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Policy Coordination and Financial Intermediaries

Michael C. Keeley and Carl E. Walsh*

Summary of proceedings from the 1986 Fall Academic Conference sponsored by the Federal Reserve Bank of San Francisco.

On November 20 and 21, 1986, the Federal Reserve Bank of San Francisco held its annual Fall Academic Conference. This conference provides a forum for academic and business economists, together with the staff economists of the Federal Reserve Bank of San Francisco, to discuss recent academic research on topics of current policy interest.

The 1986 conference focused on two topics. The first, macroeconomic policy coordination, is a topic that has figured prominently in recent discussions of the United States' monetary policy. Frequently during 1986, commentators linked the Federal Reserve's setting of the discount rate to attempts to coordinate interest rate cuts with Japan and West Germany. The Reagan Administration also expressed a desire to coordinate U.S. monetary and fiscal policy with more expansionary policies in Japan and W. Germany as a means of reducing the U.S. trade deficit. Two papers and a panel discussion during the first day of the conference examined various aspects of international policy coordination.

A third paper examined domestic policy interaction between independent monetary and fiscal authorities.

Financial intermediaries and their role in the economy comprised the second topic discussed at the conference. The course of financial innovation and deregulation over the last decade in the U.S. has brought to prominence several important policy issues related to banking regulation and the responsibility of the Federal Reserve to maintain the stability of the financial system. Five papers presented at the conference addressed issues related to the role of financial intermediaries in the economy, specifically those important to the debate over the appropriate scope of and need for financial regulation and ways of reforming our current regulatory system.

This article contains a brief survey of the papers presented at the 1986 Fall Academic Conference with an emphasis on their policy implications. Copies of any of the individual papers may be requested by writing to Public Information, Federal Reserve Bank of San Francisco, 101 Market Street, San Francisco, California 94105.

I. Policy Coordination

Recent developments in the analysis of macroeconomic policy have emphasized the role played by expectations about future policy actions. In particular, the impact of current policy on the economy can be influenced by the private sector's expectations about future policy. The influence of expectations raises two issues: first, whether we can under-

stand the effects of current economic policy without an explicit understanding of how policy is likely to be determined in the future; second, whether policy-makers can influence the economy by announcing that they will take certain actions in the future.

These issues are particularly important when trying to understand economic policy in the presence of two or more independent policy authorities. Recent concern in two areas highlight the timely relevance of research on the interactions among policy authorities. In this nation, where authority for fiscal and monetary policy resides in separate institutions, some authors have expressed concern

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over the extent to which the Federal Reserve might be forced by fiscal inaction to monetize the growing federal debt. On the international scene, where policy decisions taken by one country can affect the policy choices open to other countries, much attention has been placed on recent attempts by the U.S. to reduce the American trade deficit by persuading Japan and W. Germany to stimulate their economies.

Money, Deficit and Public Debt: An Empirical Investigation

by Guido Tabellini and Vincenzo La Via

The paper by Guido Tabellini of UCLA and Vincenzo La Via of the World Bank entitled "Money, Deficit and Public Debt: An Empirical Investigation" focuses on the joint behavior of domestic monetary and fiscal authorities. Recent theoretical work has emphasized that the relationship between macroeconomic variables, such as real interest rates and the current budget deficit, will depend critically on the expectations the public holds about the course of future budget deficits. These expectations will, in turn, depend on future monetary and fiscal policy. Therefore, to analyze the impact of current and projected federal budget deficits, for example, it would be necessary to forecast how the Federal Reserve and the Congress are likely to act in the future. Specifically, will the Federal Reserve eventually generate renewed inflation by monetizing future deficits, or will Congress be forced eventually to raise taxes to reduce the debt?

To forecast future monetary and fiscal policy, it is necessary to understand how relatively independent policy authorities will interact. Such interaction may be particularly complex when, as seems likely, the policy authorities have conflicting objectives. In such an environment, Tabellini and La Via take the view that "future policies must be viewed as the equilibrium outcome of a dynamic game between the two authorities."

The game that the authors model separates the strategic interaction of the monetary and fiscal authorities into two stages. In the first stage, each authority chooses an optimal path for the policy instrument under its control in order to achieve its macroeconomic objectives without considering the choices being made by the other authority. The policy instruments in the United States consist of

the monetary base for the central bank and the cyclically adjusted fiscal deficit net of interest for the fiscal authority. In the second stage, each policy authority attempts to achieve the best trade-off between keeping its policy instrument close to the value that achieves its macroeconomic objectives and minimizing deviations of the stock of public debt from a desired target.

The second stage of this game is made interesting by the dynamic government budget constraint that links the debt to the actions of the monetary and fiscal authorities. The fiscal policymaker can lower the debt held by the public by choosing to run a budget surplus, but this course of action may conflict with the fiscal stance necessary to achieve the reference path. The monetary authority can reduce the debt held by the public by monetizing it, but this choice may conflict with the path of the monetary base necessary to achieve goals such as price stability.

The solution to this game yields a set of equations that describe the behavior of the monetary base, the noncyclical fiscal deficit, and the stock of debt held by the public. The heart of the authors' theory lies in the restrictions the theory implies for the coefficients in the equations for the base, the deficit, and the debt. Most importantly, these coefficients depend on the parameters characterizing the weight each policymaker gives to achieving its desired value for the debt.

If the fiscal authority cares about achieving its target for debt, while the monetary authority does not, then the monetary authority will set its instrument to achieve its macroeconomic objective without regard to the debt and the fiscal authority will be forced to give up its desired reference path in order to keep the total debt near the desired target. Conversely, if the monetary authority cares about the debt target and the fiscal authority does not, the monetary authority will be forced to sacrifice such macro goals as low inflation, for example, in order to achieve the target level of the debt. These two alternative outcomes represent the extremes in which one policymaker or the other dominates. The actual outcome will depend on the relative weight each authority places on its policy objectives.

A chief purpose of the Tabellini and La Via paper is to provide a framework for empirical analysis that might allow these weights to be estimated. The

framework would then allow a conclusion to be drawn as to whether U.S. policy is best characterized as a game in which the monetary authority dominates or one in which the fiscal authority dominates.

The main finding of the paper is that the burden of stabilizing public debt during the period 1955-1985 fell on the fiscal authority. The authors conclude that "there is no evidence of debt monetization on the part of the monetary authorities, while instead there is strong evidence that fiscal deficits were reduced when the stock of public debt inherited from the past increased." In other words, the evidence suggests that the Federal Reserve has not, in the past, tended to monetize government debt. Other findings are that both fiscal and monetary policy tend to be more expansionary under Democratic administrations, and that there is evidence of a political business cycle in both monetary and fiscal policy related to national elections.

Comments by Steve Sheffrin

Steve Sheffrin of the University of California at Davis raised three issues in his comments on the Tabellini and La Via paper. First, he questioned the division of the policy game into two separate stages. In particular, he felt that it seems unreasonable to expect policy authorities to act in the first stage as if they were totally unaware of the second stage of the game. Tabellini agreed that this separation was somewhat artificial, but argued that it allowed the analysis to be greatly simplified.

Second, Sheffrin expressed concern about the use of the cyclically adjusted federal budget deficit as the fiscal policy instrument. He claimed the use of the deficit ignores the choice between spending changes and tax changes.¹ In addition, the use of a cyclically adjusted deficit was not introduced into macroeconomic policy discussions until the 1960s so he believed that its use in the empirical work as a measure of the fiscal policy instrument for the entire 1955-1983 period may be inappropriate.

Finally, Sheffrin questioned whether Tabellini and La Via had really succeeded in estimating structural parameters that can be used as guides to understanding future policy. In particular, he referred to parameters estimated by Tabellini and La Via which they describe as representing the prefer-

ences of the monetary and fiscal authorities. To Sheffrin, it seemed unlikely that such preference parameters would remain unchanged as the personalities of the individuals determining policy changed. Tabellini noted that an attempt was made to test for parameter stability over the sample period, and that dummy variables were included in the empirical analysis to capture the effects of changes in the chairmanship of the Federal Reserve. The results suggested monetary policy was most restrictive under William Martin's chairmanship.

Noncooperative Monetary Policies in Interdependent Economies

by *Matthew Canzoneri and Dale Henderson*

Tabellini and La Via examine only the Nash equilibrium to their dynamic policy game; they do not consider how the outcomes might be affected if the monetary and fiscal authorities can coordinate their policies or build reputations for "good" behavior. The role of such reputation building is one of the central foci of the Conference's second paper, "Noncooperative Monetary Policies in Interdependent Economies: Time Inconsistency and Reputation" by Matthew Canzoneri and Dale Henderson, both of Georgetown University. The paper represents a chapter from the authors' forthcoming book, *Noncooperative Monetary Policies in Interdependent Countries*.

Like Tabellini and La Via, Canzoneri and Henderson employ a game-theoretic framework to study the interaction of two policy authorities. However, Canzoneri and Henderson shift the focus from the domestic interaction of monetary and fiscal authorities to the international context in which the different policymakers are the monetary authorities in different countries. The authors argue that one can obtain misleading conclusions from models with only one active policy authority and illustrate their argument with an example. In their example, a requirement that policy be pre-committed to certain actions necessarily leads to better outcomes when only one policymaker is active but may lead to worse outcomes when two policymakers are active.

Canzoneri and Henderson note that if the current behavior of private agents depends on their expectations of the future, credible announcements about future policy instrument settings may provide pol-

icy authorities with an extra instrument for affecting the current values of their target variables. Thus, the ability to pre-commit to future actions increases the number of effective policy instruments available to policymakers. The authors examine the role of pre-commitment within the context of a two-country model in which monetary policies in the two countries can be either cooperative or noncooperative.

As a framework for their analysis, the authors use a model in which each monetary authority cares about employment and price volatility in its own country. The price the authority cares about, however, corresponds to the Consumer Price Index (CPI) — an average of the price of home goods and the home price of foreign goods — which is affected by monetary policy actions in the other country through the real exchange rate.

For example, a rise in the home country's money supply raises the price of home output and further raises the home CPI by causing the home country currency to depreciate in real terms. This depreciation comes about because an increase in the home money supply lowers real wages, given that nominal wages are predetermined by contracts, thereby causing home output to rise and creating an excess supply of domestic output. The home currency must depreciate in real terms to raise demand for domestic output and restore equilibrium in the market for home output. While a domestic monetary expansion raises the home CPI, the associated real depreciation of the home currency lowers the foreign CPI.

In the Canzoneri and Henderson model, credible announcements about future monetary policies affect current CPIs because they affect expected real exchange rates. This connection depends critically on the assumption that wage contracts last for more than one period.² The existence of multi-period wage contracts imparts a short-run rigidity to wages that allows announced monetary policy actions to have real effects.

Canzoneri and Henderson then show how pre-committing to future policy actions in the absence of cooperation among policymakers can be undesirable. They cite the case of a symmetric disturbance in which each policymaker will consider responding with the two tools available: the current money supply and a commitment for next period's money supply. Since Canzoneri and Henderson assume that

the monetary policymakers in the two countries also respond symmetrically, their commitments to change next period's money supplies are counterproductive. Their symmetric pre-commitments have no effect on this period's employment and CPIs because the pre-commitments leave the expected real exchange rate unchanged. The only effects of the pre-commitments are undesirable changes in the next period's CPIs. According to this model, each policymaker makes a counterproductive commitment to change next period's money supply because if he did not, the other policymaker would make a commitment that would leave him in an even worse position.

In his presentation at the Conference, Henderson developed a four-way classification of policy according to whether cooperative or noncooperative behavior and pre-commitment or no pre-commitment are involved. He then argued that two combinations — noncooperative behavior with no pre-commitment and cooperative behavior with pre-commitment — were the most relevant options for future study. In most cases, cooperation among policy authorities, together with pre-commitment to future policy, is likely to yield the best results since, as Richard Sweeney of Claremont McKenna College, the paper's discussant, pointed out, cooperation maximizes the economic pie and pre-commitment maximizes the number of instruments available to the policy authorities.

Canzoneri and Henderson also consider what happens when the policymakers interact in an infinite sequence of two-period games. In this situation, the policymakers can establish reputations for good behavior. Over an infinite succession of two-period games, noncooperative behavior without pre-commitment may result in what can usefully be called the efficient outcome, that is, the outcome that would result with cooperative behavior and pre-commitment in a single two-period game. The inefficient outcome is the outcome that would result with noncooperative behavior and no pre-commitment in a single two-period game.

In playing the succession of games, each policymaker thinks that if he does not cheat, the other policymaker will continue to choose the policy associated with the efficient outcome, and that if he does cheat, the other policymaker will revert to the

policy associated with the inefficient outcome for some number of two-period games in the future, perhaps forever. Each policymaker would choose the policy associated with the efficient outcome only if the future reward for not cheating were high enough. The Canzoneri and Henderson analysis suggests that when reputation building is possible, the outcomes of noncooperative behavior without pre-commitment may not be inefficient.

Comments by *Richard Sweeney*

In discussing Canzoneri and Henderson's paper, Richard Sweeney felt that actual experience with policy coordination suggests that policy authorities have usually tried to get other countries to follow bad policies. In addition, policy authorities may have preferences that differ from those of private agents — a point of view emphasized in recent theories of public choice.

An Econometric Evaluation of International Monetary Policy Rules

by *John Taylor*

Whereas the Henderson and Canzoneri paper provided a theoretical framework for analyzing policy coordination, the purpose of the conference's third paper, "An Econometric Evaluation of International Monetary Policy Rules: Fixed versus Flexible Exchange Rates" by John Taylor of Stanford University, was to report on a model designed to evaluate alternative policy regimes empirically. This paper represents part of an ongoing research project by Taylor that involves the estimation of a rational expectations model of seven industrial countries — the U.S., Canada, France, Germany, Italy, Japan and the United Kingdom. Taylor strongly argued that even if agreement were reached on the theoretical effects of disturbances in open economies, estimates of the empirical magnitudes involved would remain crucial for actual policy analysis.

Taylor attempts in his paper "to evaluate and compare flexible versus fixed exchange rate systems using a rational expectations policy evaluation technique . . ." The estimated multi-country model he uses is subjected to random shocks, first under the assumption of flexible exchange rates and then under the assumption of fixed exchange rates. He then evaluates the two different exchange rate sys-

tems by comparing the fluctuations in output, prices, imports, and exports under each system. His results seem to indicate that economic fluctuations would be smaller under a flexible exchange rate system.

Taylor's evaluation of the exchange rate regime focuses only on aggregate supply disturbances. At this stage of the research project, Taylor has not fully evaluated the two exchange rate systems in the face of aggregate spending and financial market disturbances. Also, he makes very specific assumptions about monetary policy and fiscal policy to compare fixed and flexible exchange rates. Under both systems, he holds fiscal policy constant. Under the flexible rate system, he assumes that all seven countries in the model hold constant the rate of growth of their money supplies. In contrast, under the fixed rate system, he assumes that the U.S. holds its money growth rate constant while the other six countries allow whatever money supply movements are necessary to keep their exchange rates fixed.

Taylor compares these alternative exchange rate systems using a model characterized by two important features. First, the aggregate wage level is modelled as determined by the existence of multi-period, overlapping contracts of the type studied by Taylor in earlier work.³ The wage equations are estimated for the United States, and the wage equations in the other six countries are then assumed to be the same as that for the U.S. Second, the model assumes perfect capital mobility as reflected in its requirement that deviation from uncovered interest parity be zero on average. This requirement means that the differential between interest rates in each country must equal the expected change in the exchange rate. In Taylor's model, therefore, this interest rate parity condition and the wage equations are two channels through which expectations of the future influence the economy's current equilibrium.

The presence of expectations of future variables, together with the assumption that these expectations are rational, greatly complicates the derivation of the policy simulations. Within Taylor's model, the solution for the current period depends on expectations of next period's equilibrium, which depends on expectations of the following period's equilibrium, and so on. Hence, to simulate the model for

even one quarter requires that the model be solved into the distant future to ensure that the expectations of the future are consistent with the actual future behavior implied by the model.

In addition to providing a comparison of alternative exchange rate regimes in the face of supply shocks, Taylor's paper also reports the estimated effects of unanticipated U.S. monetary and fiscal policy changes. He examines the effects of these policy changes under both fixed and flexible exchange rates.

Under flexible exchange rates, Taylor shows that a U.S. monetary expansion raises U.S. real output during the first year of the expansion; output then returns to its baseline level over the next two years, reflecting the long-run neutrality of money. The dollar depreciates in response to the monetary expansion in this simulation, but the effects of U.S. monetary expansion on other countries are small. The rise in domestic output raises U.S. demand for imports, which causes some output expansion in the other countries, but this foreign expansion is dampened by the dollar depreciation that shifts demand to U.S. output.

According to Taylor, when a fixed exchange rate regime is in operation, a similar U.S. monetary expansion produces a large expansion in the other countries. In contrast to the flexible exchange rate case, the other countries must keep their currencies from appreciating relative to the dollar under fixed exchange rates. To do so they must let their money supplies expand. These induced monetary expansions lead to the greater output effects Taylor finds with fixed rates.

Taylor finds a similar contrast in the effects of a U.S. fiscal expansion under fixed and flexible exchange rates. Under flexible exchange rates, he finds that an increase in U.S. government expenditures produces a dollar appreciation and a trade deficit for the U.S. that leads to some real expansion in the other countries in the short-run. In contrast, under a fixed exchange rate system, he finds that a U.S. fiscal expansion leads to a sharp contraction abroad as the other countries are forced to reduce their money growth to keep exchange rates from changing. While these results agree qualitatively with standard open economy theoretical models, Taylor's research yields estimates of the quantitative magnitudes involved.

Comments by Roger Craine

Roger Craine from the University of California, Berkeley, was the discussant of Taylor's paper. Craine applauded Taylor's approach to policy evaluation in which the behavior of a model representing an economy or policy regime is studied while it is disturbed by random shocks.

Craine did, however, question whether the parameters of Taylor's model would remain unaffected by a shift in the exchange rate regime. In his empirical work, Taylor does account for changes in the way expectations of the future are formed when the exchange rate regime shifts, but other aspects of the model, such as the average length of wage contracts, are assumed to remain unchanged.

One method for testing the stability of the model over exchange rate regime shifts was suggested by Craine. Since the model was estimated over a period of flexible exchange rates with data from the period 1971 to 1985 used in the estimation, Craine noted it should be possible to use the model to "forecast" backward. One could then see if the model is able to fit the period of fixed exchange rates prior to 1971.

First Day Panel Discussion

The first day of the Conference concluded with a panel discussion on policy coordination. Panel members were Peter B. Clark, Acting Division Chief of the International Monetary Fund (IMF), Professor Robert W. Clower of the University of South Carolina, H. Robert Heller, member of the Board of Governors of the Federal Reserve System, and Professor Thomas Willett of Claremont Graduate School.

Peter Clark began the discussion by reviewing the role played by the IMF in international policy coordination. He explained that the role is played at two levels. First, at the bilateral level, the IMF focuses on the policies of one country in relation to the rest of the world. Since most countries are "small", the focus at this level is on the impact of external factors on the country's domestic economy. For "large" countries such as the U.S., IMF discussions focus on the impact of that country's domestic policy on the rest of the world. Clark cites discussions with U.S. policymakers over the impact of fiscal deficits on world interest rates as an example of the difficulties inherent in policy coordination when policy-

makers hold different views about the true workings of the world economy.

Second, at the global level, the IMF focuses on multilateral coordination of policy and provides a forum through which countries can exchange information on economic forecasts and policy assumptions. Clark's example of an issue addressed at this multilateral level was the problem of managing world aggregate demand in the face of declining world fiscal deficits.

Robert Clower emphasized that, in the absence of a better understanding of how economies work at the macro level, discussions of policy coordination are of little value. Such coordination requires forecasts of where economies are headed, but he stated that economists are simply not capable of providing believable forecasting models of real economies. In this situation, Clower believes, policies are usually based on "faith, hope, and bias."

Clower also argued that there is little short-run connection between demand, supply, and price in most markets. He felt that economists need to understand better how markets work before they worry about policy coordination.

In his remarks, Robert Heller praised the line of research presented in John Taylor's paper for its attempt to quantify some of the issues that are relevant for an evaluation of policy coordination. Heller drew a contrast between automatic regimes, such as the gold standard, and discretionary regimes, such as that which currently characterizes the international economy. He said that coordination was determined by rules in automatic regimes, and described discretionary regimes as characterized by "coordination by conference."

Heller argued that the desirability of flexible exchange rates will depend on the cost of reallocating resources within each country. He believed that small countries would tend to favor a fixed exchange rate system because rate adjustments are likely to be

expensive for them. In contrast, he thought the large industrial economies would favor flexible exchange rates. Heller argued that a hierarchy of views exists. Among the U.S., Japan and Germany, for example, coordination may rely primarily on flexible exchange rates. Among Germany, France, and the U.K., greater reliance may be placed on fixed exchange rates within Europe and flexible rates with the rest of the world. In turn, each of these countries is likely to have a group of smaller nations, often former colonies, that fix their exchange rates against the larger country's currency.

Tom Willett emphasized that the disagreement among policymakers over the correct model of the world economy has played a major role in limiting past attempts to coordinate policy. He cited the recent revival of the locomotive argument, in which the U.S. wants Japan and W. Germany to expand more rapidly and thereby pull up the U.S. growth rate. Willett believed that one's view of the desirability and even effectiveness of such coordination depends on whether a Keynesian or monetarist model provides the more accurate view of economic movements.

Willett felt that the post-war record of avoiding "beggar-thy-neighbor" policies was fairly good. However, he also felt that recent discussions on coordinating policy to reduce exchange rate fluctuations have been misdirected. He believes that exchange rate stability, by itself, is not an appropriate objective of policy. International considerations can be important for monetary and fiscal policy formulations, but Willett stated the objective of policy coordination should be to promote overall economic stability and that this objective does not always correspond to a constant exchange rate. When macroeconomic policies themselves contribute to economic instability, he suggested that attempts to peg exchange rates within target zones may promote further instability.

II. Financial Intermediaries and the Economy

Many policymakers believe that financial intermediaries (that is, banks and thrifts) play a central and special role in the macroeconomy that is different from that played by other firms. This belief underlies the notion that maintaining the stability of financial intermediaries is key to ensuring a stable real sector and avoiding the economic downturns frequently associated with financial panics caused by bank failures. However, there has been a long-standing debate in the academic economics literature about just what it is that differentiates financial intermediaries from other firms, or even if they are different.

Some economists argue that banks' role in the macroeconomy is not inherently different from other firms even though banks undoubtedly provide valuable services. Proponents of this view believe that banking regulation is unnecessary and that an unregulated banking industry would be stable. To the extent banks currently have a special role, adherents of this view believe that this special role is a result of regulation, not a reason for regulation.

Others argue that banks are "special" because of externalities involved in the provision of payment and/or credit intermediation services. As a result, banking regulation is necessary to ensure the stability of the banking industry and the real economy. At a minimum, proponents of this view argue that some sort of federal protection is needed — in the form of either explicit or implicit deposit insurance — to prevent a systemic collapse of banking. Once such a guarantee is in place, they note that other sorts of regulations are needed to keep bank risk-taking in check.

A more complete understanding of the economic roles of banks and the influence of banks on the macroeconomy might have far-reaching implications for the regulation of the financial system and might well contribute to our understanding of the causes and effects of business cycles. Moreover, such understanding might have important implications for monetary policy.

The papers presented during the second session of the Conference contribute to our knowledge of these issues by analyzing the economic functions of banks (depository institutions), the relationship

between banks and the macroeconomy, and the role of banking regulation.

Challenges in Deposit Insurance Reform

A Speech by Robert Parry

In a presentation entitled, "Challenges in Deposit Insurance Reform," Robert Parry, President of the Federal Reserve Bank in San Francisco, addressed one of the more pressing issues in bank regulation: reform of the deposit insurance system. He focused on how deposit insurance could be reformed in such a way as to eliminate the incentives it currently provides for excessive risk-taking while still preserving the ability of deposit insurance to prevent bank runs.

His topic is especially important in light of the rapid pace of financial innovation in recent years. Currently, bank regulation and supervision are the primary means used to keep bank risk-taking in check. Such oversight is needed because a virtual 100 percent deposit insurance guarantee essentially eliminates depositor surveillance — the mechanism through which market forces would restrict risk-taking in an unregulated environment. (In an unregulated environment, banks with more risky portfolios would have to pay higher interest rates on deposits.)

If banks were allowed to participate in the changing financial environment, it would be necessary to reduce restrictive regulation and maximize reliance on market incentives to keep risk-taking in check. The question then is whether it is possible to increase reliance on private market forces while still maintaining depositor protection to prevent bank runs.

Although Parry did not directly address the broader question of whether the banking industry would be stable in the absence of deposit insurance, he argued that there are ways of keeping the good features of deposit insurance — its ability to prevent runs — while at the same time minimizing the incentives it provides for excessive risk-taking. In particular, he argued for protecting the deposit insurance funds by shifting all of the risk of bank losses to bank equity holders.

He pointed out that although other approaches,

such as shifting risk to depositors, would increase market discipline, they would not provide protection against bank runs. In contrast, shifting risk to bank capital holders would simultaneously protect depositors and the insurance fund while eliminating the incentives for excessive risk-taking inherent in our current system.

To protect the insurance fund by shifting risk to capital holders, Parry proposed using market value accounting and closing banks before their market value could fall below zero when closure would result in losses to the insurance fund. He noted that such a policy might not be easy to implement, but that the costs of carrying it out would be less than the losses to the deposit insurance funds of not doing so. Moreover, failure to reform deposit insurance might result either in an expansion of the scope of insurance and the scope of regulation if banks were allowed to expand into new areas, or such severe bank regulations that many traditional banking functions would be undertaken outside the banking industry.

Discussion

The general discussion following Parry's speech focused mainly on the issue of whether deposit insurance was necessary — the implication being that if it were not needed, the easiest way to reform deposit insurance would be to eliminate it. However, there was little disagreement that if deposit protection were necessary, then some type of reform of deposit insurance is required.

Discussion then turned to the lender-of-last-resort function of the Federal Reserve as a potential replacement for deposit insurance. Some discussants pointed out that if the lender-of-last-resort function were used to prevent runs at failing (or failed) banks, the function would have the exact same incentives for excessive risk-taking as our current deposit insurance system. The lender-of-last-resort function would in effect maintain the federal guarantee of deposits and the undesirable incentives of deposit insurance for excessive risk-taking.

Some Evidence on the Uniqueness of Bank Loans

by *Chris James*

Although the discussion did not resolve the question of whether there is an inherent need for deposit insurance, a conference paper by Chris James of the University of Oregon shed additional light on one aspect of the issue: whether bank loans are special. James' paper, entitled "Some Evidence on the Uniqueness of Bank Loans," dealt with the questions of whether banks loans are somehow special and different from other types of credit. That is, whether bank loans are imperfect substitutes for other types of loans, such as public debt offerings.

The answer to this question has two important policy implications. First, if the credit intermediation services of banks were special, regulatory policies, such as 100 percent reserve requirements, that restrict the degree of bank-provided credit intermediation could be expected to have adverse consequences for the real economy. Second, if bank loans were special, a regulatory policy that ensured a stable provision of bank credit could have beneficial real economic effects.

In addition, monetary policy might have real effects even in a classical general equilibrium framework if bank loans were special. For example, if restrictive monetary policy reduced the degree of bank-provided financial intermediation, real economic activity as well as prices would decline. Thus, the James paper is of potential importance for both regulatory policy and monetary policy.

James examines two types of evidence supporting the uniqueness of bank loans. First, he analyzes the incidence of the reserve tax on bank certificates of deposit (CDs) to determine whether bank borrowers or bank depositors bear the reserve tax on CDs. Second, he compares the stock-price announcement effects of new bank credit with those of private placements and public straight debt offerings for a group of publicly traded banks.

James finds no evidence that bank depositors bear the reserve tax on CDs. First, James finds that CD rates do not differ significantly from other domestic open market rates with similar maturities. Second, when the reserve tax was increased between November 1978 and July 1980, there was no statistically significant decrease in the rate on CDs relative to the

rate on commercial paper or Treasury bills as might be expected if deposit holders bore the reserve tax.

These findings would seem to be compelling evidence that depositors do not bear the reserve tax and that CD deposits are perfect substitutes for other types of open-market instruments. More importantly, if the banking sector were competitive, these findings imply that bank borrowers must bear the reserve tax in the form of higher loan rates. If so, bank loans would be special in the sense that borrowers are willing to pay higher rates for them.

James also finds evidence supporting the uniqueness of bank loans in a comparison of the stock price responses of borrowing firms to the announcements of new bank loan agreements, private placements of debt (primarily with insurance companies), and public straight debt offerings.

James argues that bank loans might be special because they convey information to the market about the soundness of the borrowing firm. That is, the bank may have information about the firm that outside investors do not.⁴ If so, one might expect announcements of bank loans to be associated with positive stock price effects while public debt offerings or private placements of debt would have no such effect.

As expected, James finds a positive stock-price response associated with the announcement of a bank loan that is larger than the stock-price responses observed for private placements and public straight debt offerings. In addition, the larger stock-price response associated with bank loan announcements does not appear to be attributable to any characteristic of the debt contract such as maturity, size of the loan, or differences in the type of borrower using each type of borrowing agreement.

James concludes that the stock-price evidence together with the incidence of the reserve tax on bank borrowers suggests that there must be something special or unique about bank loans. An implication of this view is that bank loans may provide a mechanism for reducing monitoring costs and agency costs and avoiding information asymmetries and the underinvestment problem associated with such asymmetries. Unfortunately, James' results offer no completely satisfactory explanation of the particular unique service or attribute of bank loans.

Comments by David Pyle

David Pyle of the University of California at Berkeley raised the following issues in his discussion of the James paper. First, he questioned the reliability of the evidence regarding the incidence of the reserve tax on CDs. He thought that pooling the data over a long period, as James did, might have problems because of changes in interest rate spreads that might have occurred because of factors not related to the reserve tax. He argued that, on statistical grounds, using shorter observation periods around the times of the actual changes in the reserve tax would be superior to pooling the data over the longer period.

Moreover, even if the findings of no change in the interest-rate spread held up, Pyle questioned whether one could conclude, as James does, that bank borrowers necessarily bear the reserve tax. For example, it is possible that bank owners might bear the tax if banking were not competitive — perhaps because of regulatory restrictions and subsidies. Because of this possibility, Pyle suggested examining the effects of the reserve tax on bank net worth by analyzing the stock-price responses when changes in the reserve requirements on CDs were announced.

Second, Pyle was highly supportive of James' analysis of the effects of different types of financing on stock price returns. He noted that James' finding that issues of straight debt used to refinance bank loans had a statistically significant negative effect on stock prices was strikingly different from previous findings by other researchers. The new finding provides a basis for arguing, as James does, that the inability of other researchers to find such an effect was due to their inability to discriminate among different uses of debt.

Pyle also asked whether the loan approval process itself (which presumably conveys information) or the actual takedown of loans accounts for the positive stock-price effect, and urged James to pursue this line of research further.

Explaining the Demand for Free Bank Notes

by Arthur Rolnick and Warren Weber

Although the James paper suggests that bank credit is special, it leaves open the question of whether banks' payment services might also be special. The paper by Arthur Rolnick and Warren Weber of the Federal Reserve Bank of Minneapolis, entitled "Explaining the Demand for Free Bank Notes," deals with this issue by examining a historical period during which banks were allowed to issue currency. (Warren Weber presented the paper.)

This subject is at the heart of an understanding of the nature of money and the demand for noninterest-bearing and possibly risky, privately issued money. It also bears on whether bank regulation is necessary to ensure the provision of a stable medium of exchange.

The paper presented at the Conference is one of a series by Rolnick and Weber (1983,1984) that re-examines the "free banking" era from 1837 to 1863, during which banks were permitted to issue their own banknotes (that is, currency). In these papers, they challenge the traditional view of the free banking era that characterized the era as chaotic, with widespread fraudulent "wildcat" banking, large numbers of bank failures, large losses to banknote holders, and frequent banking panics. The experiences of that era are often cited as evidence that strong government regulation of banking is necessary for banking and monetary stability, and that banks should not be allowed to issue their own banknotes.

The specific question addressed in the conference paper is why privately issued, risky banknotes were demanded as a medium of exchange when relatively safe specie (gold and silver coins) were available.⁵ Rolnick and Weber have two answers to this question. First, banknotes issued in the states of New York, Wisconsin and Indiana were in fact not very risky because their backing (the assets banks acquired by issuing banknotes) was sufficiently strong. Although banknotes apparently circulated at par in these states, as did specie, the service return on banknotes may well have equalled that of specie even though some banks failed to pay off banknotes at par (although the losses were very small). The reason for comparable service returns was that wear

on the coins imposed costs on the use of specie that approximated the expected losses on banknotes due to bank failures. Moreover, banknotes may have been more convenient than coin for large transactions.

Second, in Minnesota, where banknotes of the "railroad" banks eventually were redeemed at far below par because their backing was very poor, banknotes appear to have been exchanged at well below par and treated as small-denomination securities, not par-valued money. Rolnick and Weber point out that the notion that free banknotes were priced as risky securities rather than as safe currency implies that the public was able to judge the quality of the underlying assets. This view is much different from the conventional one that the public accepted banknotes at par regardless of the quality of the bank's assets presumably because they were either naive or misinformed.

If the acceptance of banknotes below par were characteristic of other states during the free banking era, the traditional literature may have misinterpreted the true economic function of some banks. According to Rolnick and Weber, banks may have acted more like mutual funds offering denomination intermediation than issuers of a par-value medium of exchange.

Comments *by Tom Cargill*

One unresolved but very important question mentioned by Tom Cargill of the University of Nevada at Reno in his discussion of Rolnick and Weber's paper is whether nonpar-valued banknotes such as those issued by the railroad banks actually circulated as a medium of exchange. If not, Cargill questioned whether silver and gold coins were used more than banknotes in Minnesota than in the other states.

If nonpar-valued banknotes did circulate as a medium of exchange, Cargill stated that a banking system in which bank deposits are equity shares (as are money market mutual fund shares) may be more feasible than is normally thought possible. This conclusion is important because such a banking system is not subject to runs and it may be that banking has developed along a different line because of unnecessary restrictions. If so, one avenue to solving the bank run problem while eliminating the deposit insurance guarantee would be to

allow (or perhaps require) banks to offer equity share deposits rather than par-valued deposits.

Cargill also raised the question of why Minnesota's experiences differed from those of New York, Indiana, and Wisconsin even though the ostensible regulatory environments were the same. For example, he asked whether the railroad banks in Minnesota were explicitly tolerated by state officials or the result of clever exploitations of loopholes by bankers?

In discussing the paper, Cargill also pointed out a limitation of the paper's applicability to current problems. He noted that banks during the free banking era operated in a commodity-based monetary system (gold was the numeraire) in which there would have been much less reason for concern with banks' issuance of currency than in our current system where currency itself is the numeraire.

Cargill applauded the authors for dispelling a number of common myths about the free banking era. He stressed that the paper's importance goes far beyond that of an interesting piece of historical research. In particular, he cited the paper's important implications for the rationalization of government regulation of financial institutions as well as its implications for the type of regulations that might enhance financial efficiency.

Perhaps most importantly, Cargill believed the paper debunks the idea that restrictive government regulation is necessary because the public cannot distinguish between good and bad banks. (The traditional argument is that such regulation is needed because the banking system would be destabilized by the contagion of bank runs if the public were unable to distinguish good from bad banks.)

The Intermediation Profit Margin and Market Share of S&Ls

by Alan Hess

Alan Hess of the University of Washington, in his paper entitled "The Intermediation Profit Margin and Market Share of Savings and Loan Associations," deals with the question of just what economic functions savings and loan associations (S&Ls) provide. He addresses two interrelated aspects of the question: (1) could S&Ls have earned a positive profit margin in the period from the 1950s

to the 1980s if they had hedged their portfolios and thus provided only intermediation services, and (2) is there something special about S&L deposits that causes households to continue to hold relatively stable amounts of them even in the face of relatively large changes in the differential between the rate paid on such deposits and the rate on substitute assets?

The answers to these questions have several potentially important public policy implications. First, if S&Ls can earn a pure intermediation profit distinct from a profit resulting from assuming interest-rate risk, they must be providing a valuable economic function that somehow differs from the similar function performed by primary financial markets (for example, securities markets).

Second, if thrifts' economic functions are somehow special, part of the reason might be that thrifts' or other depositories' deposit-taking and loan origination services differ from similar functions provided by primary financial markets. Thus, like Chris James' paper, which deals with the question of whether bank loans are special, Hess' paper deals with the issue of whether the financial intermediation process is special.

Hess finds that the S&L intermediation profit margin has been positive since 1950 and has exhibited a strong upward trend since its trough in 1965. This intermediation profit margin contrasts with the actual profit margin of thrifts, which declined sharply and even became negative when interest rates rose in the early 1980s. Thus, Hess argues that had thrifts eliminated their duration imbalance, the sharp rise in interest rates in the early 1980s would not have caused so many of them to fail.

In a statistical analysis of the intermediation profit margin, Hess finds that both trend growth and deviations from trend growth are due mainly to the difference between the rate on one-year U.S. government securities and the average rate paid on S&L deposits. The differential increases whenever open market rates rise, thus increasing thrifts' intermediation profit margin.

These findings lead Hess to ask whether S&Ls lose market share to substitute assets when the rate differential and hence their intermediation profit margin increases. If such an effect were large

enough, aggregate industry income could actually fall when the intermediation profit margin increased because the size of the S&L industry would decline. Such a result would suggest that S&L deposits have a number of close substitutes and that they are not in any sense special.

In fact, Hess's results are quite the opposite. He finds that the substitutability of S&L deposits with other assets is very small, and interprets this finding as evidence that the S&Ls reduce information and/or transactions costs to depositors. This reduction in information costs, in turn, reduces depositors' portfolio substitution in response to interest rate differentials. Thus, when market interest rates rise relative to S&L deposit rates, the intermediation profit margin increases on a one-to-one basis while S&L's market shares fall only slightly. The net effect of these two forces on the aggregate industry intermediation profit margin is to increase industry profits when interest rates rise — a pattern opposite that observed when S&Ls do not hedge their interest rate risk.

Comments by *Herb Kaufman*

Herb Kaufman of Arizona State University discussed the paper. He wondered if the estimated interest elasticities of demand for deposits were sensitive to the estimation procedure, arguing that a multi-equation approach might produce different estimates.

Kaufman then discussed three other points: (1) the optimal number of thrift institutions, (2) their ability to immunize their portfolios, and (3) the underpricing of FSLIC insurance.

Kaufman agreed with Hess's point that fewer S&Ls would have failed if they had been able to immunize themselves from interest rate risk in the early 1980s. But he suggested that the optimal number of thrifts might have declined in the early 1980s due to changes in the economy, and that, as a result, some thrifts would have failed anyway. For example, he pointed out that some banks failed even though they were more or less immunized against interest rate risk.

Kaufman also noted that, until recently, market instruments were inadequate for thrifts to immunize themselves against interest rate risk. Instruments that hedge against interest rate risk, such as futures,

adjustable rate mortgages, and securitized mortgage pools, are all relatively recent developments. Even now, with these instruments available, some thrifts choose not to use them to immunize themselves against interest rate risk. One reason for their choice might be the underpricing of FSLIC deposit insurance, which provides an incentive for thrifts to assume more interest-rate risk than is socially optimal.

Agency Cost, Collateral, and Business Fluctuations

by *Ben Bernanke and Mark Gertler*

The final paper by Ben Bernanke of Princeton and Mark Gertler of the University of Wisconsin, entitled "Agency Cost, Collateral and Business Fluctuations," provides a theoretical explanation of the microeconomic foundations of banking and the connection between banking and the macroeconomy. (The paper was presented by Ben Bernanke.) The paper focuses on special aspects of bank credit and thus is related to Chris James' paper on whether bank credit is special.

Bernanke and Gertler's paper has important implications for public policy since it highlights the interrelationships between the bank intermediation process and the real economy. In fact, Bernanke argues in another related paper (Bernanke, 1983) that the collapse of bank-provided intermediation services was a major contributing factor to the length and severity of the Great Depression. The results of the Conference paper also suggest that financial problems can have important effects at the macro level.

The two economists' analysis starts at the micro level with assumptions about informational structures regarding the outcome of investment projects, and shows that the "institutions" of debt and bankruptcy will arise. Bernanke and Gertler then show how a financial structure with both debt and bankruptcy leads to a connection between the financial and real parts of the economy.

Their paper is divided into two basic parts. In the first part, the authors provide a static partial equilibrium analysis of the financing of physical investments. In this analysis, investments are of such a large size that no single individual has sufficient resources to finance them. As a result, investments

are typically financed by both “inside” and “outside” funds — that is, equity and debt. This method of financing leads to a standard agency problem with divergent incentives between borrowers (firms) and lenders (debt holders). The key proposition Bernanke and Gertler establish is that the more collateral (equity) that the borrowers or insiders bring to a project, the lower are the agency costs and the more efficient will be the investment process.

The authors show that the existence of asymmetric information (the insider-equity holders have more information about the project’s outcome than the outsider-lenders) leads to an optimal contract for outside financing that takes the form of a debt contract. A debt contract is one in which the insider announces the return to the project, say x . If the actual return were greater than or equal to x , the outsider would receive x , and if the actual return were less than x , the firm would go bankrupt and the outsider would receive all the remaining assets.

According to Bernanke and Gertler, there is a social loss or agency cost associated with bankruptcy because the lenders must audit a bankrupt firm to ensure that they receive all of the remaining assets of the firm. Bringing more collateral to the project lowers agency costs because the more collateral the insider brings to the project, *ceteris paribus*, the lower the probability of bankruptcy and the lower the expected auditing cost.

An implication of this analysis is that there is a connection between the financial arrangements in the economy and the real investment undertaken. For example, in a world in which there is a great deal of bankruptcy and default, the efficiency of physical investment will be lower.

In the second part of the paper, the authors embed their micro financial model into a macro model to examine its business cycle implications. In this macro model, output is in the demand-for-investment function because, according to the model, when firms do well and output is high, collateral also is high and high collateral lowers the cost of borrowing. Thus, as real income rises, saving increases but investment demand also increases because of the “financial-solvency” effect. Income therefore has to increase more to balance the demand for investment with savings.

The integration of a financial sector into the macro model leads to a more “persistent” business cycle with greater amplitudes. The intuition behind this result is that if productivity rises, for example, borrowers will become more solvent since they will have more collateral, and therefore agency costs will be lower and investment demand would be stimulated (due to lower borrowing costs). Moreover, since more investment occurs, the effects persist over time. (The story works in a similar way in a recession when collateral declines, borrowing costs increase, and investment decreases.)

A final point of Bernanke and Gertler’s paper is that financial shocks themselves can be causes of business cycles. For example, a large unanticipated deflation would redistribute wealth away from borrowers to lenders, given that debt contracts are written in nominal terms. This wealth redistribution lowers collateral and makes the borrowing class less creditworthy, which in turn reduces the amount of financial intermediation and physical investment. This unanticipated deflation can have an adverse effect on real output.

One major limitation of the paper noted by Bernanke is that the model applies best to privately held firms. If firms could easily issue additional equity, for example, they would have no need for debt financing and the conclusions of the paper would not hold. Bernanke suggested one answer to this criticism is that there may be similar agency costs in publicly held firms, costs that preclude them from using equity issuance as a means of raising new funds.

Bernanke and Gertler’s paper has potentially far-reaching policy implications. For one, it suggests that to the extent public policy can enhance the stability of the financial system, the real economy will benefit. It also suggests that unanticipated deflations caused, for example, by contractionary monetary policy, can have an adverse effect on the real economy.

Comments by *Aris Protopapadakis*

Aris Protopapadakis of the Claremont Graduate School, in his discussion of the paper, praised the paper as excellent and urged the authors to continue their research. He did suggest that the authors

consider adding risk-aversion to the model since the structure of the model precludes initially identical persons from holding identical portfolios (some persons hold debt while others hold equity).

Protopapadakis thought the main weakness of the paper, which was acknowledged in the paper's conclusion, is that it is somewhat hard to see how its

findings apply to publicly held corporations. Although he thought that some of the elements of the paper might apply, he questioned whether it was possible to show that stock contracts as well as debt contracts would arise as a means of attracting outside funds.

FOOTNOTES

1. See Tom Sargent, Federal Reserve Bank of San Francisco *Economic Review*, Fall 1986.
2. The role of multiperiod wage contracts for the effectiveness of monetary policy is studied by Fischer [1977], Taylor [1980], and the conference paper by Taylor discussed below.
3. See, for example, Taylor (1980).
4. Although James does not focus on this explanation, it may be that banks obtain inside information about firms through their deposit relationships. If so, the special nature of bank loans cannot be separated from the special nature of deposits.
5. Although Rolnick and Weber provide an interesting explanation of why there was a demand for banknotes, there also are interesting questions regarding what factors limited their supply. For example, if (noninterest-bearing) banknotes could be used to buy (interest-bearing) state bonds (which could be deposited in turn for more banknotes) as the authors argue, seemingly a bank owner would buy an unlimited amount of bonds, thus infinitely leveraging original capital and earning an unlimited profit.

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