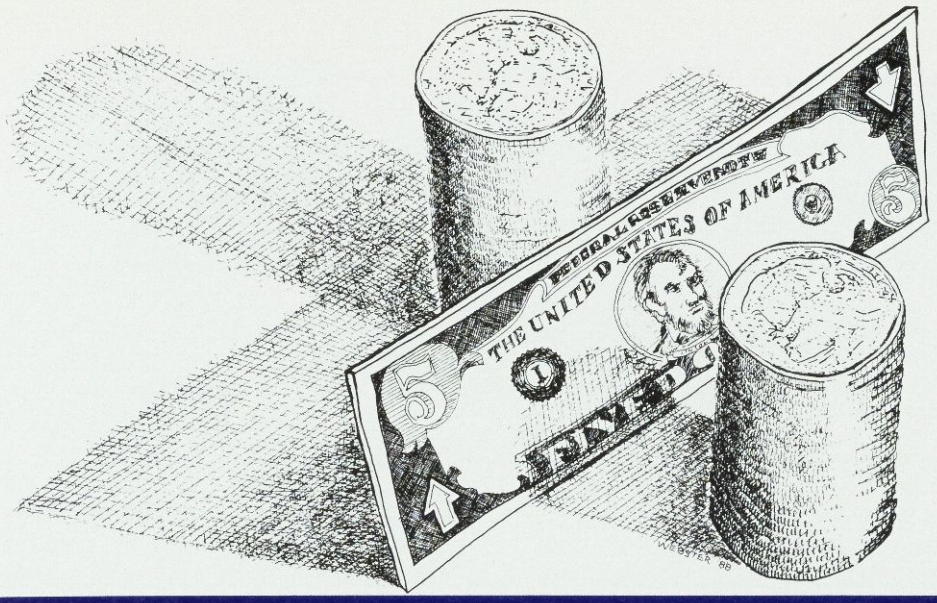
Their rapid growth is one reason swaps have generated considerable interest among academics, regulators, accountants, and market participants alike. Paramount among the questions surrounding swaps are the reasons for their use and the basis of their pricing. Regulators are also keenly concerned with the risks swaps pose to financial firms, while accountants are debating appropriate reporting. This article reviews the current literature and presents some new research on interest rate swaps. Among the issues addressed are the workings of interest rate swaps, the reasons that firms use such swaps, the risks associated with interest rate swaps, the pricing of these swaps, the regulation of participants in the swap market, and the disclosure of swaps on firms' financial statements.

What Is an Interest Rate Swap?

Interest rate swaps serve to transform the effective maturity (or, more accurately, the repricing interval) of two firms' assets or liabilities. This type of swap enables firms to choose from a wider variety of asset and liability markets without having to incur additional interest rate risk, that is, risk that arises because of changes in market interest rates. For instance, a firm that traditionally invests in short-term assets, whose

---

The authors are, respectively, a senior economist in the financial section of the Atlanta Fed's Research Department and a professor of finance at the University of North Carolina at Chapel Hill. *They wish to thank William Curt Hunter and Peter Abken for their comments.*



returns naturally fluctuate as the yield on each new issue changes, may instead invest in a long-term, fixed-rate instrument and then use an interest rate swap to obtain floating-rate receipts. In this situation, one firm agrees to pay a fixed interest rate to another in return for receiving a floating rate.

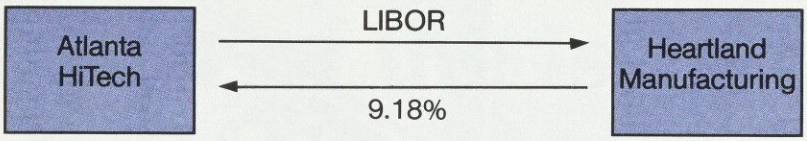
Interest rate swaps have fixed termination dates and typically provide for semiannual payments. Either interest rate in a swap may be fixed or floating.[4] The amount of interest paid is based on some agreed-upon principal amount, which is called the "notional" principal because it never actually changes hands. Moreover, the two parties do not exchange the full amounts of the interest payments. Rather, at each payment a single amount is transferred to cover the net difference in the promised interest payments.

An example of an interest rate swap is provided in Chart 1. Atlanta HiTech agrees to pay Heartland Manufacturing a floating rate of interest equal to the London Interbank Offered Rate (LIBOR), which is commonly used in international loan agreements.[5] In return, Heartland Manufacturing promises to pay Atlanta HiTech a fixed 9.18 percent rate of interest. The swap transaction is ordinarily arranged at current market rates in order for the net present value of payments to equal zero. That is, the fixed rate on a typical interest rate swap is set so that the market value of the net floating-rate payments exactly equals the market value of the net fixed-rate payments. If the swap is not arranged as a zero-net-present-value exchange, one party pays to the other an amount equal to the difference in the payments' net present value when the swap is arranged.

Chart 2 demonstrates three aspects of the swaps market: converting floating-rate debt to fixed-rate debt, converting a floating-rate asset to a fixed-rate asset, and using an intermediary in the swap transaction. In Chart 2, Widgets Unlimited can issue short-term debt but is averse to the risk that market interest rates will increase. To avoid this risk, Widgets enters into a swap in which it agrees to pay the counterparty a fixed rate of interest and receive a floating rate. This arrangement resembles long-term, fixed-rate debt in that Widgets' promised payments are independent of market interest rate changes. If market interest rates rise, Widgets will receive payments under the swap that will offset the higher cost of its short-term debt. Should market rates fall, though, under the terms of the swap Widgets will have to pay its counterparty money.

The combination of short-term debt and swaps is not identical to the use of long-term debt. One difference is that Widgets' interest payments are not truly fixed. The company is protected from an increase in market rates but not from changes in its own risk premium. The swap

Chart 1.
An Interest Rate Swap without a Dealer



In this example, Atlanta HiTech agrees to pay Heartland Manufacturing a floating rate of interest equal to the London Interbank Offered Rate. In return, Heartland agrees to pay Atlanta HiTech a fixed 9.18% rate of interest. These two companies do not actually exchange the full amounts of the interest payments, but at each payment, a single amount is transferred to cover the net difference in the promised interest payments.

would not compensate Widgets if its own cost of short-term debt increased from LIBOR-plus-0.5 percent to LIBOR-plus-0.75 percent. If the cost of short-term debt to Widgets decreased to LIBOR-plus-0.30 percent, however, the cost of the debt issue would fall by 0.20 percent. In addition, the counterparty to the combination generally does not provide the corporation with the interest rate option implicit in many bonds issued in the United States, whereby they can be called in at a fixed price regardless of current market rates. Call options allow issuers to exploit large changes in market interest rates.[6] In contrast, standard interest rate swap contracts may be unwound or canceled only at prevailing market interest rates.

The other swap user in this example illustrates a swap's potential to convert a floating rate asset to one in which the rate is fixed. OneState Insurance, a small life insurance company, has long-term, fixed-rate obligations but would like to invest part of its portfolio in short-term debt securities. OneState Insurance can invest in short-term securities without incurring interest rate risk by agreeing to a swap in which the insurer pays a floating rate of interest and receives a fixed rate of interest. This combination provides the insurance company with a stream of income that does not fluctuate with changes in short-term market interest rates.

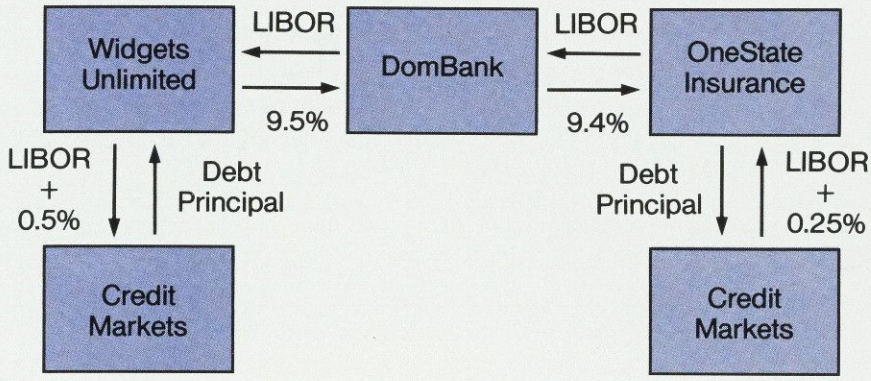
This example also demonstrates the usefulness of an intermediary in a swap. Although Widgets and OneState Insurance could have entered into a swap agreement with each other, in this example (see Chart 2), both Widgets Unlimited and OneState Insurance actually have a swap agreement with DomBank. Numerous large commercial and investment banks as well as insurance companies have entered into the swap market as intermediaries. DomBank is compensated in an amount equal to the difference between what is received on one swap and what is paid under the other one. In this example, the fee is equal to 10 basis points.

Using DomBank is advantageous to Widgets and OneState Insurance for two reasons. First, the use of an intermediary reduces search time in establishing a swap agreement. DomBank is willing to enter into a swap at any time, whereas Widgets and OneState Insurance might take several days to discover each other, even with a broker's help. Second, an intermediary can reduce the costs of credit evaluation. Either of the participants in an interest rate swap may become bankrupt and unable to fulfill their side of the contract. Thus, each swap participant should understand the credit quality of the other party. In this example, Widgets and OneState are not familiar with each other, and each would need to undertake costly credit analysis on the other before agreeing to deal directly. However, total credit analysis costs are significantly reduced since both parties know the quality of DomBank and DomBank knows their respective credit standings.

Reasons for Interest Rate Swaps

Why do two firms agree to swap interest payments? They could either acquire assets or

Chart 2.
An Interest Rate Swap with a Dealer



This chart demonstrates three aspects of the swaps market:

(1) Converting floating-rate debt to fixed-rate debt (Widgets Unlimited)
(2) Converting floating-rate assets to fixed-rate assets (OneState Insurance)
(3) Using an intermediary (DomBank) to facilitate the swap

issue liabilities with their desired repricing interval (or maturity) and eliminate the need to undertake a swap. An early explanation for swaps was that they reduce corporations' funding costs by allowing firms to exploit market inefficiencies.[7] Although this explanation remains popular with some market participants, academic analysis has questioned the ability of market inefficiencies to explain the existence and growth of the swap market. Several other explanations for the swap market's popularity that do not rely on market inefficiency have also been provided. The next section of this article presents both original research and a review of recent literature to determine alternative reasons for the surge in use of interest rate swaps.

Quality Spread Differential. The cost savings explanation of swaps claims that swaps allow corporations to arbitrage quality spread differentials. A *quality spread* is the difference between the interest rate paid for funds of a given maturity by a high-quality firm—that is, one with low credit risk—and that required of a lower-quality firm. The quality spread *differential* is the difference in quality spreads at two different maturities. Table 1 provides the calculation of the quality spread differential based on the example provided in Chart 1. Atlanta HiTech, which has a AAA rating, can obtain short-term financing at six-month LIBOR-plus-0.20 percent or fixed-rate financing at 9.00 percent. Heartland Manufacturing can obtain floating-rate funding at six-month LIBOR-plus-0.70 or fixed-rate funds at 10.20 percent. For floating-rate funding, the quality spread, or difference in rates, between the two firms is 50 basis points, but it widens to 120 basis points for fixed-rate funding. The difference in quality spread, or the quality spread differential, in this example is 70 basis points.

The quality spread differential may be exploitable if Atlanta HiTech desires floating-rate funds and Heartland Manufacturing seeks a fixed rate. Table 2 shows how the quality spread differential is exploited through an interest rate swap. Atlanta HiTech issues fixed-rate debt, and Heartland issues floating-rate debt. Then the two firms enter into an interest rate swap. The net result is that Atlanta HiTech obtains funds at LIBOR minus 18 basis points and Heartland obtains fixed-rate funds at 9.88 percent. Compared with their cost of funds had they not used the interest rate swap strategy, this result represents a 38 basis point savings for Atlanta HiTech and a 32 basis point savings for Heartland. Note that the division of the gain in this

Table 1.
Numerical Example of a Quality Spread Differential

	Atlanta HiTech	Heartland Manufacturing	Quality Spread
Credit rating	AAA	BBB	
Cost of Raising Fixed-Rate Funding	9.00%	10.20%	1.20%
Cost of Raising Floating-Rate Funding	6-month LIBOR plus 0.20%	6-month LIBOR plus 0.70%	0.50%
Quality Spread Differential			0.70%

example is arbitrary and that the two parties could split the gains differently. However, the total gains to the swapping parties will always equal the quality spread differential—70 basis points in this example.

Table 2 clearly demonstrates the ability of swaps to help exploit apparent arbitrage opportunities. However, some observers question whether arbitrage opportunities actually exist. Stuart Turnbull (1987) argues that swaps are zero-sum games in the absence of market imperfections and swap externalities. He also suggests that quality spread differentials may arise for reasons that are not subject to arbitrage. Clifford W. Smith, Charles W. Smithson, and Lee Macdonald Wakeman (1986) note that, even if quality spread differential arbitrage were possible, such activity by itself would not explain swap market growth. In fact, the annual volume of new swaps should be declining as arbitrage becomes more effective.

If the quality spread differential is not entirely the result of market inefficiencies, why does it exist? In a 1987 research paper, the authors of this article point out that quality spread differentials could arise for a number of reasons, including differences in expected bankruptcy costs. Because the expected discounted value of bankruptcy-related losses increases at a faster pace for lower-rated corporations than for higher-rated ones, quality spreads increase with maturity. In this case, the lower initial cost of swap financing is offset by higher costs later.

Alternatively, Jan G. Loeys (1985) suggests that quality spread differentials could arise as risk is shifted from creditors to shareholders. Creditors have the option of refusing to roll over their debt if the firm appears to be riskier than when the debt was incurred, and short-term creditors have more opportunities to exercise this option. Thus, the creditors of a firm that issues short-term debt bear less risk than the creditors of a firm that issues long-term debt. If the creditors of firms that issue short-term debt bear less risk, the equity holders and long-term creditors necessarily bear more risk.

A third possible explanation for the quality spread differential involves differences in short- and long-term debt contracts. Long-term contracts frequently include a variety of restrictive covenants and may incorporate a call option that is typically not present in short-term debt contracts. The differences in these contract provisions may be reflected in the interest rates charged on various debt contracts. For example, Smith, Smithson, and Wakeman point out that the long-term corporate debt contracts issued by U.S. firms in domestic markets typically have a call provision that is not adjusted for changes in market interest rates. However, long-term debt contracts issued in the Eurobond markets frequently have call provisions that adjust call prices for market rate changes. Thus, quality spread differentials will reflect differences in contract terms if they are calculated using domestic U.S. market rates for lower-quality firms and Eurobond rates for higher-quality firms.

In a forthcoming paper, one of the authors of this article suggests that the quality spread dif-

Table 2.
Numerical Example of a Swap's Ability to Reduce a Firm's Cost of Funding

	Atlanta HiTech	Heartland Manufacturing
Direct Funding Cost		
Fixed-rate funds raised directly by Atlanta HiTech	(9.00%)	
Floating-rate funds raised directly by Heartland		(6-month LIBOR + 0.70%)
Swap Payments		
Atlanta HiTech pays Heartland floating rate	(LIBOR)	LIBOR
Heartland pays Atlanta HiTech fixed rate	9.18%	(9.18%)
All-in cost of funding	LIBOR - 0.18%	9.88%
Comparable cost of equivalent direct funding	LIBOR + 0.20%	10.20%
Savings	38 basis points	32 basis points

ferential may reflect differences in the agency costs associated with short- and long-term debt. Agency costs arise because managers, owners, and creditors have different interests, and managers or owners may take actions that benefit themselves at the expense of the other parties and at the expense of total firm value. In particular, Larry D. Wall notes that the owners of firms that issue long-term, noncallable debt create an incentive to underinvest and to shift investments from low-risk to high-risk projects.[8] A firm may underinvest in new projects because most of the benefit of some projects is received by creditors in the form of a reduced probability that the firm will default. Owners will prefer a high-risk project to a low-risk project because they receive the gains on successful high-risk projects while creditors may suffer most of the losses if the projects fail. Creditors recognize the incentives created by long-term debt and demand a higher risk premium in compensation. The problems created by long-term debt may be reduced or eliminated by short-term debt, that is, debt which matures shortly after the investment decision.[9] An interest rate swap allows lower-quality firms to issue short-term debt while avoiding exposure to changes in market interest rates. Thus, the combination of short-term debt and swaps may be less costly than long-term debt.

In their 1987 paper, the authors also point to another agency cost—that of liquidating insolvent firms—which may be reduced by using short-term debt. Insolvent firms have an incentive to underinvest because, according to David Mayers and Clifford W. Smith (1987), creditors receive almost all of the benefit. Creditors of these firms can reduce the costs associated with underinvestment by taking control of the firm as soon as possible after the firm becomes insolvent. However, creditors may not gain control of a firm until it fails to make a promised debt payment. Short-term debt may hasten creditors' gaining control when a firm has adequate funds to pay interest but lacks the resources to pay interest on its debt and repay the principal.

According to Wall and John J. Pringle, the quality spread differential is not exploitable to the extent that it arises from differences in the expected costs of bankruptcy, shifts in risk from creditors to equityholders, or actual differences in contract terms. However, the quality spread differential can be exploited to the extent that it arises from agency costs. Moreover, arbitrage may eliminate differentials that arise from market inefficiencies, whereas one firm's swap does not reduce the potential agency cost savings to another firm. Thus, agency cost explanations could provide at least a partial explanation for the continuing growth of the swap market.

An important question facing the quality spread differential-based explanations is the extent to which the differential reflects exploitable factors. The authors note that the various explanations of the quality spread differential are not mutually exclusive. For example, if the differential is 70 basis points, then perhaps only 30 basis points may be exploitable.

One empirical study that has some bearing on the quality spread differential is by Robert E. Chatfield and R. Charles Moyer (1986). This study examines the risk premium on 90 long-term puttable bonds issued between July 24, 1974, and August 2, 1984, and a control sample of 174 nonputtable bonds. The put option on long-term, floating-rate debt gives creditors the option to force the firm to repay its debt if the firm becomes riskier.[10] The study finds that the put feature reduces the rate that the market requires on long-term debt by 89 basis points for the bonds in the sample. Chatfield and Moyer provide strong evidence that at least part of the quality spread differential does not arise due to inefficiencies in the markets for short- and long-term debt. However, the observed savings arising from the put feature may be attributable to some of the factors discussed earlier, including bankruptcy costs, risk shifting from creditors to equityholders, and agency costs. Thus, the Chatfield and Moyer results cannot be used to determine the magnitude of agency-cost savings available through interest rate swaps.

Other Explanations. Several explanations for the increased use of the interest rate swap market which do not depend on exploiting the quality spread differential are available. One is that swaps may be used to adjust the repricing interval (or maturity) of a firm's assets or liabilities in order to reduce interest rate risk. For example, a firm may start a period with an acceptable degree of exposure to changes in market interest rates. Subsequently, though, it desires a change in its exposure because of shifts in its product environment or in the volatility of interest rates. Swaps provide a low-cost method of making immediate changes in exposure to market interest rates. For example, suppose that a firm is initially fully hedged with respect to interest rate changes but that a subsequent change in its product markets increases its revenues' sensitivity to interest rates. This company may be able to offset the increased sensitivity by entering into a swap whereby it agrees to pay a floating rate of interest, which better matches revenues, and receives a fixed rate of interest to cover payments on its outstanding debt.[11]

Smith, Smithson, and Wakeman (1987a) suggest that swaps may allow firms greater flexibility in choosing the amount of their outstanding debt obligations. In particular, reducing debt levels may be a problem if swaps are not used. To reduce its outstanding long-term debt, a firm may need to pay a premium (that is, the call price may exceed the current market value of the debt). On the other hand, if it issues short-term debt without a swap, it may be exposed to adverse changes in market interest rates. However, by issuing a combination of short-term debt and swaps, the firm avoids the need to pay a premium to retire debt and simultaneously eliminates its exposure to changes in market interest rates.

"Swaps provide a low-cost method of making immediate changes in exposure to market interest rates."

Marcelle Arak and others (1988) present a general model in which firms will choose the combination of short-term debt and interest rate swaps over short-term debt; long-term, fixed-rate debt; and long-term, variable-rate debt. The model suggests that the combination will be preferred if the firm expects higher risk-free interest rates than does the market, the firm is more risk-averse than the market with respect to changes in risk-free rates, the firm expects its own credit spread to be lower than that expected by the market, and the borrower is less risk-averse to changes in its credit spread than is the market. The researchers also note that not all four conditions need to be met at the same time.

Arak and her colleagues' model is very broad and could include the agency cost models as subsets. An additional implication of their model is that firms may use swaps to exploit information asymmetries. Suppose that a company desires fixed-rate financing to fund a project. It could issue long-term debt, but, if management thought that the company would soon receive a better credit rating, issuing long-term debt would force the firm to pay an excessive risk premium. By issuing short-term debt, the firm could obtain a lower cost of long-term funds in the future when its credit rating improved. However, this strategy would expose the firm to interest rate risk. By instead issuing a combination of short-term debt and interest rate swaps the firm's managers can exploit their information about the true credit risk of the firm without exposing the organization to changes in market interest rates.[12] When the good news comes, the firm's floating rate payments to outside creditors falls while its payments under the swap remain the same, thus reducing the firm's total financing costs. One important limitation of this explanation is that it applies only to firms that expect improved credit ratings in the near future.

"One limitation of the nonarbitrage explanation of swaps is that they provide only one reason for floating-rate payers to enter into swaps, namely, the ability to change the maturity structure of the firm's assets and liabilities."

In yet another alternative to the quality spread differential explanation, Loeys points out that swaps may allow firms to exploit differences in regulation. He notes that Securities and Exchange Commission (SEC) registration requirements raise the cost of issuing bonds in the United States by approximately 80 basis points above the cost of issuing bonds in the Eurobond markets. However, not all firms have access to the Eurobond market. Thus, the costs of obtaining fixed-rate funding may be reduced by having companies with access to the Eurobond market issue long-term debt and then enter into a swap with firms that lack access to but prefer fixed-rate funding. Smith, Smithson, and Wakeman, observing that a variety of regulations differ across countries in ways that can be exploited, refer to this explanation as tax and regulatory arbitrage.

A Review of the Explanations. The various explanations of interest rate swaps discussed above are not mutually exclusive, since different firms may use swaps for different reasons. One of the most popular explanations of interest rate swaps—that they allow arbitrage of the quality spread differential—is also the explanation with the weakest theoretical support. The other explanations are all theoretically plausible. Unfortunately, published empirical evidence on the reasons for using swaps is almost nonexistent. Linda T. Rudnick (1987) provides anecdotal evidence that reductions in financing costs are one of the primary reasons that firms enter into interest rate swaps. In research currently in progress, the authors of this article are examining the financial characteristics of firms that reported the use of swaps in the notes to their 1986 financial statements.

One limitation of the nonarbitrage explanations of swaps is that they provide only one reason for floating-rate payers to enter into swaps, namely, the ability to change the maturity structure of the firm's assets and liabilities. Moreover, this single explanation fails to provide a sound reason for a firm to issue long-term, fixed-rate debt and then enter into a swap agreement. If a company does issue long-term debt and then enters into a swap agreement as a floating-rate payer, either fixed-rate payers are sharing part of their gains with the floating-rate payer or floating-rate payers obtain some as yet undiscovered benefit from swaps.

Risks Associated with Swaps

Interest rate swap contracts are subject to several types of risk. Among the more important are interest rate, or position, risk and credit risk. Interest rate risk arises because changes in market interest rates cause a change in a swap's value. Credit risk occurs because either party

may default on a swap contract. Both participants in a swap are subject to each type of risk.

Interest Rate Risk. As market interest rates change, interest rate swaps generate gains or losses that are equal to the change in the replacement cost of the swap. These gains and losses allow swaps to serve as a hedge which a company can use to reduce its risk or to serve as a speculative tool that increases the firm's total risk. A swap represents a hedge if gains or losses generated by the swap offset changes in the market values of a company's assets, liabilities, and off-balance sheet activities such as interest rate futures and options. However, a swap is speculative to the extent that the firm deliberately increases its risk position to profit from predicted changes in interest rates.

The determination of whether and how to use a swap is straightforward for a firm that is a user, one which enters into a swap agreement solely to adjust its own financial position.[13] First, the company evaluates its own exposure to future changes in interest rates, including any planned investments and new financings. Then, its views on the future levels and volatility of interest rates are ascertained. Firms wishing greater exposure to market rate changes enter into swaps as speculators. Alternatively, if less exposure is desired, the company enters into a swap as a hedge.

The problem facing a dealer—a firm that enters into a swap to earn fee income—is more complicated. A dealer may enter into a swap to hedge changes in market rates or to speculate in a manner similar to users. However, a dealer may also enter a swap to satisfy a customer's request even when the dealer wants no change in its interest rate exposure.[14] In this case, the dealer must find some way of hedging the swap transaction.

The simplest hedge for one swap transaction by a dealer is another swap transaction whose terms mirror the first swap. An example of this arrangement is given in Chart 2, in which the dealer's promised floating-rate payments of LIBOR to Widgets Unlimited is exactly offset by OneState's promise to pay LIBOR. Similarly, the fixed payments to OneState Insurance are covered by Widgets' promised fixed payments, and DomBank is left with a small spread. This combination of swaps is referred to as a *matched pair.* One problem with relying on matched pairs to eliminate interest rate risk is that the dealer is exposed to interest rate changes during the time needed to find another party interested in a matching swap. Another problem is that the dealer may be relatively better at arranging swaps with fixed-rate payers and, thus, have problems finding floating-rate payers to execute the matching swap (or vice versa).

An alternative to hedging one swap with another swap is to rely on debt securities, or on futures or options on debt securities, to provide a hedge. Steven T. Felgran (1987) gives an example whereby a dealer agrees to pay a fixed rate and receive a floating rate from a customer. The dealer uses the floating-rate receipts to support a bank loan, which is then used to purchase a Treasury security of the same maturity and value as the swap. Any gains or losses on the swap are subsequently offset by losses or gains on the Treasury security. Felgran does note one problem with using Treasury securities to hedge a swap: the spread between them and interest rate swaps may vary over time.[15] According to Felgran, dealers are unable to hedge floating-rate payments perfectly. Sources of risk include differences in payment dates and floating-rate reset days, disparities in maturity and principal, and "basis risk," that is, the risk associated with hedging floating payments based on one index with floating payments from another index.

"One problem with relying on matched pairs to eliminate interest rate risk is that the dealer is exposed to interest rate changes during the time needed to find another party interested in a matching swap."

Using the futures market to hedge swaps also entails certain drawbacks. Wakeman points to the "additional risk created by the cash/futures basis volatility." He also notes that matching the fixed-rate payments from a swap with the Treasury security of the closest maturity may not be optimal when the Treasury security is thinly traded. As an alternative he suggests that "on-

the-run" (highly liquid) Treasury issues be used for hedging. The investment amount and type of issues to be used may be determined applying a duration matching strategy. Still, this approach is unlikely to eliminate interest rate risk for the swap dealer since duration matching provides a perfect hedge only under very restrictive assumptions.

Credit Risk. Aside from interest rate and basis risk, both interest rate swap participants are subject to the risk that the other party will default, causing credit losses. The maximum amount of the loss associated with this credit risk is measured by the swap's replacement cost, which is essentially the cost of entering into a new swap under current market conditions with rates equal to those on the swap being replaced.

"Aside from interest rate and basis risk, both interest rate swap participants are subject to the risk that the other party will default, causing credit losses."

A simple example can demonstrate the credit risk of swaps. Suppose that Widgets Unlimited agrees to pay a fixed rate of 9.5 percent to DomBank, and in return Widgets will receive LIBOR on a semiannual basis through January 1994. If the market rate on new swaps maturing in January 1994 falls to 8 percent, the swap has positive value to DomBank—that is, DomBank would have to pay an up-front fee to entice a third party to enter into a swap whereby DomBank receives a fixed rate of 9.5 percent. DomBank will suffer a credit loss if Widgets becomes bankrupt while the rate is 8 percent and pays only a fraction of its obligations to creditors. On the other hand, if the rate on swaps maturing in January 1994 rises to 10.5 percent and DomBank defaults, Widgets may suffer a credit loss.

This example demonstrates that both of the parties to an interest rate swap may be subject to credit risk at some time during the life of a swap contract. However, only one party at a time may be subject to credit risk. If rates in the above example fall to 8 percent, DomBank can suffer credit losses, but Widgets is not exposed to credit risk. That is, the swap has negative value to Widgets when the market rate is 8 percent; Widgets would be happy to drop the swap agreement if DomBank were to go bankrupt. In practice, though, Widgets is unlikely to receive a windfall from DomBank's failure. The swap contracts may provide for Widgets to continue making payments to DomBank or, if the contract is canceled, provide for Widgets to pay DomBank the replacement cost of the swap.[16]

One way of reducing the credit risk associated with swaps is for the party to whom the swap has negative value to post collateral equal to the swap's replacement cost. Some swaps provide for collateral but most do not. According to Felgran, swap collateralization is of uncertain value because such documentation has yet to be adequately tested in court. Moreover, some parties that would be happy to receive collateral are themselves reluctant to post it when swap rates move against them. Certain commercial banks in particular have a strong incentive to avoid collateralization. Such institutions take credit risks in the ordinary course of business and are comfortable with assuming credit risk on interest rate swaps. Investment bankers, on the other hand, are typically at risk for only short periods of time with their nonswap transactions and are not as experienced in evaluating credit risk. Thus, the continued presence of credit risk in the swap market strengthens the relative competitive position of commercial banks.

Several simulation studies have explored the magnitude of the credit risk associated with individual swaps or matched pairs of swaps. Arak, Laurie S. Goodman, and Arthur Rones (1986) examine the credit exposure—or maximum credit loss—of a single interest rate swap to determine the amount of a firm's credit line that is used by a swap.[17] They assume that short-term rates follow a random walk with no drift; in other words, the change in short-term rates does not depend on the current level of or on past changes in short-term rates. After the swap begins, the floating-rate component of the swap is assumed to move one standard deviation each year in the direction of maximum credit exposure. The standard deviation of interest

rates is calculated using 1985 data on Treasury issues. Their results suggest that until the swap matures, maximum annual credit loss on swaps is likely to be between 1 and 2 percent of notional principal.

J. Gregg Whittaker (1987b) investigates the credit exposure of interest rate swaps in order to develop a formula for swap pricing. Using an options pricing formula to value swaps and assuming that interest rates follow a log-normal distribution and volatility amounts to one standard deviation, Whittaker finds that the maximum exposure for a 10-year matched pair of swaps does not exceed 8 percent of the notional principal.

The Federal Reserve Board and the Bank of England studied the potential increase in credit exposure of a matched pair of swaps.[18] The study's purpose is to develop a measure of the credit exposure associated with a matched pair of swaps that is comparable to the credit exposure of on-balance sheet loans. The results are used to determine regulatory capital requirements for interest rate swaps. The joint central bank research assumes that for regulatory purposes the swaps' credit exposure should be equal to its current exposure, that is, the replacement cost plus some surcharge to capture potential increases in credit exposure. The investigation uses a Monte Carlo simulation technique to evaluate the probabilities associated with different potential increases in credit exposure.[19] Interest rates are assumed to follow a log-normal, random-walk distribution with the volatility measure equal to the 90th percentile value of changes in interest rates over six-month intervals from 1981 to mid-1986. The credit exposure of each matched pair is calculated every six months and the resulting exposures are averaged over the life of the swap. The study concludes with 70 percent confidence that the average potential increase in credit exposure will be no greater than 0.5 percent of the notional principal of the swap per complete year; at the 95 percent confidence level it finds the average credit risk exposure to be no greater than 1 percent of the notional principal.

Terrence M. Belton (1987) follows this line of research in analyzing the potential increase in swap credit exposure, but he uses a different method of simulating interest rates. Belton estimates a vector autoregressive model over the period from January 1970 to November 1986 to estimate seven different Treasury rates. (Vector autoregressive models estimate current values of some dependent variables, in this case interest rates at various maturities, as a function of current and past values of selected variables. Belton uses current and past interest rates as explanatory variables.) Changes in the term structure are then simulated by drawing a set of random errors from the joint distribution of rates and solving for future values at each maturity. In effect, Belton's procedure allows the historical shape in the yield curve and historical changes in its level and shape to determine the value of various interest rates in his simulations. Belton's analysis differs from prior studies in that he uses stochastic, or random, default rates rather than focusing exclusively on maximum credit exposure. His results imply that the potential increase in credit exposure of swaps caused by rate changes can be covered by adding a surcharge of 1 percent to 5 percent of the notional principal to the current exposure for swaps with a maturity of 2 to 12 years.

"[S]everal ways of estimating the increased credit exposure associated with matched pairs of swaps . . . might not be applicable to swap portfolios."

While the foregoing analyses suggest several ways of estimating the increased credit exposure associated with matched pairs of swaps, these approaches might not be applicable to swap portfolios. Starting with the assumption that dealers use matched pairs of swaps and that the swaps are entered into at market interest rates, Wall and Kwun-Wing C. Fung (1987) note that the fixed rate on the matched pairs will change over time as interest rates move up and down. Wall and Fung point out that if rates have fluctuated over a certain range, a bank may have credit exposure on some swaps in which it pays

a fixed rate and on others in which it pays a floating rate. In this case, an increase in rates generates an increase in the credit exposure of swaps in which the dealer pays a fixed rate but also causes a decrease in the exposure of swaps in which the dealer pays a floating rate. Similarly, a decrease in rates will increase the exposure on the swaps in which the dealer pays a floating rate and decrease exposure on those in which the dealer pays a fixed rate.[20]

In a more empirical vein, Kathleen Neal and Katerina Simons (1988) simulate the total credit exposure of a portfolio of 20 matched pairs of interest rate swaps. The initial portfolio is generated by originating one pair of five-year swaps per quarter from the fourth quarter of 1981 through the fourth quarter of 1986 at the prevailing interest rate. For the period 1987 through 1991, the interest rates are generated randomly based on the volatility observed in historical rates.[21] The maturing matched pair is dropped each quarter from the sample and a new five-year swap is added to the portfolio at the simulated interest rates. After running "several thousand" simulations and assuming a portfolio of interest rate swaps with a notional principal of $10 million, Neal and Simons find the average maximum credit loss to be $185,000 and the 90th percentile exposure, $289,000.

"[T]he maximum exposure on a matched pair of swaps is unlikely to exceed a small fraction of the swap's notional principal."

No single correct approach is available to determine the expected credit exposure on an interest rate swap. The results may be influenced by the assumptions that are made about the distribution of future interest rates. However, several studies using different methodologies have reached the conclusion that the maximum exposure on a matched pair of swaps is unlikely to exceed a small fraction of the swap's notional principal. Moreover, the analysis of a single matched pair may overstate the expected exposure of a swap portfolio. Therefore, additional simulations of portfolio analysis risk may be appropriate to determine the risk exposure of swap dealers. Dominique Jackson (1988) reports that a survey of 71 dealers showed that 11 firms had experienced losses with "total write-offs accounting for $33 million on portfolios which totaled a notional (principal) of $283 billion."

How Should Swaps Be Priced?

In addition to considering the reasons for engaging in swaps and the attendant risks, the literature on interest rate swaps addresses two important pricing questions: (1) how should the overall value of a swap be established, and (2) what spread between higher-rated and lower-rated firms is appropriate to cover swap credit risk? James Bicksler and Andrew H. Chen (1986) provide an analysis of a swap's overall value. They suggest that an interest rate swap be treated as an exchange of a fixed-rate bond for a floating-rate bond. According to this approach, the fixed-rate payer has in effect sold a fixed-rate bond and purchased a floating-rate bond. Bicksler and Chen suggest that pricing an interest rate swap is essentially the same as pricing a floating-rate bond.

Insight into the appropriate spreads between high- and lower-rated firms can be obtained by comparing the quality spreads on bonds versus those on swaps. Patrick de Saint-Aignan, the chairman of the International Swap Dealers Association and a managing director at Morgan Stanley, remarks that, "There's a credit spread of 150 basis points in the loan market but of only 5 to 10 basis points in swaps."[22] However, Smith, Smithson, and Wakeman (1987a) note that the risk exposure, as a proportion of notional principal for swaps, is far less than the exposure on loans. Lenders have credit exposure for all principal and interest payments promised on the loan, whereas a swap participant's credit exposure is limited to the difference between two interest rates. Thus, the credit risk borne by swap dealers is a far smaller proportion of the (notional) principal than that assumed by lenders.

Belton also addresses the question of appropriate spreads to compensate for swaps' credit risk by considering the default premium required to compensate one party for the expected value of the default losses from the other. For low-risk firms—companies with a 0.5 percent probability of default in one year and zero payment on default—the required premium is 0.70 basis points for a two-year swap and 3.02 basis points for a ten-year swap. For below-investment-grade firms—with a 2 percent probability of default per year and zero payment on default—the required premium ranges from 2.83 basis points for a two-year swap to 14.24 basis points for a ten-year swap. The differences in default premium of 2 to 14 basis points found by Belton for swaps is approximately in the 5 to 10 basis point range of the credit spread charged in swaps markets.

Whittaker (1987b) applies his options pricing method for calculating swaps' credit risk to the issue of swap pricing. He views a swap as a set of options to buy and sell a fixed-rate bond and a floating-rate bond. In his model default by the fixed-rate payer is analogous to a decision to exercise jointly a call option to purchase the fixed-rate bond and a put option to sell a floating-rate security. From this perspective, the decision to exercise one option is not independent of the decision to exercise another. Thus, one option may be exercised even though it is unprofitable to do so, provided that it is sufficiently profitable to exercise the other option. He then estimates the value of these options and suggests that "the market does not adequately take account of the exposure and pricing differentials across varying maturities." However, Whittaker claims that his results may not necessarily imply that the market is on average underpricing swap credit risk.

One limitation of the above studies is that they fail to combine into an integrated framework the distribution of interest rates and the credit risk associated with swaps. A conceptually superior approach to interest rate swap valuation begins by separating the payments. The result looks like a series of forward contracts in which the floating-rate payer agrees to buy a zero-coupon Treasury security from the fixed-rate payer. This forward contract may then be decomposed into two options, one in which the floating-rate payer buys a call from the fixed-rate payer on the zero-coupon Treasury security and one in which the floating-rate payer sells a put on the security to the fixed-rate payer.

Unfortunately, the options derived from this analysis cannot be valued using standard options pricing formulas because both options are subject to credit risk. Herb Johnson and René Stulz (1987) analyze the problem of pricing a single option subject to default risk. However, swaps are a series of linked options whose payments in one period are contingent on the terms of the swap contract being fulfilled in prior periods. Thus, as Smith, Smithson, and Wakeman (1987b) suggest, to derive an optimal default strategy for swaps requires analysis of compound option issues similar to those discussed by Robert Geske (1977) for corporate coupon bonds.

"[T]he interest rate swap market is subject to remarkably little regulation and does not have a central exchange or even a central clearing mechanism."

The theoretical and pedagogical advantages of splitting a swap into a series of default-risky options are that the decomposition clearly illustrates the primary determinants of swap value: the distribution of the price of default-risk free bonds (interest rates), the possibility of default by either participant, and the linked nature of the options through time. The practical problem with the decomposition is that developing a pricing formula is not straightforward.

Requirements Imposed on Swaps

Regulation. In contrast to most other financial markets in the United States, the interest rate swap market is subject to remarkably little regulation and does not have a central exchange or even a central clearing mechanism. The terms

of a swap agreement are determined by the parties to the contract and need not be disclosed. Nor does the existence of a swap need to be disclosed at the time the agreement is executed. (The financial statements' disclosure requirements for individual firms are discussed later in this article.) While certain regulators have a general responsibility for the financial soundness of some participants in the swap market, no public or private organization has overall responsibility for its regulation.

In general, this lack of regulation has not resulted in any major problems. Legislatures could make one potentially valuable contribution, though, by providing specific statutory language on the treatment of swap contracts when one party defaults. Market participants are currently waiting for the courts to determine if default procedures will follow the language of the swap contract or if the courts will impose some other settlement procedure. For example, many swaps are arranged under a master contract between two parties that provides for the netting of payments across swaps. This clause is desirable because it reduces the credit risk borne by both parties. However, the risk exists that a bankruptcy court will ignore this clause and treat each swap separately.

"Like regulatory requirements, accounting standards for swaps are minimal at best, owing largely to their rapid development."

Even though the swap market is not subject to regulation, individual participants are. In particular, federal banking regulators in the United States are including interest rate swaps in the recently adopted risk-based capital standards. These standards are designed to preserve and enhance the safety and soundness of commercial banks by requiring them to maintain capital commensurate with the levels of credit risk they incur.[23]

Banks' capital standards first translate credit exposure on swaps into an amount comparable to on-balance sheet loans. The loan equivalent amount for swaps is equal to the replacement cost of the swap plus 0.5 percent of the notional principal. This loan equivalent amount is then multiplied by 50 percent to determine a risk-adjusted asset equivalent. Banks are required to maintain tier-one (or core) capital equal to 4 percent of risk-adjusted assets and total capital equal to 8 percent by 1992.[24]

The central banks of 12 major industrial powers have agreed to apply similar risk-based capital requirements to their countries' financial firms.[25] However, these standards do not apply to U.S. investment banks or insurance companies. Thus, capital requirements are not being applied to all swap dealers. Some market participants are concerned that the standards will place dealers that are subject to capital regulation at a competitive disadvantage.[26]

Accounting. Like regulatory requirements, accounting standards for swaps are minimal at best, owing largely to their rapid development. Existing accounting standards provide a general requirement that a firm disclose all material matters but do not require a company to disclose its participation in the interest rate swap market. Different firms appear to be following many of the same rules in accounting for the gains and losses under swap contracts, but some important discrepancies exist in practice.

Keith Wishon and Lorin S. Chevalier (1985) note that swap market participants generally do not recognize the existence of swaps on their balance sheets, a practice which is consistent with the treatment of futures agreements. However, they aver that the notes to the firm's financial statements should disclose the existence of material swap agreements and discuss the swap's impact on the repricing interval of the firm's debt obligations. Harold Bierman, Jr. (1987) recommends that firms also disclose the transaction's effects on their risk position.

Another issue at the inception of some swap contracts is accounting for up-front payments. Wishon and Chevalier believe that any up-front payments that reflect yield adjustments should be deferred and amortized over the life of the swap. While acknowledging that payers appear to be following this policy, the researchers note that some recipients have taken the position

that all up-front fees are arrangement fees and may be immediately recognized in income. Bierman argues that yield-adjusting fees cannot be distinguished from others. Thus, all fees should be treated in the same manner. He further maintains that the most appropriate treatment is to defer recognition and amortize the payments over the life of the contract.

According to Wishon and Chevalier, regular payments and receipts under a swap agreement are frequently recorded as an adjustment to interest income when the swap is related to a particular debt issue. Though the receipts and payments are technically not interest, this approach is informative, especially if footnote disclosure is adequate. They report, nonetheless, that changes in the market value of the swap are generally not recognized in the income statement if gains and losses are not recognized on the security hedged by the swap. This treatment parallels that of futures, which meets the hedge criteria in the Financial Accounting Standards Board's Statement Number 80, "Accounting for Futures Contracts."

Another issue arising during the life of an interest rate swap is the presentation of the credit risk. For a nondealer, credit risk may not be material and, therefore, need not be reported. However, Wishon and Chevalier argue that the credit risk taken by a dealer is likely to be material and should be disclosed.

Some firms may enter into swaps as a speculative investment. Wishon and Chevalier contend that speculative swaps should be accounted for in the same manner as other speculative investments. Among the alternatives they discuss are using either the lower of cost or market method of valuation, with writedowns only for losses that are not "temporary," and the lower of cost or market in all cases. Both approaches are flawed. The treatment of some swap losses as "temporary" is inappropriate because objective and verifiable predictions of changes in interest rates are impossible.[27] Yet using the lower-of-cost-or-market method of valuation in all cases will always result in a swap's being valued at its historical low, an excessively conservative position. Probably the best approach is to report the swap's replacement cost and to recognize any gains or losses in the current period.

Bierman suggests that, when a speculative swap is terminated prior to maturity, the gain or loss should be recognized immediately. However, no consensus exists on the treatment if the swap is a hedge. Wishon and Chevalier report widespread disagreement on the appropriate treatment of a swap's termination. One common approach would defer and amortize any gains or losses on the swap over the life of the underlying financial instrument. The other calls for immediate recognition of any gains or losses. The treatment of gains or losses on futures hedges suggests that the deferral and amortization of early swaps termination is appropriate.

Eugene E. Comiskey, Charles W. Mulford, and Deborah H. Turner (1987-88), surveying the financial statements of the 100 largest domestic banks in 1986, discovered that some banks are deferring gains or losses in accordance with hedge accounting treatment even though hedge accounting would not be permitted in similar circumstances for futures.[28] They also found that five banks disclosed their maximum potential credit loss in the extremely unlikely event that every counterparty defaulted on all swaps that were favorable to the bank.

The Financial Accounting Standards Board issued an Exposure Draft of a proposed Statement of Financial Accounting Standards titled "Disclosures about Financial Instruments." The statement proposes disclosing a variety of new information about financial instruments, including the maximum credit risk; the reasonably possible credit loss; probable credit loss; the amount subject to repricing within one year, one to five years, and over five years; and the market value of each class of financial instrument. This statement specifically includes interest rate swaps in its definition of financial instruments. If, when, and in what form this proposal will be adopted is unclear.

Commercial banks in the United States are currently required to disclose the notional principal on their outstanding interest rate swap portfolio to the federal bank regulators.[29] It would seem that regulators should also consider requiring disclosure of the replacement cost of outstanding swaps given that replacement cost is an element of the risk-based capital standards.

Conclusion

This article surveys the literature and some research in progress on interest rate swaps. The extremely rapid growth of the market has left academics trying to explain the existence of the market and the pricing of these instruments, regulators attempting to determine what risks these instruments pose to financial firms, and accountants endeavoring to determine how institutions should report their use of swaps. Evidence is beginning to accumulate to dispel some of the early misconceptions about this market, but far more analysis remains before interest rate swaps can be fully understood.

Notes

[1]See Abken (1988) for a review of the studies of the stock market crash.

[2]The size of the interest rate swap market is typically stated in terms of the notional principal of the outstanding swaps. See the explanation of interest rate swap transactions for a discussion of the role of the notional principal. Refer to Jackson (1988) for a discussion of the size of the interest rate and currency swap markets.

[3]See Celarier (1987): 17. This estimating appears to encompass the effect of both interest rate swaps and a related instrument called a currency swap. A *currency swap* is an arrangement between two organizations to exchange principal and interest payments in two different currencies at prearranged exchange rates. For example, one corporation agrees to pay a fixed amount of dollars in return for receiving a fixed number of Japanese yen from another corporation. This article focuses on interest rate swaps, and hereafter the term *swaps* will be used as a synonym for interest rate swaps. Beckstrom (1986) offers a discussion of different types of swaps.

[4]Both fixed-rate interest payment to floating-rate payment swaps and floating-rate to floating-rate swaps whereby, for example, one party pays the London Interbank Offered Rate (LIBOR) while the other party pays the commercial paper rate, are observed in the market.

[5]LIBOR is the most common floating rate in interest rate swap agreements, according to Hammond (1987).

[6]However, the call option is not a free gift provided by the bond market to corporations. Corporations pay for this call option by paying a higher rate of interest on their bonds.

[7]See Bicksler and Chen (1986) as well as Whittaker (1987a) and Hammond (1987) for further discussion.

[8]See Myers (1977); Bodie and Taggart (1978); and Barnea, Haugen, and Senbet (1980).

[9]Long-term, callable debt may also reduce the agency problems of underinvestment and risk shifting problems. However, Barnea, Haugen, and Senbet point out that callable debt does not eliminate the underinvestment problem. Wall (forthcoming) suggests that callable bonds may not solve the risk shifting problem in all cases and also notes that short-term debt will solve both problems if it matures shortly after the firm makes its investment decision.

[10]Investors may also have an incentive to exercise the put option on fixed-rate bonds when interest rates increase. An easy way to control for this feature is to focus exclusively on floating-rate bonds. However, Chatfield and Moyers' study contained fixed-rate, puttable bonds. Their research controlled for the interest rate feature of the put option on these bonds by including a variable for the number of times per year the coupon rate on a bond adjusts and a measure of interest rate uncertainty.

[11]Bennett, Cohen, and McNulty (1984) discuss the use of swaps for controlling interest rate exposure by savings institutions.

[12]Robbins and Schatzberg (1986) suggest that callable bonds are superior to short-term debt in that they permit firms to signal their lower risk and to reduce the risk borne by equityholders. However, their results depend on a specific example. Wall (1988) demonstrates that the callable bonds may fail to provide a separating equilibrium if seemingly small changes are made to their example.

[13]This analysis does not consider the use of the futures, forward, and options markets. See Smithson (1987) for a discussion of the various financial instruments that may be used to control interest rate risk.

[14]The dealer may enter into a swap for a customer even though the dealer desires a change in exposure in a direction opposite to the swap.

[15]Indeed, some variation in the spread should be expected since the Treasury yield curve incorporates coupon interest payments and principal repayments at the maturity of the swap whereas the swap contract provides only for periodic interest payments.

[16]Widgets would probably prefer to cancel the contract and enter into a new swap contract with a different party. Otherwise, market rates could increase above 9.5 percent and then DomBank might be unable to make the promised payments. See Henderson and Cates (1986) for a discussion of terminating a swap under the insolvency laws of the United States and the United Kingdom.

[17]One way that banks typically limit their risk to individual borrowers is to establish a maximum amount that the organization is willing to lend to the borrower, called the borrower's credit line. The amount of a credit line used by a loan is the principal of the loan; however, the amount of the line used by a swap is less clear since a swap's maximum credit loss is a function of market interest rates.

[18]See also Muffet (1987).

[19]The Monte Carlo technique involves repeated simulations wherein a key value, in this case an interest rate, is drawn from a random sample.

[20]Consider two matched pairs of swaps. For the first matched pair the bank agrees to two swaps: 1) the bank pays a fixed rate of 11 percent and receives LIBOR on the first swap, and 2) the bank pays LIBOR and receives 11 percent. For the second matched pair the bank pays and receives a 9 percent fixed rate for LIBOR. Assume that the notional principal, maturity, and repricing interval of all swaps are equal. If the current market rate for swaps of the same maturity is 10 percent, the bank has credit exposure on the 9 percent fixed-rate swap in which it pays a fixed rate of interest and has credit exposure on the 11 percent fixed-rate swap in which it pays a floating rate of interest. If the market rate on comparable swaps increases to 10.5 percent, credit exposure increases on the 9 percent swap in which the dealer pays a fixed rate and decreases on the 11 percent swap in which the dealer pays a floating rate. Given the assumptions of this example, the change in exposure is almost zero when the market rate moves from 10 percent to 10.5 percent.

[21]The paper does not explain how swap replacement values and interest rate volatility were calculated.

[22]David Shirreff (1985): 253.

[23]The standards do not include any framework for evaluating the overall interest rate risk being taken by banking organizations.

[24]The standards effective in 1992 define core (tier-one) capital as common stockholders equity, minority interest in the common stockholders' equity accounts of con-

solidated subsidiaries, and perpetual, noncumulative preferred stock. (The Federal Reserve will also allow bank holding companies to count perpetual, cumulative preferred stock.) Total capital consists of core capital plus supplementary (tier-two) capital. Supplementary capital includes the allowance for loan and lease losses; perpetual, cumulative preferred stock; long-term preferred stock, hybrid capital instruments including perpetual debt, and mandatory convertible securities; and subordinated debt and intermediate-term preferred stock.

[25]The framework for risk-based capital standards has been approved by the Group of Ten countries (Belgium, Canada, France, the Federal Republic of Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom, and the United States) together with Switzerland and Luxembourg.

[26]Pitman (1988) discusses the capital standards' implications for various swap market participants.

[27]If the predicted changes in interest rates were subject to objective verification, that would suggest that arbitrage opportunities exist. That is, investors may be able to earn a profit with no net investment (financing the purchase of one debt security with the sale of another) and without assuming any risk (since objective verification proved that interest rates will move in the predicted direction). However, efficient markets theory implies that the market will immediately compete away any arbitrage opportunities.

[28]Deferral of gains or losses on futures is permitted only if the future is designated as a hedge for an "existing asset, liability, firm commitment or anticipated transactions," according to Comiskey, Mulford, and Turner, 4, 9.

[29]See Felgran (1987) for a listing of the top 25 U.S. banks by notional principal of swaps outstanding.

References

Abken, Peter A. "Stock Market Activity in October 1987: The Brady, CFTC, and SEC Reports." Federal Reserve Bank of Atlanta *Economic Review* 73 (May/June 1988): 36-43.

Arak, Marcelle, Arturo Estrella, Laurie Goodman, and Andrew Silver. "Interest Rate Swaps: An Alternative Explanation." *Financial Management* 17 (Summer 1988): 12-18.

Arak, Marcelle, Laurie S. Goodman, and Arthur Rones. "Credit Lines for New Instruments: Swaps, Over-the-Counter Options, Forwards and Floor-Ceiling Agreements." Federal Reserve Bank of Chicago, *Conference on Bank Structure and Competition,* 1986, 437-56.

Barnea, Amir, Robert A. Haugen, and Lemma W. Senbet. "A Rationale for Debt Maturity Structure and Call Provisions in the Agency Theoretic Framework." *Journal of Finance* 35 (December 1980): 1223-34.

Beckstrom, Rod. "The Development of the Swap Market." In *Swap Finance,* vol. 1, edited by Boris Antl, 31-51. London: Euromoney Publications Limited, 1986.

Belton, Terrence M. "Credit-Risk in Interest Rate Swaps." Board of Governors of the Federal Reserve System unpublished working paper, April 1987.

Bennett, Dennis E., Deborah L. Cohen, and James E. McNulty. "Interest Rate Swaps and the Management of Interest Rate Risk." Paper presented at the Financial Management Association meetings, Toronto, October 1984.

Bicksler, James, and Andrew H. Chen. "An Economic Analysis of Interest Rate Swaps." *Journal of Finance* 41 (July 1986): 645-55.

Bierman, Harold, Jr. "Accounting for Interest Rate Swaps." *Journal of Accounting, Auditing, and Finance* 2 (Fall 1987): 396-408.

Black, Fischer, and Myron Scholes. "The Pricing of Options and Corporate Liabilities." *Journal of Political Economy* 81 (1973): 637-59.

Bodie, Zvi, and Robert A. Taggart. "Future Investment Opportunities and the Value of the Call Provision on a Bond." *Journal of Finance* 33 (September 1978): 1187-1200.

Celarier, Michelle. "Swaps' Judgement Day." *United States Banker* (July 1987): 16-20.

Chatfield, Robert E., and R. Charles Moyer. " 'Putting' Away Bond Risk: An Empirical Examination of the Value of the Put Option on Bonds." *Financial Management* 15 (Summer 1986): 26-33.

Comiskey, Eugene E., Charles W. Mulford, and Deborah H. Turner. "Bank Accounting and Reporting Practices for Interest Rate Swaps." *Bank Accounting and Finance* 1 (Winter 1987-88): 3-14.

Federal Reserve Board and Bank of England. "Potential Exposure on Interest Rate and Exchange Rate Related Instruments." Unpublished staff paper, 1987.

Felgran, Steven D. "Interest Rate Swaps: Use, Risk and Prices." *New England Economic Review* (November/December 1987): 22-32.

Geske, Robert. "The Valuation of Corporate Liabilities as Compound Options." *Journal of Financial and Quantitative Analysis* 12 (1977): 541-52.

Hammond, G.M.S. "Recent Developments in the Swap Market." *Bank of England Quarterly Review* 27 (February 1987): 66-79.

Henderson, Schuyler K., and Armel C. Cates. "Termination Provisions of Swap Agreements under U.S. and English Insolvency Laws." In *Swap Finance,* vol. 2, edited by Boris Antl, 91-102. London: Euromoney Publications Limited, 1986.

Jackson, Dominique. "Swaps Keep in Step with the Regulators." *Financial Times,* August 10, 1988, 22.

Johnson, Herb, and René Stulz. "The Pricing of Options with Default Risk." *Journal of Finance* 42 (June 1987): 267-80.

Loeys, Jan G. "Interest Rate Swaps: A New Tool For Managing Risk." Federal Reserve Bank of Philadelphia *Business Review* (May/June 1985): 17-25.

Mayers, David, and Clifford W. Smith. "Corporate Insurance

and the Underinvestment Problem." *Journal of Risk and Insurance* 54 (March 1987): 45-54.

Muffet, Mark. "Modeling Credit Exposure on Swaps." Federal Reserve Bank of Chicago, *Conference on Bank Structure and Competition,* 1987, 473-96.

Myers, Stewart C. "Determinants of Corporate Borrowing." *Journal of Financial Economics* 5 (November 1977): 147-76.

Neal, Kathleen, and Katerina Simons. "Interest Rate Swaps, Currency Swaps, and Credit Risk." *Issues in Bank Regulation* (Spring 1988): 26-29.

Pitman, Joanna. "Swooping on Swaps." *Euromoney* (January 1988): 68-80.

Robbins, Edward Henry, and John D. Schatzberg. "Callable Bonds: A Risk Reducing, Signalling Mechanism." *Journal of Finance* 41 (September 1986): 935-49.

Rudnick, Linda T. "Discussion of Practical Aspects of Interest Rate Swaps." Federal Reserve Bank of Chicago, *Conference on Bank Structure and Competition,* 1987, 206-13.

Shirreff, David. "The Fearsome Growth of Swaps." *Euromoney* (October 1985): 247-61.

Smith, Clifford W., Charles W. Smithson, and Lee Macdonald Wakeman. "The Evolving Market for Swaps." *Midland Corporate Finance Journal* 3 (1986): 20-32.

_____, _____, and _____. "The Market for Interest Rate Swaps." University of Rochester Working Paper Series No. MERC 87-02 (May 1987a).

_____, _____, and _____. "Credit Risk and the Scope of Regulation of Swaps." Federal Reserve Bank of Chicago, *Conference on Bank Structure and Competition,* 1987b, 166-85.

Smithson, Charles W. "A LEGO® Approach to Financial Engineering: An Introduction to Forwards, Futures, Swaps, and Options." *Midland Corporate Finance Review* 4 (Winter 1987): 16-28.

Stulz, René M., and Herb Johnson. "An Analysis of Secured Debt." *Journal of Financial Economics* 14 (December 1985): 501-21.

Turnbull, Stuart M. "Swaps: A Zero Sum Game?" *Financial Management* 16 (Spring 1987): 15-21.

Wakeman, Lee Macdonald. "The Portfolio Approach To Swaps Management." Chemical Bank Capital Markets Group unpublished working paper, May 1986.

Wall, Larry D. "Interest Rate Swaps in an Agency Theoretic Model with Uncertain Interest Rates." *Journal of Banking and Finance* (forthcoming).

_____. "Alternative Financing Strategies: Notes Versus Callable Bonds." *Journal of Finance* 43 (September 1988): 1057-65.

_____, and Kwun-Wing C. Fung. "Evaluating the Credit Exposure of Interest Rate Swap Portfolios." Federal Reserve Bank of Atlanta Working Paper 87-8 (December 1987).

_____, and John J. Pringle. "Alternative Explanations of Interest Rate Swaps." Federal Reserve Bank of Chicago, *Conference on Bank Structure and Competition,* 1987, 186-205.

Weiner, Lisabeth. "Dollar Dominates Swaps, Survey Shows: Deals in U.S. Currency Outstrip Yen, Deutsche Mark by Far." *American Banker,* February 26, 1988, 2.

Whittaker, J. Gregg. "Interest Rate Swaps: Risk and Regulation." Federal Reserve Bank of Kansas City *Economic Review* (March 1987a): 3-13.

_____. "Pricing Interest Rate Swaps in an Options Pricing Framework." Federal Reserve Bank of Kansas City unpublished working paper RWP 87-02. Presented to the Financial Management Association Meetings, Las Vegas, October 1987b.

Wishon, Keith, and Lorin S. Chevalier. "Interest Rate Swaps—Your Rate or Mine?" *Journal of Accountancy* (September 1985): 63-84.

THE FEDERAL RESERVE BANK OF ATLANTA
Presents

The Banking Industry: Preparing for the Next Decade

Hyatt Regency Atlanta
Atlanta, Georgia

December 7-8, 1988

Banks face numerous challenges as this decade of unprecedented change in financial services draws to a close. To address banking's future, the Atlanta Fed will host a conference on December 7 and 8 that will bring together an impressive range of speakers from industry, academia, and government, including **Manuel Johnson, William Isaac, Doug Barnard, Robert Litan,** and **George Vojta.**

Topics to be covered include:

New Market Strategies for a Changing Environment
Problems of Risk in the Financial System
What the Next Session of Congress Promises for the Industry
Developments in Consumer and Community Regulations

The lively exchange of information among business, government, and Fed leaders will help you determine your business and banking strategies for the coming decade and beyond.

For more information on the conference, please contact Linda Donaldson, Conference Coordinator, at (404) 521-8747. You can also register for the conference using the form below. Hotel arrangements must be made directly with the Hyatt Regency Atlanta at (404) 577-1234. Discount airfare is available from Osborne Travel at 1 (800) 334-2087.

REGISTRATION FORM

The Banking Industry: Preparing for the Next Decade
December 7-8, 1988

Hyatt Regency Atlanta
Atlanta, Georgia

FEE $495

☐ Check/Money Order ☐ Mastercard ☐ Visa

Account No. _____ Exp. Date _____

Signature _____

Name _____

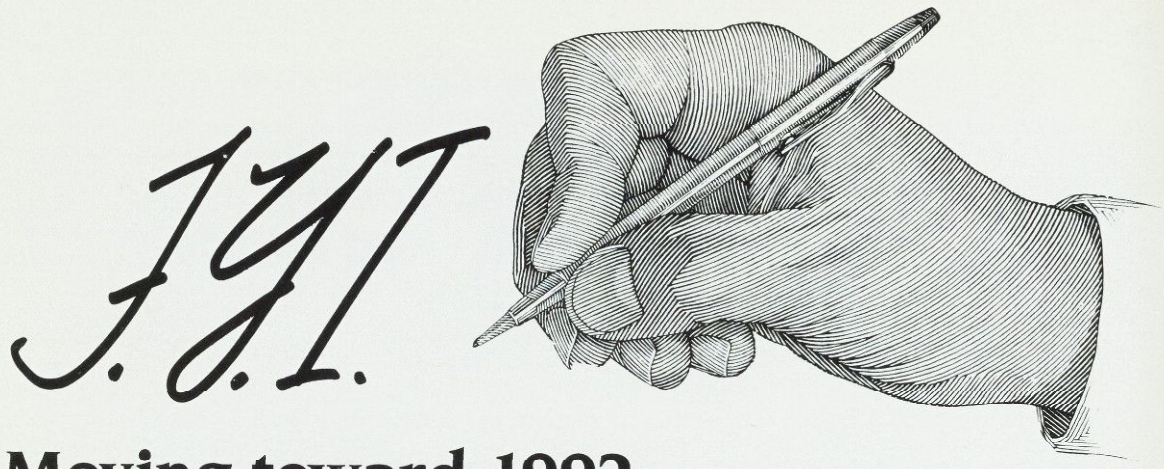
Title _____

Organization _____

Address _____

City _____ State _____ ZIP _____

Payment must accompany registration form. Make check payable to the Federal Reserve Bank of Atlanta and mail with registration form to **Linda Donaldson, Public Information Department, Federal Reserve Bank of Atlanta, 104 Marietta Street, N.W., Atlanta, Georgia 30303-2713.** Late registrations cannot be refunded. For additional information, call **Linda Donaldson, (404) 521-8747.** For hotel accommodations, please call the **Hyatt Regency Atlanta, (404) 577-1234,** and mention Federal Reserve Bank Conference. Discount airfare is available through **Osborne Travel. Call 1 (800) 334-2087.**



Moving toward 1992: A Common Financial Market for Europe?

David D. Whitehead

> All the credit institutions, bankers' associations and supervisory authorities of the countries of the European Community are now fully convinced that 1992 is a real deadline. . . .
>
> *Deputy Director General*
> *Tommaso Padoa-Schioppa*
> *October 1987*

Until a couple of years ago most observers believed the concept of a truly common market for Europe was little more than a dream. A common European market would require 12 widely disparate nations to agree on and pass legislation designed to ensure the free flow of goods, services, people, and capital across mutual borders, essentially molding into one the economies of a dozen sovereign states. More recently, however, steps have been taken that render the realization of greater economic integration far more likely.

This development has far-reaching ramifications. A single European market with a population larger than that of the United States would carry significant competitive implications for the conduct of business throughout the world. Consolidations that are occurring in Europe are creating firms with the resources to compete even more effectively in global markets. For example, 22 of the world's 50 largest banks are already housed in the common market countries. This article reviews the progress Europe is making toward the formation of a common market. Special attention is given to the movement toward an integrated European banking market and a summary of its implications for the American banking industry.

The dream of mutual economic cooperation among the nations of Europe grew out of a devastated post-World War II environment and was viewed as a way to help guarantee peace and economic prosperity for the continent. Formal agreement on this goal was set forth in the Treaty of Rome in 1957, but, as the years passed and little progress was realized, most observers doubted that a common market would emerge. The skepticism was founded primarily on the

---

The author is research officer in charge of the financial section of the Atlanta Fed's Research Department. *He would like to thank Sharon Fleming for research assistance.*

Background on the European Economic Community

In 1946, following the end of World War II, British Prime Minister Winston Churchill painted a picture of his dream of a united Europe enjoying the peace and economic prosperity associated with political unity and free trade. Five years later, the Treaty of Paris was signed, creating the European Coal and Steel Community, which was the first step toward a European common market. The success of the European Coal and Steel Community encouraged community members to ratify the Treaty of Rome in 1957, which established the European Economic Community (EEC) with the goal of a unified internal market encompassing the entire economies of six European countries: France, West Germany, Italy, the Netherlands, Belgium, and Luxembourg. The United Kingdom, Denmark, and Ireland entered in 1973; Greece became a member in 1981; and Portugal and Spain followed suit in 1986. The European Economic Community is but a part of a larger international organization, the European Community, the basic structure and institutions of which are described in the box on page 50.

Six additional countries belong to the European Free Trade Association, which shares in the benefits of duty-free access for industrial goods within the EEC, but are not members of the common market. These six—Switzerland, Austria, Sweden, Norway, Finland, and Iceland—do not participate in the EEC's farm subsidy and agricultural trade programs. Upon realization of the 1992 goal, they will not share in its associated benefits such as tax and regulatory harmony and freer trade and capital flows.

To promote these benefits, the preamble and general clauses of the treaty called for implementation of common policies and rules in almost every economic and social area across all member states. In addition to the treaty's specific articles, a general article empowered the European Economic Community to set up any common policy necessary to attain the general objectives of the treaty. This latter article gave the European Community the power to structure policies dealing with industrial, social, and environmental problems not originally foreseen.

difficulty of harmonizing the commercial trade laws of 12 nations. Enthusiasm, however, has now replaced skepticism as a result of the Single European Act, which streamlined the process of melding the member states' laws and set a deadline of 1992 for the establishment of the common market.

The original push for a European common market was based on a keen realization of the potential economic benefits from free trade and expanded geographic competition. Free trade would reduce distribution costs and encourage efficiencies through the specialization and division of labor associated with increased competition and the principle of comparative advantage. In addition, an expanded geographic market encompassing over 320 million people would allow for increased production efficiencies through economies of scale. The arguments for a common market basically revolved around Europe's potential for competing on a more equal footing with the United States and Japan.

The Development of a Common Market

A common market is an economic objective that necessarily carries social and political consequences. To establish a European common market or free trade area, all trade barriers among the 12 member states must first be removed. To date the European Community has been successful in removing tariff barriers, or taxes that each country had charged on imported goods. This first step is perhaps the easiest in establishing a free trade area. Nontariff barriers are harder to break down because they are intertwined into the economic, legal, social, and political fabric of each nation.

Nontariff barriers include any politically controllable measures that impede the free movement of goods and services across borders and thus benefit a producer in one country to the detriment of producers in other countries. The

community has identified eight general types of nontariff barriers and produced approximately 300 proposals for removing them. The basic suggestions for eliminating nontariff barriers are: (1) abolishing frontier controls on goods; (2) achieving the free movement of people; (3) harmonizing technical standards for motor vehicles, tractors, and agricultural machinery, food laws, pharmaceutical and high technology medicine, chemical products, and other industrial output; (4) opening up public procurement markets; (5) coordinating services, including financial services and transportation; (6) liberalizing the laws regarding capital movement; (7) creating suitable conditions for industrial cooperation, company law and taxation, and intellectual and industrial property rights; and (8) removing fiscal frontiers, such as indirect value-added taxes associated with intracommunity purchases. As of March 1988, 75 specific proposals had been adopted, a joint position had been reached on 14 others, and 126 had gone to the Council of Ministers. Although significant headway has been made, the process is slower than expected.

Observers should not be surprised that the path toward economic integration is a long one. After all, as the 12 member states build a legal foundation for the new economic order, they are at the same time giving up a degree of autonomy. For example, every time they agree on common technical and environmental standards for a product, each individually gives up the right to establish its own standards. Similarly, agreement on a common tax policy reduces each nation's autonomy with respect to taxation. For instance, the dozen member states currently have substantially different value-added tax rates that affect costs to producers. These taxes represent barriers to free competition, and the community realizes these should be eliminated before a truly competitive combined market can be realized. Yet eliminating these taxes requires another loss of autonomy for the member states.

European economic integration would also be facilitated by a common currency unit or stable exchange rates. A European Monetary System has been established in an attempt to create a stable system of currency exchange rates, but only eight of the twelve EEC member states, comprising seven currencies, are currently members of the exchange-rate mechanism. Even within the European Monetary System, exchange rates are not pegged but are allowed to vary within a given range. In addition, the exchange value of a currency may be realigned to reflect changing economic conditions such as a persistent differential in inflation rates between a given country and others in the system. The fact that realignment took place seven times between 1983 and 1987 indicates that each of these countries maintains its sovereignty with respect to monetary and fiscal policies.

The creation of the European Currency Unit (ECU) as a common unit of account has given the European Community a standard of value for setting prices but does not decrease the autonomy of any nation.[1] To some degree the ECU acts as an official unit of exchange and has been used by the private sector to establish value in commercial dealings across national borders. The value of an ECU is defined in terms of specific amounts of each of 10 currencies. In terms of any single currency, an ECU's value varies with changes in the exchange rates of each currency. Again, since exchange rates are not pegged, each country maintains its autonomy with respect to internal economic decisions. The European Community is currently studying and debating the merits of a common currency and central bank, but no quick resolution appears likely. Prospects for a rather competitive free trade area for Europe appear likely by 1992, but complete integration that encompasses fiscal and monetary policy will take longer, if it occurs at all.

Harmonization: Two Decades of Struggle

Over its first two-and-a-half decades, from 1958 to 1985, the European Community attempted to establish a common market by harmonizing and centralizing all laws pertaining to trade and commerce in each member state. One key attempt was in the area of agriculture, but finding a simple yet universal formula for farm price supports and agricultural policies proved extremely complicated and inefficient. The process that the European Community's central governing body must go through to pass direc-

tives and regulations is laborious and in itself has tended to restrict progress. This process, described in the box on page 50, requires extensive time and effort within both the structure of the European Community and the legislative bodies of each member state. Centralizing and harmonizing the member states' trade and commercial laws proved to be so time-consuming that most observers questioned whether a common market would ever emerge. Some proposals recommended by the Commission in 1985 had been under consideration for more than a decade.

A Change in Direction: Minimal Harmonization. In 1985 the European Parliament passed the Single European Act, which was ratified by the parliaments of member states in 1986 and 1987. The act marked three fundamental changes that should facilitate the decision-making process in the member states. First, the Single European Act replaced the requirement for unanimity with qualified majority voting in four fields: the creation of a real internal market by 1992, technological research and development, economic and social cohesion, and improvement of working conditions.

Second, the act endorsed the European Commission's 1985 legislative timetable. At that time, a European Commission White Paper identified barriers to the free movement of goods, people, services, and capital in the EEC and constructed a legislative agenda for removing them by December 31, 1992. The Commission also called for the drafting of almost 300 proposals that would help integrate the European Community. Approximately 20 of these are directly concerned with banking and security trading, which will be discussed later in this article. Each individual country must eventually change its domestic legislation to conform to the directives, and a grace period of one to two years has been granted to allow countries time to conform. The timetable calls for all of the Commission's proposals to be completed by the end of 1989, which gives the Council time to adopt them and the member countries' legislative bodies time to comply before the December 31, 1992, deadline.

Third and perhaps most important, the Single European Act marked a shift in the European Community's philosophy from the originally desired "harmonization and centralization" to the new goals of "minimal harmonization" and "mutual recognition." The principle of mutual recognition basically holds that firms or products approved and regulated by one member state should be free to operate or be sold throughout all 12. In this way a firm chartered in one state may offer the same array of products in a host state that it offers in its home state. Host states must agree to recognize that the firm is regulated by its home state's regulatory framework. If certain firms in the host state find themselves at a competitive disadvantage, they may put pressure on their domestic legislative bodies to "level the playing field." Competition thus becomes the key element in integrating the 12 states into a unified market.

The Community did recognize the potential adverse effects of such regulatory competition. By passing more liberal regulation, any of the dozen member states could create a more advantageous competitive environment for its home producers throughout the common market but in so doing expose the public to unacceptably high risk or actually undermine the essential objectives of the common market. To eliminate this incentive, the community specified a level of "minimal harmonization." Still, the principle of competitive market forces predominates in most cases.

The advantage of this trade-off is its practicability—it is much easier to achieve. The new strategy of minimal harmonization and mutual recognition also allows the home country to maintain regulatory control and responsibility for domestic firms, including their activities in other states, but mandates only minimal agreement on the scope of permissible activities. The difference in approach between the First and Second Banking Directives, which are discussed in the next section of this article, reflects this dramatic shift in philosophy.

The Banking Coordination Directives

"Host country rule" characterized the First Banking Directive, which was adopted in 1977 and established a basic set of rules under which financial institutions could establish branches across national boundaries. This directive, which is in force today, permits branching by a

Table 1.
Core Banking Activities of the European Economic Community

The Second Banking Directive provides that, subject to prohibitions in its home country, a credit institution may undertake any of the following activities:

- deposit-taking and other forms of borrowing;
- lending (including participation in consumer credit, mortgage lending, trade finance, as well as factoring and invoice discounting);
- financial leasing;
- money transmission services;
- issuing and administering means of payments (credit cards, travelers' checks, and bankers' drafts);
- guarantees and commitments;
- trading for the institution's own account or for the account of its customers in money market instruments (such as checks, bills, and certificates of deposit), foreign exchange, financial futures and options, exchange and interest rate instruments, and securities;
- participation in share issues and the provisions of services related to such issues;
- money brokering;
- portfolio management and advice;
- safekeeping of securities;
- credit reference service; and
- safe custody services.

credit institution, considered to be an entity whose business is to receive deposits or other repayable funds from the public and to grant credit for its own account. In order to establish a branch, authorization by the appropriate supervisor in the host country must be acquired. The branch then falls under the supervisory authority of the host country. The activities a branch may perform in a host country must conform to those approved for similar types of credit institutions headquartered there. In addition, a branch in a host country is required to have its own dedicated capital—that is, its own funds separate from its parent.

The Second Directive shifts the emphasis from host country rule to home country rule and applies a principle which involves the mutual recognition by all member states of the authorization and supervisory systems within each member state. This directive acknowledges that prior harmonization of certain essential supervisory rules throughout the EEC will be necessary. Areas that these rules affect include initial capital requirements, supervision of credit institutions' major shareholders, limitations on the size of participations in nonfinancial undertakings, and harmonization of solvency ratios. Once the essential supervisory rules are in place, though, the directive provides for cooperation among supervisory authorities in the different member states.

Any credit institution that is duly authorized in one member country may branch throughout the EEC without host country authorization. Subject to prohibitions in its home country, a credit institution may undertake any or all of the core banking activities commonly agreed to in the directive. These core banking activities are presented in Table 1.

Agreement on these core activities does not preclude a home country from prohibiting one or more of these activities to its own financial organizations. However, once a home country authorizes the offering of a core product or service, a financial institution headquartered in that country may engage in that activity throughout the EEC regardless of host country prohibitions. For example, a branch of a financial institution operating in a host country may offer financial services prohibited to a counterpart headquartered in the host country. If this situation places the domestic counterpart at a competitive disadvantage, pressure will probably develop to change the host country prohibitions. Over time these competitive pressures should lead to common offerings by similar types of financial institutions throughout the EEC, thus resulting in a common market for financial services.

The Second Directive has not yet been adopted. The timetable calls for an opinion by the European Parliament by June 30, 1988; an opinion by the Economic and Social Committee by June 30, 1988; the Council's common position by December 31, 1988; a second reading by the European Parliament by March 31, 1989; and adoption by the Council of Ministers by June 30, 1989. As of August 1988, the last month for which information was available at press time, the opinion by the European Parliament and by the Economic and Social Committee had not been reported.

Obviously, the Second Directive is not on schedule, but prospects for adopting it appear

good. A number of major problems, though, still need to be resolved. In addition to obtaining agreement on the various provisions in the Second Banking Directive concerning the limits on financial institutions' activities and the degree to which banks may own equity stakes in commercial businesses (which, at present, varies greatly among member states and complicates mergers among banks in different EEC nations), the remaining problems involve determining the minimum levels for deposit insurance along with the manner in which it should be provided and setting forth a method for handling financial institution failures. With regard to capital standards, the European Commission has proposed directives based on the framework developed by the Basel Committee on Banking Regulations and Supervisory Practices, which is composed of representatives from the Group of Ten (Belgium, Canada, France, West Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom, and the United States), Switzerland, and Luxembourg.

Though the problems pertaining to types of financial services offered, deposit insurance, and the means of handling failures appear to be well on the way to a common agreement, the other two problem areas are more complex. Bank ownership of significant equity shares of commercial business creates major political issues when mergers or acquisitions of these banks by foreign entities is proposed. Not only would the foreign entity gain control of the bank, but, in countries like Germany where banks own significant shares of commercial businesses, by so doing it may gain control of large firms in the host country. To date, this issue is unresolved. Moreover, even the issue of bank activities is not problem-free. A wide disparity in bank powers currently exists. The problem of allowing banks based in other member countries to engage in activities not permitted in the host country is exacerbated by the fact that some banks are partly owned by their governments, thus posing obvious problems in merger and acquisition cases. Finally, adjusting to freer capital flows may prove difficult for the less developed common market countries. Greece, for example, now limits outflows of domestic capital.

The process of internal deregulation creates a subsidiary problem of how to deal with entry into the community by banks external to the community. The question is whether the community should take an open or a protectionist position. The proposed Second Banking Directive contains a provision that would establish a communitywide principle of reciprocity for non-Economic Community banks. These issues are complex and are currently being debated.

The Status of Banking and Capital Flow Proposals. The 1985 White Paper's legislative initiatives specified 22 proposals in the financial services sector, 17 of which had been submitted by March 1988. The remaining five are scheduled for completion by the Commission no later than the end of this year. Two of the key elements in these proposals are that (1) each state agrees to recognize mutually the way standards are applied by other member states and (2) home country supervision and control of financial institutions operating in each member state is recognized. Three proposals involving banking and capital flows have been adopted, six have been submitted to the Commission for adoption, and one proposal remains to be submitted. Table 2 briefly describes the Commission's proposals or recommendations in the financial services sector and their status with respect to adoption as of March 1988.

Conclusion

The European goal of eliminating the maze of nontariff barriers that impede the flow of goods, services, and capital among a dozen member states is approaching reality after more than 30 years of fits and starts. The new philosophical approach of mutual recognition and minimal harmonization has resulted in so much progress in the last few months that the goal of achieving a truly common market at last seems probable.

The process in which the European Community is engaged is probably one of the most important economic and political events of the late twentieth century. The Community would encompass a population of some 323 million, 80 million larger than the current U.S. population. It would merge the economies of 12 nations that collectively have a gross national product roughly equal to that of the United States.

While advances have been made on a number of fronts, the movement toward a common

Table 2.
Proposals and Recommendations for the EEC's Financial Services Sector

Proposals that have been adopted:	Status:
Banking:	
• Bank accounting—Harmonization of bank accounting systems.	Adopted 12/8/86—Implementation is required by 12/31/90 and must be applied in member states for the first time beginning with the 1993 financial year.
• Deposit insurance—Recommendation for a deposit guarantee system.	Adopted 12/22/86—Implementation is not required since it is only a recommendation.
• Control of large exposures—Harmonizes the control of large exposures by credit institutions.	Adopted 12/22/86—Implementation is not required since it is only a recommendation.
• European Code of Conduct relating to electronic payment between financial institutions, traders, and service establishments and consumers.	Adopted 12/8/87—Implementation is not required since it is only a recommendation.
Capital Flows:	
• Liberalization of units in collective investment undertakings for transferable securities. Provides for free circulation of units in collective investment undertakings such as unit trusts.	Adopted 12/20/85—Member states must comply with the directive by 10/1/89. Derogation, that is, the partial repeal of the directive, for Portugal has been extended to 12/31/90.
• Liberalization of operations such as transactions in securities not dealt on stock exchanges, admission of securities on the capital market, and long-term commercial credit.	Adopted 11/17/86—Compliance with the directive was required by 2/28/87. Greece, Italy, and Ireland have derogations, and Spain and Portugal may postpone liberalization until 10/1/89 and 12/31/90, respectively.
Proposals submitted to Council but not yet adopted:	
Banking:	
• Mortgage banking—Freedom of establishment and freedom to supply services across borders in the field of mortgage credit.	
• Reorganization of credit institutions—Specific procedures involving the reorganization or closing of financially troubled credit institutions.	
• Foreign branch publication of accounting documents—Eliminates the need for foreign branch offices of banks headquartered in a member state to publish separate accounts for those branches.	
• Own funds—Harmonizes the concept of "own funds" which basically defines capital.	
• Second directive on coordination of credit institutions.	
Capital Flows:	
• Liberalization of capital movements.	
Commission proposals still to be presented to the Council:	
• Directive on solvency ratios.	

market for financial services has been particularly impressive. From 1958 to 1985 only a few relatively unimportant directives concerning banking were approved. Since 1985 substantial progress has been achieved on a wide range of questions including specifications of allowable activities for credit institutions, the choice between specialized and universal banking, and the establishment of appropriate standards for capital ratios and deposit insurance to safeguard public confidence in financial institutions. The European Community will very likely have a common financial services market within the time frame originally targeted.

The importance of reaching this objective is twofold. First, as the European Commission's

1985 White Paper acknowledged, financial services play a critical role in the Community's economy. The efficiency and competitiveness of the financial sector directly affect the costs of services provided to the economy's other sectors, from manufacturers to consumers. Deregulation, along with new technology and global capital markets, will allow the European banking community to achieve the efficiencies associated with geographic and product expansion. These efficiencies should provide benefits that will radiate throughout the entire economy. Second, realization of a common European banking arena will expand the home market for deposits. This enlarged internal deposit and capital base should give European banks a further competitive advantage in world financial markets. Consolidations or simple working agreements among these European institutions are likely to have a significant competitive impact that will be felt throughout the world.

Implications for U.S. banks of a common European banking arena are two-pronged. First, they will likely face larger competitors both in domestic and foreign markets. Second, U.S. banks may find themselves at a competitive disadvantage depending on how extensive European product deregulation is relative to the United States. This disparity could increase pressures on the American financial services industry at a time when it is undergoing substantial stresses of its own.

The Organization of the European Community

The European Community (EC) is an international organization comprising a dozen member states that have agreed to share a measure of sovereignty in order to create—through the adoption of common policies—joint benefits for all 12 nations.

The objectives of the Community include:

- a closer union of the people of Europe;
- ongoing improvement of living and working conditions;
- concerted action to guarantee steady expansion, balanced trade, and fair competition;
- reduction in the economic differences between regions;
- progressive abolition of restrictions on international trade;
- increased overseas development; and
- pooling of resources to preserve and strengthen peace and liberty.

The Constitution of the European Community is based on the Rome Treaties, which established the European Economic Community (EEC) and the European Atomic Energy Community, as well as the Paris Treaty, which established the European Coal and Steel Community. Thus, the EC consists of three separate legal entities: the European Coal and Steel Community, the EEC, and the European Atomic Energy Community. All three entities are controlled by common institutions: the European Parliament, the Council of Ministers, the European Commission, the Court of Justice, the Court of Auditors, and an Economic and Social Committee that acts in an advisory capacity.

The *European Commission,* which houses the executive powers of the European Community, is responsible for the functioning and development of the common market. This commission is mandated to initiate and implement cross-European legislation, and in 1985 it sent 694 proposals to the Council of Ministers. The Commission also has investigative powers and may impose fines for breaching community rules.

The *Council of Ministers,* which includes 76 ministers delegated by the various governments of the member states, is the legislative body. The Council makes major policy decisions for the Community.

The *European Parliament,* unlike national parliaments, does not have legislative powers. Instead, it supervises the Commission and Council of Ministers by debating their programs and reports. This body is also invited to give an opinion on Commission proposals before the Council makes a decision. Parliament does have the power to dismiss the Commission by a two-thirds vote, and it makes final decisions on Community expenditures by approving or rejecting the draft budget drawn up by the Commission and agreed to by the Council. Its 518 members are elected by universal suffrage. Delegates represent political parties and are not national representatives.

The *Economic and Social Committee* and the *Advisory Committee* constitute a consultative body with 189 members representing employers, trade unions, and other interest groups such as farmers and consumers. Before some proposals may be adopted, opinion must be sought from the Economic and Social Committee.

The *Court of Justice* ensures that the European Community's laws are observed. Its judges, from all the Community countries, pass judgment on disputes concerning the application or interpretation of Community laws.

The *Court of Auditors* has extensive power to examine the legality and regularity of Community receipts and expenditures and the sound financial management of the Community's budget. The Community generates revenues from customs duties and agricultural levies on imports from the rest of the world and a value-added tax collected in member states. Almost three-fourths of these expenditures are applied toward the support of farm prices and the modernization of agriculture and the fishing industry.

Unlike many international organizations, the European Community and its institutions have powers that carry the force of law. In fact, the European Community was founded on a system of laws that are separate from and which transcend the national laws of the member states.

The Treaty of Rome specifies the process that is to be followed in adopting EC laws. The Council of Ministers makes decisions only on proposals submitted by the European Commission. Amendments by the Council of Ministers to Commission proposals require unanimity of its members. The Commission, on the other hand, may change a proposal at any time during the Council's period of consideration, a provision which gives the Commission a good deal of bargaining power. When the Council receives a proposal, it is referred to a Permanent Representatives Committee for examination and preparation of a decision.

The Council of Ministers is empowered to pass five different types of acts that affect the legisla-

tive autonomy of member states in different ways. The Council's Recommendations and Opinions are nonbinding and are intended to serve as a general guideline for member states. Council Directives set forth the objective to be attained but leave to the member states the procedures to be followed. Directives are binding and may be addressed to selected member states, to selected enterprises, or even to individuals. On varied questions the Council may adopt resolutions that are applied on a case-by-case basis. Finally, the Council may also pass regulations that supersede national legislation and establish European law that is binding on all member states. This process is obviously very cumbersome, requiring consideration and agreement on the part of groups dispersed across 12 nations that represent the interest of affected parties.

Note

[1]The ECU was originally created by the European Payments Union in 1950 as the community's unit of account and was used for internal budgetary purposes. Conversion into national currencies was based on official central rates for member states' currencies fixed at international levels established by the Bretton Woods agreement. As the Bretton Woods system of fixed exchange rates disintegrated, so did the community's unit of account, but it was resurrected in 1975 as the European Unit of Account (EUA). The EUA was modeled after the International Monetary Fund's unit of account, the SDR, which was defined in terms of a basket of 16 currencies in specified quantities. When the European Monetary System was established in 1979, the EUA was renamed the ECU, but the original formulas for the basket of currencies were unchanged.

References

Commission of the European Communities. *The Institutions of the European Community.* Brussels, 1986.

Court of Justice of the European Communities. *The Court of Justice of the European Communities.* Luxembourg, 1983.

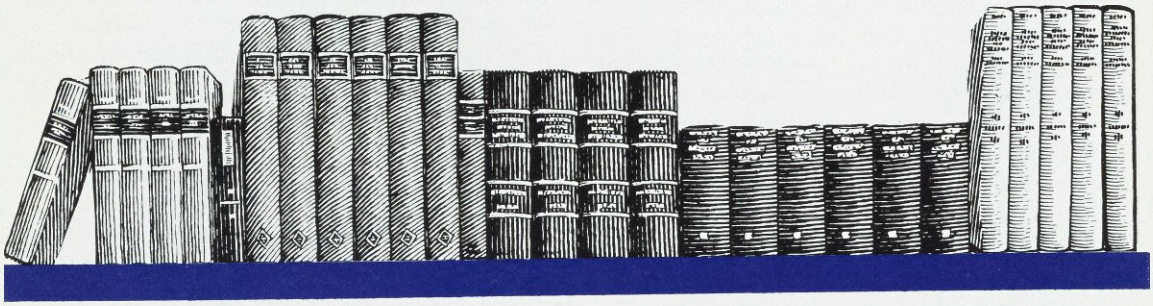
Economic and Social Committee of the European Communities. *The Other European Assembly.* Brussels, 1985.

Padoa-Schioppa, Tommaso. "Towards a European Banking Regulatory Framework." Banca D'Italia *Economic Bulletin* (February 1988): 49-53.

Book Review

The Gathering Crisis in Deposit Insurance

by Edward J. Kane
Cambridge, Mass.: MIT Press, 1985.
176 pages. $14.95.



Originally published in 1985, Edward J. Kane's *The Gathering Crisis in Deposit Insurance* takes on additional importance given the current emergency in our nation's deposit insurance programs. When the book was written, the reserves in U.S. deposit insurance funds were just beginning to show signs of decline. Since 1985, however, the rapid deterioration of the reserves of the Federal Savings and Loan Insurance Corporation (FSLIC) has resulted in that fund's insolvency and the need for a massive infusion of federal aid.

What caused this crisis, and what are some possible long-term solutions? The reader of *The Gathering Crisis in Deposit Insurance* will find the answers to these questions and much more. Professor Kane, who holds the Reese Chair of Banking at Ohio State University and is an internationally acclaimed banking scholar, provides a comprehensive overview and detailed economic analysis of the problems surrounding the nation's federal deposit insurance programs. The fact that Kane first began writing this book in early 1983—almost three years before the FSLIC was officially declared insolvent—only confirms the depth of Professor Kane's insight into the structure and workings of this nation's deposit insurance system. This insight is even more remarkable in light of the recent actions of the Federal Home Loan Bank Board. To appreciate properly, then, the author's understanding of the deposit insurance dilemma, an overview of the current status of this crisis is in order.

Deposit Insurance: How the Problem of Zombie Thrifts Evolved

On Friday, August 19, 1988, the Federal Home Loan Bank Board, overseer of the nation's federally chartered savings and loan associations and savings banks, announced a stunning multibillion-dollar FSLIC bailout of eight insolvent Texas thrift institutions. At that time the bailout, estimated to cost the FSLIC between $2.5 billion and $5.5 billion, represented the most costly multiple rescue ever undertaken by the fund. The bailout may have also signaled an end to the era of high-risk investment strategies which have been pursued by many of the nation's now-troubled thrift institutions.

The beginning of the problem thrift period can be traced back to the late 1970s when rising interest rates shrank the spread between the rates thrifts earned on their long-term asset portfolios, principally mortgages, and the rate

they paid on their primarily short-term deposit liabilities. As the 1980s arrived and profit margins continued to be squeezed, many already-weakened thrifts tried to improve their earnings performance by undertaking speculative high-risk investment strategies. Needless to say, many of these weak institutions suffered equity-eroding losses as the high-risk investments proved unsuccessful. Certain institutions were in such dire financial condition that Kane coined the now-popular phrase "zombie thrifts," referring to institutions that are still operating but financially moribund.

The term "zombie" has most often been applied to problem thrifts in Texas. These institutions are also the ones that pursued the most speculative investment strategies and that were devastated by the collapse of the oil economy. In Texas, the thrift problem is so severe that an estimated 100-plus thrifts are currently in need of rescue. Although the crisis is concentrated in the so-called oil patch—Texas, Oklahoma, and Louisiana—zombie thrifts are by no means located only in this geographic area.

On August 10, 1987, President Reagan signed legislation that provided $10.8 billion for the insolvent FSLIC. This assistance package is part of the Competitive Equality Banking Act of 1987, which allowed the Federal Home Loan Bank Board to create a new entity, the Financing Corporation, which serves as the vehicle for replenishing the thrift insurance fund.[1] Funds to recapitalize the FSLIC will come from bonds sold in the capital markets. Interest payments on the debt will be made from assessments on FSLIC-insured thrifts, while the principal will be backed by zero-coupon long-term Treasury bonds bought with the proceeds of the bond issues.

This recapitalization plan is not without its own risks, however. First, the $10.8 billion capital infusion approved by Congress for thrift rescues nationwide is significantly less than the $15.2 billion that Home Loan Bank Board Chairman M. Danny Wall estimates will be required to clean up the thrift problem in Texas alone. The likelihood of such a shortfall is very real for the insurance fund, which former Home Loan Chairman Edwin J. Gray in early 1987 told Congress was losing $10 million per day. Even if one takes the approximate $20 billion available to the FSLIC through the year 1990, estimates of the total cost of liquidating insolvent thrifts nationwide range from $45 billion to a staggering $65 billion.[2] Second, given that they will in effect be subsidizing insolvent and perhaps poorly managed zombie institutions, many healthy, well-managed thrifts may actually withdraw from the FSLIC after a one-year moratorium. Finally, the weakest institutions may not even be able to meet the assessments required to service the bonds.

One often-proposed solution to the current thrift crisis is to merge the FSLIC with the much healthier Federal Deposit Insurance Corporation (FDIC), which insures the deposits at the nation's commercial banks and, like the FSLIC, has prime responsibility for handling insolvent institutions. The rationale underlying this proposal derives from the fact that the FDIC began 1988 with roughly $18 billion in reserves in addition to an annual income from premium assessments of roughly $3.3 billion.

Though a merger between the nation's two most important deposit insurers seems plausible, according to noted financial consultant Dan Brumbaugh, Jr., and banking law scholar Robert Litan, the FDIC may soon be unable to fund the cost of closing all insolvent commercial banks and may itself be headed towards a fate similar to the FSLIC's.[3] Brumbaugh and Litan base their conjecture on an analysis of the capital base of the nation's commercial banks with over $50 million in total assets. This analysis, which is conducted relative to the cushion available to the FDIC in the event of bank failures, focuses on the growth of insolvent commercial banks during the 1986-87 period.

Although many analysts will no doubt disagree with the Brumbaugh-Litan conjecture, their analysis does raise questions about the financial strength of the FDIC. Factors that Brumbaugh and Litan cite as contributing to the overvaluation of the deposit insurer's financial strength include the use of generally accepted accounting principles that tend to overstate the true value of bank capital and understate insolvency risk, the presence of inadequate loan loss reserves for the Third World loans being carried on bank balance sheets, and the overstating of the value of domestic real estate owned by banks.

Kane's Analysis: Deposit Insurance Problems and Solutions

In analyzing U.S. deposit insurance programs—that is, the programs of the FSLIC, the FDIC, and the National Credit Union Share Insurance Fund—Professor Kane provides a masterful analysis of the incentive problems that arise in deposit insurance relationships. These problems occur (1) when the insurance premiums charged to institutions are actuarially unfounded—in other words, not related to the underlying riskiness of the insured institution—and (2) when regulatory policy further retards market discipline from operating to keep risk-return relationships in balance.

The presence of risk-insensitive premiums leads to the insurance problems of moral hazard and adverse selection. Moral hazard arises when the presence and structure of insurance change the incentives of the insured to exercise proper care under the insurance contract. The problem of adverse selection exists when the insured presents more of a risk to the insurer than the insurer can detect from the information provided. Both problems result in insured parties' taking excessive risks since the insurance premiums do not cover the insurer's expected losses.

With fixed-rate deposit insurance, one can understand why Kane's zombie thrifts pursue high-risk investment strategies. By bidding for deposits at premium rates, these institutions are actually issuing contingent claims on the insurance funds. If the high-risk, high-return projects financed by these deposits pay off, then the institution makes handsome returns. On the other hand, if these projects fail, the management can basically walk away, leaving the problem on the insurance agency's doorstep. Thus, their behavior can be likened to a Ponzi scheme or a game of "heads I win, tails you lose."

Kane's exposition is divided into six chapters. Chapter 1 introduces the reader to the general regulatory environment of financial institutions and reviews the nature of the incentive problems along with suggestions for reform of the deposit insurance system. Chapter 2 examines the preferred procedures that federal regulators use for handling insolvent depository institutions. Professor Kane discusses how delayed closings and the preference of the insurance agencies for purchases and assumptions of insolvent institutions by solvent ones actually dull the market's ability to discipline management, thus allowing further risk-taking on the part of banks and thrifts. These actions lead to a significant weakening of the deposit insurance funds. Professor Kane provides statistical support for this claim with data based on FDIC- and FSLIC-assisted mergers that occurred during the early 1980s.

Chapter 3 describes in some detail the major types of risk that bank and thrift managements have assumed as a result of an inefficient deposit insurance program. The author presents numerical estimates on the exposure of the insurance funds along with their loss experience over the 15 years prior to 1985. The interested reader should compare Professor Kane's estimates with those cited in the introduction of this review. Clearly, regulatory policy has not kept pace with the ability of institution managers to add risk to their portfolios.

Interest-rate risk is covered in chapter 4. Basically, the author shows how interest-rate risk—the loss of market value of assets as a result of changes in market interest rates—can be considered equivalent to the default of part of an institution's mortgage portfolio. Using this equivalence relationship, Kane examines pseudodefault rates on the mortgage holdings of insured thrifts, savings and loans, and mutual savings banks over several years. This chapter also includes several methods for estimating the value of deposit insurance to insured institutions. These methods range from a simple percentage of insured deposits to the use of the rather sophisticated option pricing models of modern financial economics.

Chapter 5 of the book concentrates on the risk associated with lending to less developed countries (LDCs). The magnitude of the LDC debt crisis is related to the magnitude of federal default guarantees. Professor Kane argues that the establishment of a secondary market for this debt would help resolve the crisis by establishing market values for the debt. These could then be used to restructure the loans on the institutions' books. However, this approach may be unacceptable as it would require substantial reductions in the book equity of the institutions affected.

The final chapter presents Professor Kane's broad-based proposals for deposit insurance reform. For example, the use of market value measures, as opposed to historical valuation, is proposed. In addition, risk-based deposit insurance premiums are suggested as another way to alleviate the incentive problems associated with the current deposit insurance program. Finally, Kane recommends implementing statutory restrictions on the ability of regulatory bodies to keep insolvent institutions operating.

A 1988 Perspective on Kane's Analysis

Taken as a whole or separately, the author's proposals are certainly steps in the right direction and could form part of the basis for serious reform of the deposit insurance system. However, the presence of measurement error, a practical certainty in any attempt to report thrift assets and liabilities at their market values, will inhibit the judicious closing of thrifts when their net worth is zero. In addition, such closings are certain to be challenged in the courts by thrift owners and other stakeholders in an effort to preserve their property rights, and the courts will not necessarily agree with the insurers. Finally, such litigation might require a significant expenditure of resources by the insurers or the thrift owners, resources that could be better used in other capacities.

In today's environment Kane's proposals represent only modest changes for a system that needs major restructuring. If Professor Kane were writing this monograph today, he would likely offer sweeping changes in the overall form and structure of the nation's deposit insurance program, including a discussion of how the transition to the new structure should be managed. This transition issue will certainly be a key component in any major reform proposal.

The Gathering Crisis in Deposit Insurance is an important volume for academic scholars, policymakers, practitioners, and others interested in the overall safety and soundness of our financial system. If the finance community is lucky, Professor Kane will publish a new volume dealing with the question of where we go from here.

William Curt Hunter

The reviewer is a research officer in the Atlanta Fed's Research Department.

Notes

[1] In addition to providing much-needed assistance to the thrift insurance fund, the law also requires banks to clear customers' checks more quickly, bans the creation of new limited-service (nonbank) banks, and imposes a moratorium on granting banks authority to expand into such areas as insurance, real estate, and securities underwriting.

[2] William Proxmire, "Comment," *American Banker*, September 23, 1988, 4.

[3] R. Dan Brumbaugh, Jr., and Robert E. Litan, "Insuring the Insurers: The Banks Are in Big Trouble, Too," *The New York Times*, Sunday, August 21, 1988, sec. 3.

Economic Review

Index for 1988

FINANCE

$ millions	SEPT 1988	AUG 1988	JUL 1988	SEPT 1987	AUG 1987	JUL 1987	ANN % CHG (*)
UNITED STATES							
Commercial Bank Deposits	1,836,700	1,818,206	1,818,838	1,698,632	1,677,766	1,694,997	+ 8
Demand	361,559	360,813	380,672	358,242	354,979	369,381	+ 1
NOW	176,020	171,569	172,739	160,086	153,372	155,256	+10
Savings	519,728	522,585	524,239	511,382	508,633	510,573	+ 2
Time	822,969	806,118	794,253	703,841	697,147	691,733	+17
SOUTHEAST							
Commercial Bank Deposits	221,807	220,039	219,005	205,131	200,839	201,150	+ 8
Demand	40,461	40,659	41,635	40,951	39,435	40,767	- 1
NOW	24,330	23,834	24,005	22,227	21,384	21,785	+ 9
Savings	58,406	58,408	58,503	57,488	57,385	57,326	+ 2
Time	102,808	101,211	99,751	88,574	86,512	84,934	+16
ALABAMA							
Commercial Bank Deposits	23,006	22,606	22,486	20,909	20,200	20,405	+10
Demand	4,127	4,003	4,099	4,149	3,923	4,041	- 1
NOW	2,630	2,619	2,609	2,231	2,131	2,146	+18
Savings	4,779	4,828	4,840	4,695	4,582	4,606	+ 2
Time	11,997	11,628	11,474	10,264	9,926	9,978	+17
FLORIDA							
Commercial Bank Deposits	87,412	86,558	86,737	80,498	78,889	78,403	+ 9
Demand	15,549	15,563	16,163	15,604	15,134	15,824	- 0
NOW	10,830	10,596	10,734	10,026	9,681	9,860	+ 8
Savings	26,943	27,175	27,266	27,221	27,232	26,933	- 1
Time	35,528	34,787	34,264	29,144	28,373	27,327	+22
GEORGIA							
Commercial Bank Deposits	37,025	36,614	35,986	33,179	32,157	32,403	+12
Demand	8,447	8,879	9,013	8,799	8,481	8,568	- 4
NOW	3,521	3,407	3,419	3,208	3,021	3,088	+10
Savings	9,657	9,344	9,370	8,847	8,790	8,873	+ 9
Time	16,914	16,563	15,993	13,900	13,328	13,246	+22
LOUISIANA							
Commercial Bank Deposits	27,995	28,087	28,089	27,139	26,986	27,187	+ 3
Demand	4,953	4,953	5,008	4,837	4,738	4,961	+ 2
NOW	2,405	2,391	2,389	2,209	2,176	2,218	+ 9
Savings	7,929	8,087	8,090	7,899	7,887	7,898	+ 0
Time	13,132	13,125	13,070	12,536	12,556	12,475	+ 5
MISSISSIPPI							
Commercial Bank Deposits	15,172	15,168	15,175	14,306	14,014	13,973	+ 6
Demand	2,335	2,320	2,429	2,374	2,279	2,338	- 2
NOW	1,575	1,560	1,568	1,465	1,400	1,400	+ 8
Savings	2,974	2,972	2,990	2,981	3,013	3,028	- 0
Time	8,592	8,578	8,520	7,727	7,553	7,426	+11
TENNESSEE							
Commercial Bank Deposits	31,197	30,827	30,711	29,100	28,593	28,779	+ 7
Demand	5,050	4,941	5,032	5,188	4,880	5,035	- 3
NOW	3,369	3,261	3,294	3,088	2,975	3,073	+ 9
Savings	6,124	6,002	5,947	5,845	5,881	5,988	+ 5
Time	16,645	16,530	16,430	15,003	14,776	14,482	+11

NOTES: All deposit data are extracted from the Federal Reserve Report of Transaction Accounts, other Deposits and Vault Cash (FR2900), and are reported for the average of the week ending the first Monday of the month. Most recent data, reported institutions with over $40 million in deposits and $3.2 million of reserve requirements as of September 1988, represents 95 percent of deposits in the six-state area. The major differences between this report and the "call report" are size, the treatment of interbank deposits, and the treatment of float. The total deposit data generated from the Report of Transaction Accounts eliminates interbank deposits by reporting the net of deposits "due to" and "due from" other depository institutions. The Report of Transaction Accounts subtracts cash in process of collection from demand deposits, while the call report does not. The Southeast data represent the total of the six states. Subcategories were chosen on a selective basis and do not add to total. P = preliminary.
* = Most recent month vs. year-ago month.

FINANCE

$ millions	OCT 1988	SEPT 1988	AUG 1988	OCT 1987	SEPT 1987	AUG 1987	ANN % CHG (*)
UNITED STATES							
Commercial Bank Deposits	1,798,554	1,836,700	1,818,206	1,652,890	1,698,632	1,677,766	+ 9
Demand	358,778	361,559	360,813	342,013	358,242	354,979	+ 5
NOW	168,970	176,020	171,569	152,389	160,086	153,372	+11
Savings	506,112	519,728	522,585	495,345	511,382	508,633	+ 2
Time	814,269	822,969	806,118	693,320	703,841	697,147	+17
SOUTHEAST							
Commercial Bank Deposits	217,155	221,807	220,039	199,734	205,131	200,839	+ 9
Demand	39,702	40,461	40,659	38,870	40,951	39,435	+ 2
NOW	23,979	24,330	23,834	21,437	22,227	21,384	+12
Savings	56,635	58,406	58,408	55,770	57,488	57,385	+ 2
Time	101,895	102,808	101,211	87,109	88,574	86,512	+17
ALABAMA							
Commercial Bank Deposits	22,421	23,006	22,606	20,081	20,909	20,200	+12
Demand	3,943	4,127	4,003	3,954	4,149	3,923	- 0
NOW	2,516	2,630	2,619	2,145	2,231	2,131	+17
Savings	4,653	4,779	4,828	4,488	4,695	4,582	+ 4
Time	11,809	11,997	11,628	9,887	10,264	9,926	+19
FLORIDA							
Commercial Bank Deposits	86,640	87,412	86,558	80,476	80,498	78,889	+ 8
Demand	15,353	15,549	15,563	15,096	15,604	15,134	+ 2
NOW	10,639	10,830	10,596	9,969	10,026	9,681	+ 7
Savings	26,326	26,943	27,175	26,786	27,221	27,232	- 2
Time	36,075	35,528	34,787	29,938	29,144	28,373	+20
GEORGIA							
Commercial Bank Deposits	36,037	37,025	36,614	31,549	33,179	32,157	+14
Demand	8,559	8,447	8,879	8,154	8,799	8,481	+ 5
NOW	3,393	3,521	3,407	2,969	3,208	3,021	+14
Savings	9,078	9,657	9,344	8,432	8,847	8,790	+ 8
Time	16,657	16,914	16,563	13,267	13,900	13,328	+26
LOUISIANA							
Commercial Bank Deposits	26,638	27,995	28,087	25,697	27,139	26,986	+ 4
Demand	4,653	4,953	4,953	4,584	4,837	4,738	+ 2
NOW	2,245	2,405	2,391	2,050	2,209	2,176	+10
Savings	7,609	7,929	8,087	7,547	7,899	7,887	+ 1
Time	12,495	13,132	13,125	11,806	12,536	12,556	+ 6
MISSISSIPPI							
Commercial Bank Deposits	14,927	15,172	15,168	13,646	14,306	14,014	+ 9
Demand	2,264	2,335	2,320	2,277	2,374	2,279	- 1
NOW	1,544	1,575	1,560	1,356	1,465	1,400	+14
Savings	2,896	2,974	2,972	2,856	2,981	3,013	+ 1
Time	8,479	8,592	8,578	7,456	7,727	7,553	+14
TENNESSEE							
Commercial Bank Deposits	30,492	31,197	30,827	28,285	29,100	28,593	+ 8
Demand	4,930	5,050	4,941	4,805	5,188	4,880	+ 3
NOW	3,642	3,369	3,261	2,948	3,088	2,975	+24
Savings	6,073	6,124	6,002	5,661	5,845	5,881	+ 7
Time	16,380	16,645	16,530	14,755	15,003	14,776	+11

NOTES: All deposit data are extracted from the Federal Reserve Report of Transaction Accounts, other Deposits and Vault Cash (FR2900), and are reported for the average of the week ending the first Monday of the month. Most recent data, reported institutions with over $40 million in deposits and $3.2 million of reserve requirements as of September 1988, represents 95 percent of deposits in the six-state area. The major differences between this report and the "call report" are size, the treatment of interbank deposits, and the treatment of float. The total deposit data generated from the Report of Transaction Accounts eliminates interbank deposits by reporting the net of deposits "due to" and "due from" other depository institutions. The Report of Transaction Accounts subtracts cash in process of collection from demand deposits, while the call report does not. The Southeast data represent the total of the six states. Subcategories were chosen on a selective basis and do not add to total. P = preliminary. * = Most recent month vs. year-ago month.

EMPLOYMENT

	JUL 1988	JUN 1988	JUL 1987	ANN % CHG		JUL 1988	JUN 1988	JUL 1987	ANN % CHG
UNITED STATES									
Civilian Labor Force - thous.	123,888	123,028	122,105	+ 1	Nonfarm Employment - thous.	106,055	106,882	102,212	+ 4
Total Employed - thous.	117,066	116,209	114,652	+ 2	Manufacturing	19,500	19,651	18,982	+ 3
Total Unemployed - thous.	6,823	6,819	7,453	- 8	Construction	5,634	5,507	5,628	+ 0
					Trade	25,569	25,545	24,544	+ 4
Unemployment Rate - % SA	5.4	5.3	6.0		Government	16,450	17,423	16,156	+ 2
					Services	25,781	25,663	24,479	+ 5
Mfg. Avg. Wkly. Hours	41.2	41.2	40.6	+ 0	Fin., Ins. & Real Est.	6,779	6,740	6,660	+ 2
Mfg. Avg. Wkly. Earn. - $	414	419	401	+ 3	Trans., Com. & Pub. Util.	5,597	5,611	5,377	+ 4
SOUTHEAST									
Civilian Labor Force - thous.	16,690	16,591	16,448	+ 1	Nonfarm Employment - thous.	13,779	13,877	13,156	+ 5
Total Employed - thous.	15,553	15,543	15,247	+ 2	Manufacturing	2,369	2,393	2,343	+ 1
Total Unemployed - thous.	1,087	1,048	1,189	- 9	Construction	804	796	793	+ 1
					Trade	3,454	3,457	3,369	+ 3
Unemployment Rate - % SA	6.0	6.1	6.2		Government	2,312	2,400	2,245	+ 3
					Services	3,136	3,136	2,994	+ 5
Mfg. Avg. Wkly. Hours	41.0	41.6	40.9	+ 0	Fin., Ins. & Real Est.	829	827	816	+ 2
Mfg. Avg. Wkly. Earn. - $	369	373	360	+ 3	Trans., Com. & Pub. Util.	769	768	752	+ 2
ALABAMA									
Civilian Labor Force - thous.	1,882	1,875	1,913	- 2	Nonfarm Employment - thous.	1,537	1,541	1,510	+ 2
Total Employed - thous.	1,751	1,746	1,764	- 1	Manufacturing	376	378	370	+ 2
Total Unemployed - thous.	131	129	149	-12	Construction	77	77	76	+ 1
					Trade	339	339	333	+ 2
Unemployment Rate - % SA	6.5	7.0	7.3		Government	305	309	297	+ 3
					Services	283	283	277	+ 2
Mfg. Avg. Wkly. Hours	40.9	41.5	41.3	- 1	Fin., Ins. & Real Est.	71	71	72	- 1
Mfg. Avg. Wkly. Earn. - $	369	373	362	+ 2	Trans., Com. & Pub. Util.	74	73	73	+ 1
FLORIDA									
Civilian Labor Force - thous.	6,199	6,142	5,985	+ 4	Nonfarm Employment - thous.	5,022	5,083	4,802	+ 5
Total Employed - thous.	5,886	5,847	5,630	+ 5	Manufacturing	535	540	527	+ 2
Total Unemployed - thous.	313	295	356	-12	Construction	353	351	345	+ 2
					Trade	1,375	1,384	1,304	+ 6
Unemployment Rate - % SA	4.3	4.6	5.2		Government	724	771	692	+ 5
					Services	1,393	1,395	1,305	+ 7
Mfg. Avg. Wkly. Hours	40.1	41.0	40.2	- 1	Fin., Ins. & Real Est.	372	371	364	+ 2
Mfg. Avg. Wkly. Earn. - $	338	343	328	+ 3	Trans., Com. & Pub. Util.	261	262	256	+ 2
GEORGIA									
Civilian Labor Force - thous.	3,181	3,150	3,075	+ 3	Nonfarm Employment - thous.	2,794	2,802	2,770	+ 1
Total Employed - thous.	2,973	2,948	2,900	+ 3	Manufacturing	567	571	569	- 0
Total Unemployed - thous.	208	202	175	+19	Construction	152	150	154	- 1
					Trade	697	695	697	+ 0
Unemployment Rate - % SA	6.1	6.1	5.3		Government	475	487	466	+ 2
					Services	558	556	541	+ 3
Mfg. Avg. Wkly. Hours	41.4	41.5	42.1	- 2	Fin., Ins. & Real Est.	158	157	158	0
Mfg. Avg. Wkly. Earn. - $	359	359	357	+ 1	Trans., Com. & Pub. Util.	178	178	176	+ 1
LOUISIANA									
Civilian Labor Force - thous.	1,938	1,916	1,956	- 1	Nonfarm Employment - thous.	1,495	1,498	1,477	+ 1
Total Employed - thous.	1,738	1,712	1,723	+ 1	Manufacturing	168	169	163	+ 4
Total Unemployed - thous.	200	204	233	-14	Construction	84	82	80	+ 4
					Trade	364	363	365	- 0
Unemployment Rate - % SA	9.9	10.2	11.5		Government	306	311	306	0
					Services	329	329	318	+ 3
Mfg. Avg. Wkly. Hours	42.4	42.9	41.1	+ 3	Fin., Ins. & Real Est.	84	85	85	- 1
Mfg. Avg. Wkly. Earn. - $	470	474	451	+ 4	Trans., Com. & Pub. Util.	105	104	105	0
MISSISSIPPI									
Civilian Labor Force - thous.	1,146	1,144	1,155	- 1	Nonfarm Employment - thous.	877	884	851	+ 3
Total Employed - thous.	1,055	1,054	1,032	+ 2	Manufacturing	233	235	221	+ 5
Total Unemployed - thous.	91	90	122	-25	Construction	35	35	36	- 3
					Trade	191	191	185	+ 2
Unemployment Rate - % SA	7.5	7.4	10.0		Government	184	189	179	+ 3
					Services	144	145	141	+ 2
Mfg. Avg. Wkly. Hours	40.0	40.7	39.9	+ 0	Fin., Ins. & Real Est.	39	39	39	0
Mfg. Avg. Wkly. Earn. - $	310	318	301	+ 3	Trans., Com. & Pub. Util.	43	43	42	+ 2
TENNESSEE									
Civilian Labor Force - thous.	2,343	2,364	2,352	- 0	Nonfarm Employment - thous.	2,052	2,068	1,998	+ 3
Total Employed - thous.	2,199	2,236	2,198	+ 0	Manufacturing	497	502	493	+ 1
Total Unemployed - thous.	144	128	154	- 6	Construction	103	102	102	+ 1
					Trade	488	353	482	+ 1
Unemployment Rate - % SA	5.8	5.4	6.2		Government	318	333	305	+ 4
					Services	428	428	410	+ 4
Mfg. Avg. Wkly. Hours	41.2	41.9	40.8	+ 1	Fin., Ins. & Real Est.	104	104	98	+ 6
Mfg. Avg. Wkly. Earn. - $	370	374	363	+ 1	Trans., Com. & Pub. Util.	108	107	99	+ 9

NOTES: All labor force data are from Bureau of Labor Statistics reports supplied by state agencies. Only the unemployment rate data are seasonally adjusted. The Southeast data represent the total of the six states.

EMPLOYMENT

	AUG 1988	JUL 1988	AUG 1987	ANN % CHG		AUG 1988	JUL 1988	AUG 1987	ANN % CHG
UNITED STATES									
Civilian Labor Force - thous.	123,396	123,888	121,614	+ 1	Nonfarm Employment - thous.	106,287	106,055	102,471	+ 4
Total Employed - thous.	116,737	117,066	114,527	+ 2	Manufacturing	19,668	19,500	19,198	+ 2
Total Unemployed - thous.	6,659	6,823	7,088	- 6	Construction	5,690	5,634	5,352	+ 6
					Trade	25,650	22,569	24,620	+ 4
Unemployment Rate - % SA	5.6	5.4	6.0		Government	16,343	16,450	15,993	+ 2
					Services	25,802	25,781	24,515	+ 5
Mfg. Avg. Wkly. Hours	41.3	41.2	41.3	0	Fin., Ins. & Real Est.	6,778	6,779	6,661	+ 2
Mfg. Avg. Wkly. Earn. - $	412	414	403	+ 2	Trans., Com. & Pub. Util.	5,614	5,597	5,398	+ 4
SOUTHEAST									
Civilian Labor Force - thous.	16,685	16,690	16,318	+ 2	Nonfarm Employment - thous.	13,767	13,779	13,421	+ 3
Total Employed - thous.	15,268	15,553	15,204	+ 0	Manufacturing	2,378	2,369	2,358	+ 1
Total Unemployed - thous.	1,057	1,087	1,171	-10	Construction	804	804	797	+ 1
					Trade	3,460	3,454	3,369	+ 3
Unemployment Rate - % SA	6.3	6.0	6.9		Government	2,291	2,312	2,232	+ 3
					Services	3,140	3,136	3,000	+ 5
Mfg. Avg. Wkly. Hours	41.3	41.0	41.1	+ 0	Fin., Ins. & Real Est.	827	829	816	+ 1
Mfg. Avg. Wkly. Earn. - $	371	369	360	+ 3	Trans., Com. & Pub. Util.	770	769	753	+ 2
ALABAMA									
Civilian Labor Force - thous.	1,885	1,882	1,904	- 1	Nonfarm Employment - thous.	1,527	1,537	1,510	+ 1
Total Employed - thous.	1,752	1,751	1,763	- 1	Manufacturing	376	376	372	+ 1
Total Unemployed - thous.	132	131	141	- 6	Construction	76	77	77	- 1
					Trade	341	339	334	+ 2
Unemployment Rate - % SA	7.2	6.5	7.6		Government	294	305	294	0
					Services	284	283	278	+ 2
Mfg. Avg. Wkly. Hours	41.5	40.9	41.5	0	Fin., Ins. & Real Est.	71	71	71	0
Mfg. Avg. Wkly. Earn. - $	372	369	363	+ 2	Trans., Com. & Pub. Util.	74	74	73	+ 1
FLORIDA									
Civilian Labor Force - thous.	6,235	6,199	5,925	+ 5	Nonfarm Employment - thous.	5,023	5,022	4,796	+ 5
Total Employed - thous.	5,921	5,886	5,589	+ 6	Manufacturing	537	535	528	+ 2
Total Unemployed - thous.	314	313	336	- 7	Construction	354	353	345	+ 3
					Trade	1,377	1,375	1,305	+ 6
Unemployment Rate - % SA	4.9	4.3	5.5		Government	717	724	682	+ 5
					Services	1,398	1,393	1,307	+ 7
Mfg. Avg. Wkly. Hours	40.6	40.1	40.3	+ 1	Fin., Ins. & Real Est.	371	372	364	+ 2
Mfg. Avg. Wkly. Earn. - $	341	338	329	+ 4	Trans., Com. & Pub. Util.	261	261	256	+ 2
GEORGIA									
Civilian Labor Force - thous.	3,197	3,181	3,067	+ 4	Nonfarm Employment - thous.	2,794	2,794	2,777	+ 1
Total Employed - thous.	3,001	2,973	2,905	+ 3	Manufacturing	563	567	571	- 1
Total Unemployed - thous.	196	208	162	+21	Construction	152	152	155	- 2
					Trade	699	697	696	+ 1
Unemployment Rate - % SA	6.3	6.1	5.2		Government	478	475	468	+ 2
					Services	558	558	543	+ 3
Mfg. Avg. Wkly. Hours	41.3	41.4	41.6	- 1	Fin., Ins. & Real Est.	158	158	158	0
Qfg. Avg. Wkly. Earn. - $	356	359	352	+ 1	Trans., Com. & Pub. Util.	178	178	176	+ 1
LOUISIANA									
Civilian Labor Force - thous.	1,919	1,938	1,941	- 1	Nonfarm Employment - thous.	1,496	1,495	1,478	+ 1
Total Employed - thous.	1,727	1,738	1,723	+ 1	Manufacturing	169	168	164	+ 3
Total Unemployed - thous.	192	200	218	-12	Construction	85	84	82	+ 4
					Trade	365	364	365	0
Unemployment Rate - % SA	10.1	9.9	11.3		Government	303	306	303	0
					Services	330	329	320	+ 3
Mfg. Avg. Wkly. Hours	42.9	42.4	41.4	+ 4	Fin., Ins. & Real Est.	84	84	85	- 1
Mfg. Avg. Wkly. Earn. - $	470	470	450	+ 4	Trans., Com. & Pub. Util.	105	105	104	+ 1
MISSISSIPPI									
Civilian Labor Force - thous.	1,134	1,146	1,142	- 1	Nonfarm Employment - thous.	875	877	858	+ 2
Total Employed - thous.	1,046	1,055	1,029	+ 2	Manufacturing	234	233	230	+ 2
Total Unemployed - thous.	89	91	113	-21	Construction	35	35	36	- 3
					Trade	191	191	187	+ 2
Unemployment Rate - % SA	7.8	7.5	9.9		Government	185	184	179	+ 3
					Services	141	144	137	+ 3
Mfg. Avg. Wkly. Hours	40.4	40.0	40.4	0	Fin., Ins. & Real Est.	39	39	39	0
Mfg. Avg. Wkly. Earn. - $	318	310	306	+ 4	Trans., Com. & Pub. Util.	43	43	43	0
TENNESSEE									
Civilian Labor Force - thous.	2,314	2,343	2,339	- 1	Nonfarm Employment - thous.	2,052	2,052	2,007	+ 2
Total Employed - thous.	2,180	2,199	2,198	- 1	Manufacturing	500	497	498	+ 0
Total Unemployed - thous.	133	144	141	- 6	Construction	103	103	103	0
					Trade	488	488	481	+ 1
Unemployment Rate - % SA	6.3	5.8	6.7		Government	314	318	307	+ 2
					Services	429	428	413	+ 4
Mfg. Avg. Wkly. Hours	41.2	41.2	41.3	- 0	Fin., Ins. & Real Est.	104	104	98	+ 6
MfG. Avg. Wkly. Earn. - $	368	370	362	+ 2	Trans., Com. & Pub. Util.	108	108	100	+ 8

NOTES: All labor force data are from Bureau of Labor Statistics reports supplied by state agencies. Only the unemployment rate data are seasonally adjusted. The Southeast data represent the total of the six states.

CONSTRUCTION

12-month cumulative rate	JUL 1988	JUN 1988	JUL 1987	ANN % CHG		JUL 1988	JUN 1988	JUL 1987	ANN % CHG
UNITED STATES									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	50,250	50,613	47,615	+ 6	Value - $ Mil.	93,789	94,377	96,425	- 3
Industrial Bldgs.	7,249	7,323	8,183	-11	Residential Permits - Thous.				
Offices	12,717	12,773	13,974	- 9	Single-family units	982.5	992.1	1,059.3	- 7
Stores	13,562	13,679	12,237	+11	Multifamily units	452.8	462.5	557.1	-19
Hospitals	2,228	2,315	2,488	-10	Total Building Permits				
Schools	1,078	1,079	1,170	- 8	Value - $ Mil.	140,702	141,697	144,084	- 2
SOUTHEAST									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	7,745	7,743	7,802	- 1	Value - $ Mil.	15,613	15,692	15,805	- 1
Industrial Bldgs.	781	777	1,001	-22	Residential Permits - Thous.				
Offices	1,872	1,891	1,855	+ 1	Single-family units	198.9	200.5	206.0	- 3
Stores	2,435	2,468	2,465	- 1	Multifamily units	104.3	106.0	109.6	- 5
Hospitals	499	484	432	+16	Total Building Permits				
Schools	229	237	182	+26	Value - $ Mil.	23,330	23,406	23,455	- 1
ALABAMA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	517	508	530	- 2	Value - $ Mil.	575	588	689	-17
Industrial Bldgs.	27	22	53	-49	Residential Permits - Thous.				
Offices	179	175	159	+13	Single-family units	9.6	9.9	11.0	-13
Stores	173	177	184	- 6	Multifamily units	2.8	2.8	5.7	-51
Hospitals	13	14	16	-19	Total Building Permits				
Schools	25	18	27	- 7	Value - $ Mil.	1,092	1,097	1,241	-12
FLORIDA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	3,691	3,689	3,791	- 3	Value - $ Mil.	8,985	9,008	8,914	+ 1
Industrial Bldgs.	328	333	391	-16	Residential Permits - Thous.				
Offices	803	816	851	- 6	Single-family units	112.4	112.7	111.1	+ 1
Stores	1,082	1,062	1,157	- 6	Multifamily units	73.2	74.9	69.8	+ 5
Hospitals	174	173	307	-43	Total Building Permits				
Schools	96	97	37	+159	Value - $ Mil.	12,676	12,698	12,705	- 0
GEORGIA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	1,916	1,916	1,769	+ 8	Value - $ Mil.	3,650	3,682	3,577	+ 2
Industrial Bldgs.	251	252	574	-56	Residential Permits - Thous.				
Offices	559	551	464	+20	Single-family units	44.9	45.3	48.3	- 7
Stores	603	613	559	+ 8	Multifamily units	18.0	18.6	20.3	-11
Hospitals	128	124	21	+510	Total Building Permits				
Schools	70	83	72	- 3	Value - $ Mil.	5,566	5,599	5,346	+ 4
LOUISIANA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	322	354	464	-31	Value - $ Mil.	377	385	461	-18
Industrial Bldgs.	21	22	37	-43	Residential Permits - Thous.				
Offices	56	60	89	+37	Single-family units	5.8	5.9	7.1	-18
Stores	106	146	176	-40	Multifamily units	0.9	0.9	15.2	-94
Hospitals	117	105	22	+432	Total Building Permits				
Schools	9	9	28	-68	Value - $ Mil.	699	739	886	-21
MISSISSIPPI									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	206	219	242	-15	Value - $ Mil.	287	293	311	- 8
Industrial Bldgs.	23	23	31	-26	Residential Permits - Thous.				
Offices	48	54	58	-17	Single-family units	4.6	4.7	5.2	-12
Stores	63	64	73	-14	Multifamily units	1.7	1.8	1.3	+31
Hospitals	18	19	22	-18	Total Building Permits				
Schools	11	13	10	+10	Value - $ Mil.	493	512	552	-11
TENNESSEE									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	1,094	1,057	983	+11	Value - $ Mil.	1,739	1,735	1,854	- 6
Industrial Bldgs.	129	124	215	-40	Residential Permits - Thous.				
Offices	227	235	233	- 3	Single-family units	21.6	22.1	23.1	- 7
Stores	410	407	316	+30	Multifamily units	7.7	7.1	12.1	-36
Hospitals	49	50	44	+11	Total Building Permits				
Schools	18	17	8	+125	Value - $ Mil.	2,804	2,762	2,725	+ 3

NOTES: Data supplied by the U.S. Bureau of the Census, Housing Units Authorized By Building Permits and Public Contracts, C-40. Nonresidential data exclude the cost of construction for publicly owned buildings. The Southeast data represent the total of the six states.

CONSTRUCTION

12-month cumulative rate	AUG 1988	JUL 1988	AUG 1987	ANN % CHG		AUG 1988	JUL 1988	AUG 1987	ANN % CHG
UNITED STATES									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	50,960	50,250	47,265	+ 8	Value - $ Mil.	95,099	93,789	96,711	- 2
Industrial Bldgs.	7,391	7,249	8,032	- 8	Residential Permits - Thous.				
Offices	12,979	12,717	13,715	- 5	Single-family units	991.4	982.5	1,057.2	- 6
Stores	13,610	13,562	12,450	+ 9	Multifamily units	453.1	452.8	543.2	-17
Hospitals	2,377	2,228	2,425	- 2	Total Building Permits				
Schools	1,133	1,078	1,070	+ 6	Value - $ Mil.	142,722	140,702	143,976	- 1
SOUTHEAST									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	7,838	7,745	7,222	+ 8	Value - $ Mil.	15,758	15,613	15,909	- 1
Industrial Bldgs.	782	781	993	-21	Residential Permits - Thous.				
Offices	1,867	1,872	1,871	- 0	Single-family units	200.3	198.9	206.2	- 3
Stores	2,454	2,435	2,474	- 1	Multifamily units	94.2	104.3	116.7	-19
Hospitals	534	499	397	+34	Total Building Permits				
Schools	224	229	174	+29	Value - $ Mil.	23,565	23,359	23,631	- 0
ALABAMA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	536	517	545	- 2	Value - $ Mil.	585	575	656	-11
Industrial Bldgs.	29	27	52	-44	Residential Permits - Thous.				
Offices	174	179	164	+ 6	Single-family units	9.6	9.6	10.9	-11
Stores	174	173	180	- 3	Multifamily units	2.9	2.8	4.5	-36
Hospitals	25	13	16	+56	Total Building Permits				
Schools	24	25	26	- 8	Value - $ Mil.	1,119	1,092	1,200	- 7
FLORIDA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	3,743	3,691	3,740	+ 0	Value - $ Mil.	9,070	8,985	9,073	- 0
Industrial Bldgs.	321	328	390	- 8	Residential Permits - Thous.				
Offices	815	803	837	- 3	Single-family units	113.9	112.4	111.6	+ 2
Stores	1,086	1,082	1,147	- 5	Multifamily units	62.2	73.2	80.2	-22
Hospitals	191	174	289	-34	Total Building Permits				
Schools	95	96	39	+144	Value - $ Mil.	12,814	12,676	12,813	+ 0
GEORGIA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	1,953	1,916	1,748	+12	Value - $ Mil.	3,690	3,650	3,573	+ 3
Industrial Bldgs.	263	251	267	- 2	Residential Permits - Thous.				
Offices	577	559	496	+16	Single-family units	45.1	44.9	48.3	- 7
Stores	605	603	568	+ 7	Multifamily units	18.3	18.0	19.0	- 4
Hospitals	130	128	17	+665	Total Building Permits				
Schools	70	70	65	+ 8	Value - $ Mil.	5,644	5,566	5,321	+ 6
LOUISIANA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	327	322	465	-30	Value - $ Mil.	374	377	454	-18
Industrial Bldgs.	21	21	40	-48	Residential Permits - Thous.				
Offices	45	56	94	-52	Single-family units	5.7	5.8	7.0	-19
Stores	103	106	179	-42	Multifamily units	0.9	0.9	1.4	-36
Hospitals	116	117	15	+673	Total Building Permits				
Schools	8	9	26	-70	Value - $ Mil.	702	699	920	-24
MISSISSIPPI									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	200	206	238	-16	Value - $ Mil.	374	287	308	+21
Industrial Bldgs.	23	23	29	-21	Residential Permits - Thous.				
Offices	42	48	61	-31	Single-family units	4.6	4.6	5.1	-10
Stores	62	63	75	-17	Multifamily units	1.8	1.7	1.2	+50
Hospitals	21	18	17	+23	Total Building Permits				
Schools	12	11	7	+71	Value - $ Mil.	494	493	546	-10
TENNESSEE									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	1,077	1,094	986	+ 9	Value - $ Mil.	1,745	1,739	1,845	- 5
Industrial Bldgs.	124	129	209	-41	Residential Permits - Thous.				
Offices	214	227	219	- 2	Single-family units	21.4	21.6	23.3	- 8
Stores	424	410	325	+30	Multifamily units	8.1	7.7	10.4	-22
Hospitals	51	49	42	+21	Total Building Permits				
Schools	15	18	11	+36	Value - $ Mil.	2,792	2,833	2,831	- 1

NOTES: Data supplied by the U.S. Bureau of the Census, Housing Units Authorized By Building Permits and Public Contracts, C-40. Nonresidential data exclude the cost of construction for publicly owned buildings. The Southeast data represent the total of the six states.

GENERAL

	LATEST DATA	CURR PERIOD	PREV PERIOD	YEAR AGO	ANN % CHG
UNITED STATES					
Personal Income					
($ bil. - SAAR)	Q2	4,003.5	3,923.7	3,721.7	+ 8
Plane Pass. Arr. (thous.)		N.A.	N.A.	N.A.	
Petroleum Prod. (thous.)	JULY	8,107.0	8,185.0	8,203.5	- 1
Consumer Price Index					
1967=100	AUG	356.6	354.9	342.7	+ 4
Kilowatt Hours - mils.	JUNE	211.4	190.8	207.8	+ 2
SOUTHEAST					
Personal Income					
($ bil. - SAAR)	Q2	493.4	482.9	459.4	+ 7
Plane Pass. Arr. (thous.)	JULY	5,988.8	5,710.9	6,115.8	- 2
Petroleum Prod. (thous.)	JULY	1,286.0	1,303.0	1,421.0	-10
Consumer Price Index					
1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	35.1	31.4	35.1	0
ALABAMA					
Personal Income					
($ bil. - SAAR)	Q2	51.1	50.1	48.1	+ 6
Plane Pass. Arr. (thous.)	JULY	183.1	180.0	195.2	- 6
Petroleum Prod. (thous.)	JULY	56.0	56.0	56.0	0
Consumer Price Index					
1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	4.9	4.4	4.9	0
FLORIDA					
Personal Income					
($ bil. - SAAR)	Q2	201.0	195.5	184.6	+ 9
Plane Pass. Arr. (thous.)	JULY	2,990.1	2,731.9	2,929.9	+ 2
Petroleum Prod. (thous.)	JULY	21.0	22.0	22.0	- 5
Consumer Price Index		SEPT	JULY	SEPT	
1977=100 MIAMI		191.5	188.3	181.3	+ 6
Kilowatt Hours - mils.	JUNE	11.1	9.6	10.9	+ 2
GEORGIA					
Personal Income					
($ bil. - SAAR)	Q2	93.7	92.4	87.8	+ 7
Plane Pass. Arr. (thous.)	JULY	2,101.0	2,092.3	2,229.8	- 6
Petroleum Prod. (thous.)		N.A.	N.A.	N.A.	
Consumer Price Index					
1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	6.4	5.5	6.3	+ 2
LOUISIANA					
Personal Income					
($ bil. - SAAR)	Q2	53.2	52.2	50.6	+ 5
Plane Pass. Arr. (thous.)	JULY	316.4	305.1	329.3	- 4
Petroleum Prod. (thous.)	JULY	1,136.0	1,151.0	1,265.0	-10
Consumer Price Index					
1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	5.1	4.5	5.4	- 6
MISSISSIPPI					
Personal Income					
($ bil. - SAAR)	Q2	28.4	27.7	26.7	+ 6
Plane Pass. Arr. (thous.)	JULY	43.8	42.7	50.7	-14
Petroleum Prod. (thous.)	JULY	73.0	74.0	78.0	- 6
Consumer Price Index					
1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	2.3	2.1	2.4	- 4
TENNESSEE					
Personal Income					
($ bil. - SAAR)	Q2	66.0	65.0	61.6	+ 7
Plane Pass. Arr. (thous.)	JULY	354.4	358.9	380.9	- 7
Petroleum Prod. (thous.)		N.A.	N.A.	N.A.	
Consumer Price Index					
1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	5.3	5.3	5.2	+ 2

	AUG 1988	R JULY 1988	AUG 1987	ANN % CHG
UNITED STATES				
Agriculture				
Prices Rec'd by Farmers				
Index (1977=100)	144	141	127	+13
Broiler Placements (thous.)	96,828	92,563	93,199	+ 4
Calf Prices ($ per cwt.)	90.30	85.00	82.30	+10
Broiler Prices (¢ per lb.)	41.90	42.10	31.60	+33
Soybean Prices ($ per bu.)	8.40	8.87	5.02	+67
Broiler Feed Cost ($ per ton)	(Q3)248	(Q2)181	(Q3)193	+28
SOUTHEAST				
Agriculture				
Prices Rec'd by Farmers				
Index (1977=100)	130	129	111	+17
Broiler Placements (thous.)	39,972	39,638	36,789	+ 9
Calf Prices ($ per cwt.)	90.84	85.28	81.39	+12
Broiler Prices (¢ per lb.)	41.46	42.15	30.30	+37
Soybean Prices ($ per bu.)	8.52	9.06	5.28	+61
Broiler Feed Cost ($ per ton)	(Q3)226	(Q2)163	(Q3)181	+25
ALABAMA				
Agriculture				
Farm Cash Receipts - $ mil.				
Dates: JUNE, JUNE	1,145		862	+33
Broiler Placements (thous.)	14,428	14,177	12,802	+13
Calf Prices ($ per cwt.)	91.90	82.70	79.40	+14
Broiler Prices (¢ per lb.)	42.00	40.00	31.00	+35
Soybean Prices ($ per bu.)	8.55	9.45	5.38	+59
Broiler Feed Cost ($ per ton)	216	158	185	+17
FLORIDA				
Agriculture				
Farm Cash Receipts - $ mil.				
Dates: JUNE, JUNE	3,410		3,219	+ 6
Broiler Placements (thous.)	2,388	2,409	2,233	+ 7
Calf Prices ($ per cwt.)	96.00	95.80	84.70	+13
Broiler Prices (¢ per lb.)	41.50	42.40	30.50	+36
Soybean Prices ($ per bu.)	8.55	9.45	5.05	+69
Broiler Feed Cost ($ per ton)	216	158	185	+17
GEORGIA				
Agriculture				
Farm Cash Receipts - $ mil.				
Dates: JUNE, JUNE	1,263		1,178	+ 7
Broiler Placements (thous.)	15,798	15,780	14,800	+ 7
Calf Prices ($ per cwt.)	85.00	76.90	77.30	+10
Broiler Prices (¢ per lb.)	41.00	42.50	29.00	+41
Soybean Prices ($ per bu.)	8.65	9.02	4.92	+76
Broiler Feed Cost ($ per ton)	216	158	185	+17
LOUISIANA				
Agriculture				
Farm Cash Receipts - $ mil.				
Dates: JUNE, JUNE	559		446	+25
Broiler Placements (thous.)	N.A.	N.A.	N.A.	
Calf Prices ($ per cwt.)	94.00	91.00	83.40	+13
Broiler Prices (¢ per lb.)	N.A.	N.A.	N.A.	
Soybean Prices ($ per bu.)	8.65	8.90	5.49	+58
Broiler Feed Cost ($ per ton)	266	185	165	+61
MISSISSIPPI				
Agriculture				
Farm Cash Receipts - $ mil.				
Dates: JUNE, JUNE	833		600	+39
Broiler Placements (thous.)	7,358	7,272	6,951	+ 6
Calf Prices ($ per cwt.)	95.00	82.90	84.60	+12
Broiler Prices (¢ per lb.)	41.50	44.70	31.50	+32
Soybean Prices ($ per bu.)	8.29	8.84	5.31	+56
Broiler Feed Cost ($ per ton)	266	185	165	+61
TENNESSEE				
Agriculture				
Farm Cash Receipts - $ mil.				
Dates: JUNE, JUNE	885		801	+10
Broiler Placements (thous.)	N.A.	N.A.	N.A.	
Calf Prices ($ per cwt.)	85.30	82.50	78.60	+ 9
Broiler Prices (¢ per lb.)	N.A.	N.A.	N.A.	
Soybean Prices ($ per bu.)	8.59	9.27	5.18	+66
Broiler Feed Cost ($ per ton)	261	197	208	+25

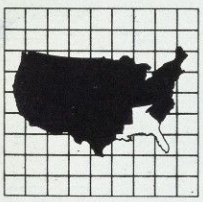
NOTES: Personal Income data supplied by U.S. Department of Commerce. Taxable Sales are reported as a 12-month cumulative total. Plane Passenger Arrivals are collected from 26 airports. Petroleum Production data supplied by U.S. Bureau of Mines. Consumer Price Index data supplied by Bureau of Labor Statistics. Agriculture data supplied by U.S. Department of Agriculture. Farm Cash Receipts data are reported as cumulative for the calendar year through the month shown. Broiler placements are an average weekly rate. The Southeast data represent the total of the six states. N.A. = not available. The annual percent change calculation is based on most recent data over prior year.
R = revised.

GENERAL

	LATEST DATA	CURR PERIOD	PREV PERIOD	YEAR AGO	ANN % CHG
UNITED STATES					
Personal Income ($ bil. - SAAR)	Q2	4,003.5	3,923.7	3,721.7	+ 8
Plane Pass. Arr. (thous.)		N.A.	N.A.	N.A.	
Petroleum Prod. (thous.)	AUG	8,141.0	8,107.0	8,155.3	- 0
Consumer Price Index 1967=100	AUG	356.6	354.9	342.7	+ 4
Kilowatt Hours - mils.	JUNE	211.4	190.8	207.8	+ 2
SOUTHEAST					
Personal Income ($ bil. - SAAR)	Q2	493.4	482.9	459.4	+ 7
Plane Pass. Arr. (thous.)	AUG	6,059.5	5,988.8	5,998.9	+ 1
Petroleum Prod. (thous.)	AUG	1,285.0	1,286.0	1,411.0	- 9
Consumer Price Index 1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	35.1	31.4	35.1	0
ALABAMA					
Personal Income ($ bil. - SAAR)	Q2	51.1	50.1	48.1	+ 6
Plane Pass. Arr. (thous.)	AUG	187.6	183.1	186.5	+ 1
Petroleum Prod. (thous.)	AUG	56.0	56.0	56.0	0
Consumer Price Index 1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	4.9	4.4	4.9	0
FLORIDA					
Personal Income ($ bil. - SAAR)	Q2	201.0	195.5	184.6	+ 9
Plane Pass. Arr. (thous.)	AUG	3,012.6	2,990.1	2,959.4	+ 2
Petroleum Prod. (thous.)	AUG	20.0	21.0	22.0	- 9
Consumer Price Index 1977=100 MIAMI		SEPT 191.5	JULY 188.3	SEPT 181.3	+ 6
Kilowatt Hours - mils.	JUNE	11.1	9.6	10.9	+ 2
GEORGIA					
Personal Income ($ bil. - SAAR)	Q2	93.7	92.4	87.8	+ 7
Plane Pass. Arr. (thous.)	AUG	2,129.5	2,101.0	2,092.5	+ 2
Petroleum Prod. (thous.)		N.A.	N.A.	N.A.	
Consumer Price Index 1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	6.4	5.5	6.3	+ 2
LOUISIANA					
Personal Income ($ bil. - SAAR)	Q2	53.2	52.2	50.6	+ 5
Plane Pass. Arr. (thous.)	AUG	326.1	316.4	342.1	- 5
Petroleum Prod. (thous.)	AUG	1,136.0	1,136.0	1,255.0	- 9
Consumer Price Index 1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	5.1	4.5	5.4	- 6
MISSISSIPPI					
Personal Income ($ bil. - SAAR)	Q2	28.4	27.7	26.7	+ 6
Plane Pass. Arr. (thous.)	AUG	46.2	43.8	47.8	- 3
Petroleum Prod. (thous.)	AUG	73.0	73.0	78.0	- 6
Consumer Price Index 1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	2.3	2.1	2.4	- 4
TENNESSEE					
Personal Income ($ bil. - SAAR)	Q2	66.0	65.0	61.6	+ 7
Plane Pass. Arr. (thous.)	AUG	357.5	354.4	370.6	- 4
Petroleum Prod. (thous.)		N.A.	N.A.	N.A.	
Consumer Price Index 1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUNE	5.3	5.3	5.2	+ 2

	SEPT 1988	AUG 1988	SEPT 1987	ANN % CHG
UNITED STATES				
Agriculture				
Prices Rec'd by Farmers Index (1977=100)	145	144	129	+12
Broiler Placements (thous.)	96,738	96,828	92,045	+ 5
Calf Prices ($ per cwt.)	89.10	90.30	86.00	+ 4
Broiler Prices (¢ per lb.)	39.20	41.90	28.50	+38
Soybean Prices ($ per bu.)	8.42	8.40	5.00	+68
Broiler Feed Cost ($ per ton)	(Q3)248	(Q2)181	(Q3)193	+28
SOUTHEAST				
Agriculture				
Prices Rec'd by Farmers Index (1977=100)	138	130	124	+11
Broiler Placements (thous.)	39,700	39,972	36,117	+10
Calf Prices ($ per cwt.)	83.87	90.84	84.13	- 0
Broiler Prices (¢ per lb.)	38.79	41.46	27.27	+42
Soybean Prices ($ per bu.)	8.63	8.52	5.20	+66
Broiler Feed Cost ($ per ton)	(Q3)226	(Q2)163	(Q3)181	+25
ALABAMA				
Agriculture				
Farm Cash Receipts - $ mil. Dates: JULY, JULY	1,350		1,005	+34
Broiler Placements (thous.)	14,320	14,428	12,260	+17
Calf Prices ($ per cwt.)	81.80	91.90	83.10	- 2
Broiler Prices (¢ per lb.)	36.70	42.00	26.50	+38
Soybean Prices ($ per bu.)	8.56	8.55	5.24	+63
Broiler Feed Cost ($ per ton)	216	158	185	+17
FLORIDA				
Agriculture				
Farm Cash Receipts - $ mil. Dates: JULY, JULY	3,703		3,470	+ 7
Broiler Placements (thous.)	2,452	2,388	2,296	+ 7
Calf Prices ($ per cwt.)	90.20	96.00	84.90	+ 6
Broiler Prices (¢ per lb.)	39.10	41.50	27.50	+42
Soybean Prices ($ per bu.)	8.56	8.55	5.24	+63
Broiler Feed Cost ($ per ton)	216	158	185	+17
GEORGIA				
Agriculture				
Farm Cash Receipts - $ mil. Dates: JULY, JULY	1,519		1,360	+12
Broiler Placements (thous.)	15,675	15,798	14,686	+ 2
Calf Prices ($ per cwt.)	81.40	85.00	81.30	+ 0
Broiler Prices (¢ per lb.)	39.00	41.00	27.00	+44
Soybean Prices ($ per bu.)	8.46	8.65	5.05	+68
Broiler Feed Cost ($ per ton)	216	158	185	+17
LOUISIANA				
Agriculture				
Farm Cash Receipts - $ mil. Dates: JULY, JULY	663		535	+24
Broiler Placements (thous.)	N.A.	N.A.	N.A.	
Calf Prices ($ per cwt.)	90.00	94.00	87.50	+ 3
Broiler Prices (¢ per lb.)	N.A.	N.A.	N.A.	
Soybean Prices ($ per bu.)	8.81	8.65	5.31	+66
Broiler Feed Cost ($ per ton)	266	185	165	+61
MISSISSIPPI				
Agriculture				
Farm Cash Receipts - $ mil. Dates: JULY, JULY	980		703	+39
Broiler Placements (thous.)	7,253	7,358	6,876	+ 5
Calf Prices ($ per cwt.)	85.00	95.00	88.00	- 3
Broiler Prices (¢ per lb.)	41.50	41.50	28.90	+44
Soybean Prices ($ per bu.)	8.63	8.29	5.21	+66
Broiler Feed Cost ($ per ton)	266	185	165	+61
TENNESSEE				
Agriculture				
Farm Cash Receipts - $ mil. Dates: JULY, JULY	1,039		936	+11
Broiler Placements (thous.)	N.A.	N.A.	N.A.	
Calf Prices ($ per cwt.)	78.60	85.30	82.40	- 5
Broiler Prices (¢ per lb.)	N.A.	N.A.	N.A.	
Soybean Prices ($ per bu.)	8.62	8.59	5.17	+67
Broiler Feed Cost ($ per ton)	261	197	208	+25

NOTES: Personal Income data supplied by U.S. Department of Commerce. Taxable Sales are reported as a 12-month cumulative total. Plane Passenger Arrivals are collected from 26 airports. Petroleum Production data supplied by U.S. Bureau of Mines. Consumer Price Index data supplied by Bureau of Labor Statistics. Agriculture data supplied by U.S. Department of Agriculture. Farm Cash Receipts data are reported as cumulative for the calendar year through the month shown. Broiler placements are an average weekly rate. The Southeast data represent the total of the six states. N.A. = not available. The annual percent change calculation is based on most recent data over prior year.
R = revised.



Economic Review

Federal Reserve Bank of Atlanta
104 Marietta St., N.W.
Atlanta, Georgia 30303-2713

Address Correction Requested

Bulk Rate
U.S. Postage
PAID
Atlanta, Ga.
Permit 292