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Review Essay

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Since the early 1980s commercial banks, spurred by financial market changes, improved technology, and tighter regulatory capital standards, have greatly increased their sales of loans. Regulators are concerned, however, about the risk banks retain by providing loan buyers at least partial recourse if problems develop with a loan. Current capital regulations discourage providing recourse for credit risk by including such loans' full value in banks' capital requirements.

This article reviews related literature and examines regulatory problems posed by recourse risk. Some empirical evidence suggests that providing recourse may not increase risk when indirect effects of recourse through loan purchaser monitoring are taken into account. The author finds no reason to change capital standards until further evidence is available about the gains from loan sales and from market discipline.

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Table 6, page 45, of "Commercial Bank Profitability," in the July/August 1991 *Economic Review*, contains an error. Percentage return on assets in 1987 for banks with assets of \$1 billion or more should read -0.15 .

Recourse Risk in Asset Sales

Larry D. Wall

Commercial banks, especially small banks, have long sold participations in loans they originated. Until the 1980s loan sales had been a very small fraction of loan originations for almost all commercial banks in the United States, but during the past decade loan sales have increased dramatically (Joseph G. Haubrich 1989).

Changes in financial markets and in regulatory pressure are behind the increase in loan sales. One significant long-run trend has been the growth in the amount of information about a wide variety of loans. This information allows loan sellers and buyers to agree more readily on the fair value of loans. More recently, advances in legal contracting and new data-processing technology have made it possible for large groups of loans to be pooled together and sold as a tradable security, a procedure called securitization. In addition, banks have increasingly made a number of large loans to support corporate restructurings, loans of amounts so large that holding the entire loan would have exceeded the risk tolerances of even the biggest U.S. banks. Besides these market developments, the key regulatory change promoting loan sales has been the implementation and progressive tightening of capital standards since the early 1980s. In turn, many banks have had to shrink their asset bases or increase their capital or both.

Bank supervisors generally see loan sales as an acceptable method by which banks can reduce their total risk exposure to better match their existing capital levels. However, the implementation of a loan sales program can raise a number of potential supervisory questions related to a bank's risk. For example, supervisors may be concerned that banks will sell their highest-quality assets and retain their weakest, with the result that the decline in risk exposure will be less than proportionate to the decline in assets

The author is a research officer in charge of the financial section of the Atlanta Fed's research department. He thanks George Benston for extensive comments and Steve Smith for additional helpful comments. The opinions expressed in this study, however, are solely those of the author.

(see Stuart I. Greenbaum and Anjan V. Thakor 1987). Supervisors also may anticipate that banks will become too reliant on loan sales as a source of funding.

This study focuses on one particular source of concern to regulators—that a bank will not transfer all risk of loss when it sells a loan. This retained risk is known as recourse risk. Regulators fear that a bank will apparently reduce its capital needs by selling a loan while in fact these needs would be unchanged because the bank has provided the buyer full recourse should any problems emerge with the loan. Perhaps the greatest concern is that, although the sales contract will explicitly disavow any recourse, the seller will nevertheless provide it to maintain the institution's reputation in financial markets. Such provision of implicit recourse troubles regulators because it impedes accurately estimating the selling banks' risk.

Most loan sales are in fact made without explicit recourse for the full amount of the credit losses because otherwise regulators would refuse to recognize these transactions as sales for regulatory accounting purposes. Recourse remains an issue, however, because, according to theory, sellers will provide the maximum recourse permitted in order to receive the highest selling price.

There is clearly a direct increase in risk when recourse is provided. However, this risk is offset somewhat as loan sales with recourse generate incentives for a bank to acquire lower-risk assets to sell and to hold in its portfolio. Existing empirical evidence, which suggests that these indirect risk reductions would approximate the direct increase in risk resulting from selling loans with recourse, raises the question of whether the current approach of including loan sales with recourse in risk-based capital regulations is appropriate. The analysis below suggests that accuracy of treatment hinges on the extent to which the capital regulations capture the indirect effects of recourse sales. If none of the indirect reductions are captured, then including loan sales with recourse may be inappropriate. However, if the capital regulations fully capture the indirect influences so that an accurate picture results, it is desirable to include the asset sales in the capital regulations so that the direct increase in risk is taken into account. This study found that current risk-based capital standards are likely to capture the risk reductions only partially. The current treatment of loans sales with recourse, which includes them in capital requirements, may therefore be justified as providing at least some degree of protection to the Federal Deposit Insurance Corporation (FDIC).

This study also considers additional regulatory concerns raised by recourse risk, including accounting issues and limits on loans to a single borrower. Following a review of reasons for which banks sell loans and a discussion of the implications of recourse for bank risk, the article examines regulatory problems posed by recourse risk. The analysis suggests that no single answer satisfies questions about the appropriate regulatory treatment of recourse risk. The regulations are structured to accomplish a variety of goals, and their complexity precludes a simple solution. However, most of the problems associated with recourse risk can be satisfactorily resolved in ways that achieve the various regulations' goals.

Why Banks Sell Loans

Analysts frequently point to deposit insurance subsidies and capital regulations to justify bank loan sales. However, there are a number of other reasons a bank might want to sell its loans. This section reviews a variety of possible motivations.

Limitations on Bank Branching. The U.S. banking system has long been fragmented by state and federal laws that restrict intrastate and interstate branching. Because this fragmentation has limited the size of individual banks, many institutions find themselves in the position of having opportunities to originate loans that would exceed the amount they can retain on their balance sheet given their own prudence and regulatory requirements that banks diversify their lending across customers.¹ Banks do not want to deny loans to good customers, however, so small banks in particular have sold part of the loans (a process called using overlines) to their larger correspondent banks. The current legal restrictions also encourage banks to buy loans as a way of diversifying their loan portfolios outside their geographic markets.

The fragmentation of the U.S. banking system also has affected banks' ability to obtain deposits at below-market rates. The situation that has resulted is an opportune environment for large banks to sell loans to smaller banks, according to George G. Pennacchi (1988). Pennacchi suggests that smaller banks' lower average cost of funds combines with large banks' superior access to loans (arising from their presence in international financial centers) to create loan sales opportunities. These opportunities are limited, however, Pennacchi notes, because of a "moral-hazard" problem with loan monitoring. The moral-hazard problem

is that the originating bank has less of an incentive to monitor those loans it sells because it has less to lose if the loans default. In turn, the price the purchaser is willing to pay for the loans is reduced. Pennacchi contends that one way to reduce the moral-hazard problem is for the selling banks to provide recourse on their loan sales.

Although branching law restriction seems to explain the increase in loan sales, the fact that the trend is toward relaxing the intrastate branching restrictions raises questions.² These changes in state laws have reduced the pressure on banks to sell loans as a means of increasing diversification and obtaining lower-cost funding of loans. However, loan-origination opportunities at money center banks—especially loans for corporate restructuring—have increased. This avenue, combined with continuing legal and financial limitations on money center branching, may have created strong incentives for loan sales from large to small banks.

Reserve Requirements. Christine Pavel and David Phillis (1987) suggest that reserve requirements—the percentage of deposits banking institutions are required to hold on reserve with the Fed—raise banks' costs of funds and encourage loan sales. Although their assessment may have been accurate in the late 1980s, recent changes should reduce the importance of reserve requirements in the future. Reserve requirements on nonpersonal time deposits and Eurocurrency liabilities were eliminated on January 17, 1991. The only remaining ones are on transactions accounts, and, because of transactions accounts' low interest elasticity, banks do not rely on them to fund marginal loans.

Securitization as a Superior Technology. Lowell L. Bryan (1988) and James A. Rosenthal and Juan M. Ocampo (1988a) argue that securitized loans are a more efficient way of garnering earnings than loans that a bank originates and holds on its balance sheet. Securitization can allow banks not only to reduce risks through diversification but also to reduce interest rate risk and to add reviewers, credit guarantors, and poolers to the original analysis of the loan. The net result, these authors argue, is that the cost of a securitized loan is, in general, significantly less than a loan retained on a bank's balance sheet.

George G. Benston (forthcoming) agrees that securitization has some advantages but argues that Bryan (1988) and Rosenthal and Ocampo (1988a) overstate the case. Securitization can provide opportunities for greater asset diversification and interest rate risk reduction. However, securitization involves costly additional review of loans, and Benston points out that the gain in credit quality may not offset the extra costs.

Benston also notes that securitization is unavoidably subject to costs arising from adverse-selection and moral-hazard risk. In particular, he singles out the risk that the originating bank will sell loans of lower quality than the information supplied would lead the buyer to expect. Such problems have the potential to cause a total breakdown in the loan-sales market (in a manner similar to that observed in the used-car market by George A. Akerlof 1970). Buyers will demand a discount in the selling price of the assets to compensate for the risk that loans will be of lower quality than promised. This reaction would prompt sellers of the highest-quality assets to withdraw, in turn leading buyers to demand an even larger discount. The ultimate result could be that the only loans that can be sold are the highest-risk ones.

Adverse-selection and moral-hazard problems are likely to be small when the originator and the purchaser have substantially the same amount of information about the borrower. For example, securitization has been proved viable for standardized consumer loans, such as home mortgages and credit-card receivables, because the default characteristics of large pools of specific types of consumer loans are fairly well known. However, securitization has not worked for small business loans because evaluating these loans depends on information available to the originating banks but not to a loan's purchaser.

The problems of adverse selection and moral hazard can be substantially reduced if the seller provides recourse. Bryan (1988, 88-89) suggests that the seller provide recourse for losses up to two or three times the normal credit losses for the type of loan being sold.³ The problem with this approach, according to Benston, is that it largely nullifies gains from selling the loans, except in the case of catastrophic losses. The seller loses most of the benefits of diversification, and regulators will not reduce a bank's capital requirements.

Differences in Risk Aversion and Underinvestment. Lawrence M. Benveniste and Allen N. Berger (1987) and Christopher James (1988) provide more sophisticated versions of the argument that loan sales may reduce a bank's cost of funding. Benveniste and Berger's analysis is based on the assumption that investors have varying degrees of risk aversion.⁴ If this assumption holds, funding a group of risky assets with a single class of liabilities is suboptimal. A bank can reduce its cost of funding by issuing low-risk securities to investors with high degrees of risk aversion and high-risk securities to those more tolerant of risk. Benveniste and Berger show that loans sold with recourse

can provide a way of issuing low-risk securities to risk-averse investors and that uninsured liabilities can be obtained from investors with less risk aversion in order to fund marginal changes in those assets remaining on the bank's balance sheet.

James's (1988) analysis of loan sales with recourse is based on prior studies by Stewart C. Myers (1977) and René M. Stulz and Herb Johnson (1985). Myers suggests that the presence of risky debt may lead a firm to underinvest (in the sense that it may refuse to invest in a positive net-present-value project) because debtholders' gains from risk reduction may exceed those from undertaking the project. Stulz and Johnson show that collateralized debt may counteract the incentive to underinvest by allowing the firm to sell a portion of the cash flows associated with the new project. More of the risk-reduction benefits are captured by the equityholders because collateralizing the debt reduces the interest rate required by the new bondholders. James notes that loans sold subject to recourse agreements have cash flow properties similar to those of collateralized bonds and, hence, also tend to reduce the incentive to underinvest.

Capital Costs. Rosenthal and Ocampo (1988b) also suggest that funding a loan on the originator's balance sheet may be more costly because doing so involves higher capital costs. These authors compare the direct costs of securitizing an asset with the costs of holding it on the balance sheet. However, Benston (forthcoming) notes a significant flaw in their argument: namely, that they recognize an equity capital cost if the loan is funded on the balance sheet, but they do not recognize any capital cost to the originator if the loan is securitized, even though the originator provides limited recourse. Thus, their analysis understates the capital cost of securitization by ignoring the effect of recourse risk on the existing debt- and equityholders of the originator.

Although the Rosenthal and Ocampo argument on capital costs is flawed, more sophisticated arguments also suggest that capital regulations encourage loan sales. Current regulations rely on a combination of a risk-based capital standard and a leverage standard. The risk-based standards incorporate the credit risk of on- and off-balance-sheet items, whereas the leverage standards set a minimum tier one capital-to-total-asset ratio.⁵ The risk-based guidelines and the leverage standards are defined in book-value rather than market-value terms.

Banks that find capital regulations binding can raise their capital ratios in three ways. They can (1) sell assets having market values in excess of book values to

increase book capital, (2) reduce assets, or (3) issue new capital. Mark J. Flannery (1989) notes that regulators can force banks to recognize asset-value losses based on increased credit risk. However, historic cost accounting does not permit recognition of increases in the value of assets retained on a bank's books. Flannery suggests that banks may use securitization to capture gains in the value of existing bank assets. Such sales would boost the seller's regulatory capital ratios even if the bank did not use securitization to shrink its asset base because the gains would cause an increase in accounting capital that would otherwise go unrecognized in bank financial statements.

Banks that cannot meet regulatory requirements via gains from asset sales must either reduce assets or issue new capital. Loan sales provide a way of reducing assets at a cost that may be below that of issuing new capital for several reasons. First, capital requirements unambiguously increase costs to the extent that they reduce the FDIC subsidy. David H. Pyle (1985) suggests that all noncapital liabilities are insured for banks most likely to be engaged in off-balance-sheet activities. Thus, increasing the volume of loans sold with recourse would increase the value of the FDIC subsidy, whereas increasing capital would decrease the subsidy.⁶ Existing regulations prevent sales with explicit recourse from reducing a bank's capital requirements, but banks may sell assets while retaining substantial risk by supplying some indirect form of credit backing or by providing verbal assurances that the seller will repurchase the loan if problems arise.

Second, capital regulations that set minimum equity-capital requirements may increase banks' taxes and raise the cost of obtaining additional capital.⁷ Recent empirical evidence from Jeffrey K. MacKie-Mason (1990) for nonfinancial corporations and from Myron S. Scholes, G. Peter Wilson, and Mark A. Wolfson (1990) suggests that corporate income taxes play an important role in firms' financial decisions.

Third, common stock issues have generally been associated with price declines for the issuing firms' common stock when new issues are announced. Although regulations do not explicitly mandate new issues of common equity, their structure suggests that a significant part of any new capital should ultimately be obtained through a common stock issue. During the 1980s banks responded by sharply increasing their issuance of all types of capital instruments, including common stock.⁸

Larry D. Wall and Pamela P. Peterson (1991) analyzed stock market responses to banking firms' announcements of new security issues and found evi-

dence that such announcements cause significantly negative abnormal returns. After conducting several tests they concluded that the hypothesis that best explains their results is the securities-overvaluation hypothesis of Myers and Nicholas S. Majluf (1984). This hypothesis suggests that a firm's managers try to maximize the value of the existing common shareholders' claims. If the firm must issue new securities, it issues those that are most overvalued (or least undervalued) by the financial markets. Financial markets recognize this incentive and interpret new common stock issues as a sign that management thinks that the residual claims on the firm's cash flow are overvalued and therefore reduces the firm's common stock value. If Myers and Majluf's hypothesis is correct, the dynamics they describe may lead banks to reduce their assets instead of selling additional common stock.

Although capital regulations may have encouraged banks to engage in loan sales, the regulations as written do not permit a reduction in capital requirements for loans sold subject to recourse. The instructions for bank call reports require that loan sales should not be excluded from the balance sheet if the loans are "sold in transactions in which risk of loss or obligation for payment of principal or interest is retained by, or may fall back upon, the seller." Exceptions are granted for sale of loans in the Government National Mortgage Association, Federal National Mortgage Association, and Federal Home Loan Mortgage Corporation. Special treatment is also provided to private certificates of participation in pools of residential mortgages, according to Thomas R. Boemio and Gerald A. Edwards, Jr. (1989). Boemio and Edwards also note that banks have been allowed to sell loans that did not involve recourse to the selling bank but did provide recourse to a special pool funded by excess payments from the underlying asset pool.

Empirical Evidence. The various theoretical studies of loan sales provide a wide variety of explanations about why banks sell loans. The theories are not mutually exclusive. The issue of which ones have a significant explanatory power is an empirical question on which there is limited evidence.

In one significant study Pavel and Phillis (1987) examine loan sales reported by 13,763 banks for 1983, 1984, and 1985. The data are obtained from the *Reports of Condition* and *Reports of Income* filed by the banks with federal regulators. According to Pavel and Phillis these reports exclude loans sold with recourse "or with the reporting bank's endorsement or guarantee." The results, which are consistent with

theory, suggest that banks with less diversified loan portfolios are more likely to sell loans than firms with highly diversified portfolios. Their study also finds that large banks sell a greater dollar value of loans, which suggests that most loan sales do not involve small banks selling loans to their correspondents. Banks that are more efficient loan generators (those having low ratios of noninterest expense to the sum of loans retained and loans sold) are more likely to sell loans. Pavel and Phillis's results also suggest that regulatory "taxes" in the form of reserve requirements and capital regulations encourage loan sales.

Implications of Recourse for Bank Risk

One view of recourse sales that is separate from the issue of capital requirements is that allowing such sales would permit banks to evade regulatory capital controls and thereby to increase FDIC subsidies.⁹ As regards the question of whether recourse risk should continue to be included in the calculation of capital requirements, if a large fraction of loan sales is motivated by wanting to increase the FDIC subsidy, the implication is that bank capital regulations should continue to include it. However, if providing recourse is not intended to exploit the FDIC and the combined direct and indirect consequences of recourse do not in fact increase bank risk, then the appropriateness of including loans sold with recourse in a bank's capital requirements needs further consideration.

The argument that loan sales with recourse could be used to increase an FDIC subsidy for bank risk taking is straightforward: if loans sold with recourse are not included in the capital requirements, banks have a mechanism for taking on additional risk without having to provide a commensurate increase in their capital level.

The counterargument to the FDIC exploitation hypothesis is that the indirect impact of loan sales will substantially offset the direct increase in risk due to recourse. One indirect offset can be seen in James's (1988) model of loan sales. To the extent that banks are selling low-risk loans that they would not otherwise have acquired, the direct increase in risk may be minimal.

A second indirect effect is that recourse sales tend to increase private-sector discipline of bank risk taking. Although Pyle (1985) has argued that all noncapital liabilities have been protected at large banks, such protection is not granted by law and depends on the

FDIC's policies at the time a bank fails. Moreover, since Pyle made his comments in 1985 the FDIC has exposed nondeposit liabilityholders at large banks to losses. Thus, purchasers of loans with recourse provisions probably are taking more risks than depositors with funds in excess of \$100,000 in an account. In valuing the recourse agreement, purchasers will discount it according to the selling bank's risk of failure unless they know with certainty that the FDIC will protect all nondeposit creditors.¹⁰ Thus, although banks may be tempted to use loan sales with recourse as a mechanism for increasing FDIC subsidies, this temptation will be partially offset by knowing that prices attached to loan sales are an inverse function of the bank's condition.¹¹

James (1988) provides indirect empirical evidence on what the effect of loans sales with recourse would be if recourse were not a factor in capital regulations. He uses regression analysis to test the impact of banks' standby letters of credit (SLCs) on their certificate of deposit (CD) rates as an indicator of perceived credit risk, a safer bank being able to attract funds to CDs at lower rates.¹² An SLC is a bank's promise to pay a third party in the event that a customer fails to repay a loan or defaults on some other obligation. SLCs that back loans create the same credit risk that would have occurred had the bank originated the loans for its own balance sheet and then sold them with full recourse. Thus, while data on actual loan sales with recourse are limited, analysis of SLCs provides a method of analyzing the effect of loan sales with full recourse. If selling loans with recourse increases a bank's risk, a statistically significant positive coefficient on SLCs would be expected, indicating that banks with higher levels of SLCs (which are similar, in effect, to providing recourse) must pay more on their CDs to compensate CD holders for the greater risk. James finds that some risk variables, such as the banks' capital level, have significant coefficients with the correct sign, indicating that these factors are correlated directly or inversely, as expected with higher CD rates; however, the coefficient on SLCs has the wrong sign (a higher volume of SLCs was associated with lower CD rates). Furthermore, this coefficient is statistically insignificant. This result suggests that loan sales with recourse are likely to have no significant impact on the seller's risk exposure.

G.D. Koppenhaver and Roger D. Stover (1991a) modeled the relationship between bank capital and SLC issuance as a simultaneous-equations problem in which changes in capital influence SLC issuance and vice versa. Using Granger causality tests (in which

causality is inferred when one variable is correlated with another at an earlier period but the converse does not hold) they found a positive relationship between current SLC issuance and lagged capital but a negative relationship between current capital and lagged SLC issuance. They found a similar relationship between contemporaneous values of the two variables in a two-stage least squares regression model. In further work Koppenhaver and Stover (1991b) added contemporaneous measures of capital and SLC issuance to the Granger causality tests. They found that the contemporaneous relationship between the two variables was significantly positive but that the relationship to lagged values was insignificant. They suggest that banks were allocating capital to SLC issuance before risk-based standards were imposed and that the risk-based guidelines could cause a decrease in issuance of SLCs and the market discipline that arises from them.

Regulatory Treatment of Risk

The provision of recourse on loan sales can influence a bank's market value and net income through its impact on credit, interest rate, and foreign exchange rate risk. (The implications of recourse for banks' liquidity are discussed in the box.) The analysis below considers the way in which these risks are and should be regulated. The discussion begins with a conceptual review of how recourse risk would be analyzed in a comprehensive system if there were complete information about the distribution of bank returns. Unfortunately, the data required for the perfect risk-measurement system are not available, so regulators have been required to address different risks piecemeal. Thus, the challenge facing regulators is finding ways to incorporate recourse risk into existing and future risk-analysis systems. The consideration of this problem first examines means of incorporating recourse risk into the two major tools of credit-risk measurement and control: risk-based capital regulation and limits on loans to a single borrower. Following is an analysis of ways the interest rate and foreign exchange rate risk could be incorporated into the risk-based capital guidelines. The section concludes with a review of possible responses to banks' attempts to frustrate the regulatory goals by providing implicit rather than explicit recourse.

Existing Approach to Regulating Bank Risk Taking. The appropriate regulatory treatment of loans sold with recourse depends on the goals of regulation.

Liquidity Risk

A bank is subject to liquidity risk when it sells loans with recourse in that it must find funds to repurchase the loans if the recourse provision is invoked. However, an even more significant form of liquidity risk arises if a bank sells loans for less than the desired maturity of the borrower and the loan-sales market refuses to purchase the loan when it is renewed or “rolled over”—as, for example, when a bank persuades a commercial borrower that wants two-year funding to accept four consecutive six-month loans in order to accommodate the needs of the loan’s ultimate purchaser. Another example of this situation involves a bank’s agreement to begin early payment of the principal on securitized credit card loans if credit losses on the card portfolio exceed some pre-specified level.

The problem arises in these examples not because of the loan sale *per se*. The bank could refuse to roll over the corporate loan or could cut its credit card lines as it passes through the loan repayments. However, the bank may be unwilling to refuse new loans to its customers, particularly if these are long-time customers who do other types of profitable business with the bank.

A bank that rolls over loans it cannot sell in the loan-sales and securitized-credit markets is exposed to credit risk if the quality of the borrowers has deteriorated. The bank is also subject to the risk that it will be unable to fund additional loans without an unacceptable deterioration in its liquidity. One regulatory alternative for dealing with this problem would be to include in the risk-based capital requirements any loan sales in which the borrower’s desired maturity exceeds that of the loan sales contract. This approach may significantly affect

the loan-sales market by preventing transactions—as when a bank cuts its lending to a borrower if it cannot sell the loan. Another difficulty with such regulation is that regulators frequently would not know the borrowers’ desired loan maturity.

Alternatively, regulators could address these problems by establishing procedures that would prevent banks from making replacement loans to cover maturing loans they have sold if the latter have significantly increased the bank’s credit risk or have reduced liquidity. For example, the regulators could use *ex post* monitoring for banks that exceed minimum safety standards and are not funding a material amount of new loans to replace loan sales. In all other cases banks could be required to obtain prior regulatory approval for new loans. The key to making this alternative work is that regulators would have to be prepared to enforce safety standards regardless of consequences for the bank and its borrower. Strict, across-the-board enforcement may appear to be suboptimal in some individual cases. However, a case-by-case approach would invite abuses in the form of banks selling short-term loans with the expectation that regulators would allow them to fund new loans if those could not be resold. Moreover, if regulators retain credibility in their enforcement the number of cases requiring action should be small. It is likely that banks and their borrowers would quickly learn that the borrowers’ ability to obtain continuing funding after their loans are sold depends on the state of the loan-sales market. When banks want to control future funding decisions they do not sell loans, and bank borrowers will not permit loan sales that create a significant risk that early loan repayment will be required.

Two important objectives are protecting the real, or nonfinancial, portion of the economy from shocks to the financial sector and minimizing the FDIC’s losses. Bank regulators also generally seek to avoid influencing the type and structure of bank loans as much as is possible in line with the first two goals.¹³ Often the three goals are not compatible, and regulators must trade off greater progress toward one at the expense of another.

If regulators knew the true probability distribution of a bank’s future total returns given its existing portfolio, they could easily specify a minimum capital level that would set a maximum on the probability of bankruptcy or expected FDIC losses arising from the bank’s failure. Having three different goals in mind would complicate the problem somewhat, but, if regulators both knew the true distribution of total returns

and could specify their trade-off function between the three goals, the problem could in fact be solved. Risk associated with selling loans subject to recourse would only indirectly enter the problem through its effect on the distribution of total returns.

The problem in regulating recourse risk is that in reality the true distribution of a bank’s future returns is not known. The historic return pattern for a limited set of assets can be determined most commonly by estimating the variances of returns associated with individual assets and the covariances of returns among assets. However, historic variances and covariances may not be very accurate predictors of future values. Moreover, the use of historic values as proxies for expected future values is especially problematic when banks know more about the distribution of future asset returns than the regulators do (a condition that

should generally hold if a bank is competently managed). Banks can deliberately avoid the intent of regulation by overinvesting in assets for which the historic data underestimate risk and underinvesting in assets for which the data overestimate the risk.

In practice regulators split the types of risk into categories, such as credit risk, interest rate risk, and foreign exchange risk. They then proceed to simplify their analysis of the different categories. Although this approach makes the analysis easier, it ignores correlations among different types of risks.

Risk-based capital standards take into account only the credit risk associated with an individual asset and ignore the correlation of credit losses among assets. Only in a crude fashion do bank regulations take correlations into account—by establishing that a bank may not lend more than 15 percent of its capital to any single borrower or group of related borrowers. Moreover, these standards use broad categories for classifying assets. For example, all nonmortgage loans to private individuals and corporations carry the same risk weighting under the standards.

Regulators monitor interest rate and foreign exchange rate risk as well as a bank's liquidity. These risks are not explicitly captured by either capital standard but are included in a rough manner in the leverage standard. For example, the total leverage standard is a control for interest rate risk in that it would require a minimum capital level of a bank that invested solely in Treasury securities (which require no capital under the risk-based standards) but which could be taking significant interest rate risk.

Risk-Based Capital Guidelines. One concern regarding the current regulatory treatment of loan sales with recourse is raised by theoretical and empirical evidence suggesting that the combined direct and indirect risk changes would not necessarily materially increase the bank's total risk exposure. Another concern is that forcing banks to carry the entire loan amount on their books, even though their maximum loss may be a fraction of that amount, could create inconsistencies with other risk-based capital standards.

Measuring the Impact of Recourse on Banks' Total Risk. One way in which loans could be sold with recourse without increasing a bank's risk exposure would be for the loans to be of such low risk that the bank would not otherwise have made the loans, as suggested by James (1988). In this case the small amount of credit risk could be more than offset by the profitability the loans contribute through the reduction in the bank's risk of failure. The risk-based capital standards are unlikely to capture this risk reduction

fully because of the broadness of the asset risk categories. However, even if James's model explains a substantial portion of bank loan sales, the case for lowering the risk weighting on loans sold with recourse is weak. Other models of loan sales imply that a bank may sell loans with recourse to increase its risk exposure. Unfortunately, in view of the fact that all private-sector, nonmortgage loans are given equal weight under the risk-based standards, low-risk private-sector loan sales cannot be distinguished from high-risk loan sales in a manner consistent with other standards.¹⁴ Moreover, many low-risk loans that a bank may choose to sell with recourse may also be profitable to make and sell without recourse. If so, regulations that discourage selling loans with recourse may not significantly reduce the volume of loan sales.

A second way for banks to sell with recourse while not increasing their risk of failure would be to make offsetting adjustments in their other balance-sheet and off-balance-sheet items. That is, the FDIC risk-subsidy increase because of recourse sales is at least partially offset by loans' lower selling prices if a bank becomes riskier. A bank could offset any higher risk due to recourse by reducing the variability of returns in the rest of its portfolio or by increasing its capital level. Risk-based capital guidelines are likely to capture at least partially the reductions in the variability of returns from the rest of the bank's portfolio, particularly given that the risk-based standards have built in an incentive for banks to reduce risk in ways the regulations can capture. For example, a bank that increases its holdings of Treasury securities and reduces its holdings of commercial loans as part of its decision to sell loans with recourse would experience a decrease in its risk-based capital requirements.

The risk-based standards would not pick up all reductions in variability, however, because some could grow out of portfolio changes involving shifts in assets within the same risk-weighting category. For instance, a bank's capital requirements would not be lowered if it increased its loans to AAA-rated corporations while decreasing its holdings of loans to highly leveraged transactions. (This type of portfolio change is not easily incorporated in the weighting of loan sales with recourse, though.) Regulators also could not attribute shifts within asset risk categories to loan sales with recourse. Moreover, it would not be fair to recognize shifts in portfolio risk for banks that sell loans with recourse without doing the same for banks that do not sell loans. Because of these conditions, a good case can be made for not amending the risk-based standards to take into account the potential

for banks that sell loans with recourse to reduce their remaining portfolio's risk.

A bank may also increase its capital level to offset the increased risk due to recourse. Because risk-based guidelines already fully capture changes in capital levels, there is no need to change the guidelines to reflect higher capital levels resulting from sale of loans with recourse.

A third argument in favor of treating loan sales with recourse differently from loans kept on the books is that loans sold with recourse should reduce the FDIC payout if a bank were to fail. That is, if the bank fails and the loan buyers try to exercise recourse, they will become general creditors of the failed bank and share the losses proportionately with other uninsured creditors, including the FDIC. The strengths of this argument depend on placing greater importance on limiting the FDIC's losses when a bank fails than on preventing bank failures. If preventing failures is the dominant concern, the smaller losses to the FDIC may not seem an important benefit of loan sales with recourse. If protecting the FDIC is the principal goal, the risk sharing may be important. However, for the standards to be consistent, adjustments to the capital standards would be necessary for all credit-risky off-balance-sheet items because they all involve some risk sharing. If capital standards are to be reduced when a private party shares the risk of failure with the FDIC, perhaps the risk-based standards should be modified to include all nondeposit liabilities as a (secondary) element of capital.¹⁵

Selling loans with recourse generates more direct risk than selling without recourse, but, as pointed out earlier, indirect offsets may render the total change in risk insignificant. However, the empirical finding that recourse has no material impact on a bank's total risk does not necessarily imply that risk-based standards should give loan sales with recourse a lower weight. Capital standards may already incorporate some risk reduction indirectly resulting from recourse sales, and measuring the uncaptured risk reduction would be difficult, if not impossible.

One could argue that loan sales may improve the banking system's efficiency and that private-sector discipline would limit a bank's risk taken on through sales with recourse. For example, Jayant R. Kale, Thomas H. Noe, and Stephen G. Timme (1990) found that initial bank announcements of plans to securitize loans generated positive abnormal returns for the selling banks' shareholders. Moreover, the current structure of risk-based capital standards does not permit an accurate accounting for the full impact on a bank's

risk of loans sold with recourse, so the standards would inevitably be biased either for or against loan sales with recourse. Therefore, to encourage loan sales the best approach would be to establish a lower weight on loan sales with recourse than on loans held in a bank's portfolio.

Evidence regarding the results of biasing standards in favor of loan sales pinpoints several problems. First, there is little solid empirical evidence that loan sales generate economies of scope with bank's other activities.¹⁶ Indeed, Loretta J. Mester (1991) finds the opposite—that loan sales generate diseconomies of

Existing capital regulations discourage loan sales with recourse by including the full value of such loans in banks' capital requirements.

scope. Second, although loan sales with recourse generate some market discipline, theory does not give clear indications as to whether the additional market discipline would outweigh the deposit insurance subsidy to bank risk taking. Third, the results of Kale, Noe, and Timme's (1990) study could be explained by a variety of hypotheses, not all of which imply a net social gain to securitization. For example, the stock market may view the loan sales as a way for banks to avoid an anticipated issue of new equity. In light of this research, keeping the current standards seems called for unless there is additional evidence that (1) the standards overestimate the *net* impact of loan sales with recourse on banks' risk or (2) loan sales generate gains to society relative to loans funded by the originator.

Potential Inconsistencies in the Risk-Based Standards. As alluded to above, risk-based standards contain an inconsistency in the way loan sales with partial recourse are treated relative to loans with identical risk exposure held on the book. A bank that makes a loan sale with partial recourse is required to carry 100 percent of the loan on its books if it retains a significant

risk of loss. For example, a bank would have to retain the entire loan amount if it sells a loan with recourse on the first 9 percent of the losses and the expected loss was 3 percent. However, the bank would need to include only the first 9 percent if the transaction were structured so that the borrower obtained the same amount of funds through a subordinated loan equal to 9 percent of the borrowing and a senior loan (a loan repaid before the subordinated loans) equal to 91 percent of the borrowing and if the bank purchased the subordinated part without ever owning the senior loan.

Unfortunately, this inconsistency is inherent in the risk-based standards. All nonmortgage loans to private-sector borrowers carry the same risk weighting regardless of the borrower's riskiness or the seniority of the debt obligation. The theoretically correct approach to measuring a bank's risk accurately would be to use weightings that fully reflect the riskiness of each loan.¹⁷ Under this method, subordinated debt to any given borrower would carry a higher risk weighting than senior debt from the same borrower. However, this approach would not automatically weight all subordinated debt more heavily than all senior debt because the subordinated debt of some borrowers is less risky than the senior debt of certain other borrowers. An accurate measurement system would require evaluation of individual borrowers as well as of the seniority of the loan contract. Regulators are reluctant to rate individual borrowers, though, because doing so could easily lead to politically motivated credit rationing.

Moreover, senior and subordinated debt are merely the two end points of a continuum of debt contracts having varying seniority. Any rules designed to favor senior debt over subordinated debt would encourage banks to design contracts that meet the formal requirements of senior debt but are, in fact, as risky as some junior issues by equally risky borrowers. Thus, a completely accurate risk rating system would require that regulators examine individual debt contracts to determine their seniority level. At this point the direct cost (that is, the financial cost to the regulatory system) of imposing completely accurate risk-based standards clearly would exceed any possible gain, and the long-run indirect costs of such government micromanagement of banks likely would be enormous.

Regulators must choose between encouraging and discouraging loan sales with recourse relative to subordinated debt, assuming that some level of inconsistency is unavoidable in the risk-based standards. The current policy takes the more conservative approach.

Single-Borrower Lending Limit. The limit on a bank's loans to a single borrower enforces at least some diversification of bank portfolios. If the recourse risk were ignored, loans sold with recourse could be used to avoid the intent of the single-borrower limits. Including recourse risk raises a question of how much of a loan sold with recourse should count against the limit. If the purchaser has recourse for the entire loan, it is clear that the entire loan should count. But what if the selling bank is liable for only a fraction of the loan—for example, 10 percent? The answer lies in the aim of the single-borrower lending limit, which is to enforce diversification by limiting a bank's maximum exposure to any single borrower. In this example the maximum exposure is 10 percent, and it follows that only 10 percent of the loan should count against its borrowing limit.

Recourse for Interest Rate or Foreign Exchange Contingencies. Recourse agreements need not be restricted to credit contingencies. Loan sales contracts can require the seller to repurchase assets based on interest rate or foreign exchange rate contingencies. These contingencies can be explicitly stated, or they can be implicit functions of interest or foreign exchange rates, such as in contracts that make the repurchase contingent on the borrower's prepayment pattern. The total leverage standards provide some controls on the maximum exposure to interest rate and foreign exchange rate risk by requiring a bank to hold some capital even if its credit risk is minimal. Any added interest rate or foreign exchange risk due to recourse could be partially captured by the leverage standards and thereby generate some additional capital requirements if the risk-based standards were not already binding. However, this approach to regulating interest rate and foreign exchange risk provides at best only a very crude measure of a bank's risk exposure.

An alternative approach that takes greater cognizance of those risks is suggested by Wall, John J. Pringle, and James E. McNulty (1990). They suggest that each bank set a maximum exposure level to interest rate and foreign exchange rate risk, establish systems adequate to ensure that actual exposure does not exceed the internal guideline, and keep their exposure within their internal guidelines. Regulators would then create an interest rate and foreign exchange rate component to the risk-based capital standards and use banks' internal guidelines in setting capital requirements. Recourse risk under this system could be treated like any other interest rate or foreign exchange rate option sold by the bank, such as the prepayment op-

tion given to borrowers under fixed-rate residential mortgage contracts.

Implicit Recourse Arrangements. As mentioned earlier, one concern of regulators is that banks will sell loans under contracts explicitly disavowing any recourse but will provide verbal or implicit promises to repurchase the loan if problems arise. Banks may grant implicit recourse in order to maximize the price received on a loan sale. These agreements, which are generally honored in the interest of the seller's reputation, increase future loan sale prices. Implicit recourse limits both regulatory and market discipline of bank risk taking.

It is hard to measure empirically the degree to which implicit recourse is involved in loan sales. A study by Gary Gorton and Pennacchi (1989) suggests that its use may be common enough that the selling bank's rating significantly affects the rate of return loan buyers require. However, subsequent research by the same authors (1991) found that implicit recourse is not a significant factor in the loan-sales market for at least some of one bank's loan sales. Regardless of the significance of implicit recourse to the overall loan-sales market, implicit recourse could have a significant effect on the riskiness of individual banks.

Providing implicit recourse could be discouraged if regulators would take strong measures against banks that provide it. Banning all repurchases of loans sold without explicit recourse may not be necessary. Such a ban should in fact be avoided, if possible, to maintain liquidity in the loan-sales market. Rather, banks should not be allowed to repurchase loans that have experienced a significant decline in credit quality. This prohibition can be enforced after the fact for financially strong banks that are not repurchasing a material amount of loans. All other loan repurchases could require prior regulatory approval. Moreover, any bank discovered to have engaged in a pattern of providing implicit recourse on loans that have experienced a significant decline in credit quality should be required to treat all outstanding loan sales as sales with full recourse for the purposes of the risk-based standards and the limits on loans to a single borrower. While it could be costlier in some individual cases to enforce this policy strictly than to provide forbearance, refraining from full enforcement of such regulations would only encourage banks to sell additional

loans with implicit recourse in the expectation that they will also receive forbearance if the need arises. The strict enforcement of limitations on implicit recourse would teach banks and their customers not to be parties to loan sales with implicit recourse if the bank wishes to retain a relationship with the borrower.

Conclusion

In the past decade banks have significantly increased their sales of loans. Theory suggests that banks would sell loans with recourse if permitted to do so by regulators. However, existing capital regulations discourage loan sales with recourse by including the full value of such loans in banks' capital requirements. By limiting possible solutions to moral-hazard and adverse-selection risks to loan purchasers, capital regulations probably hamper market development and reduce the prices banks receive for loans sold.

This study reviews related literature and analyzes the impact of loan sales on banks' riskiness. Findings indicate that the direct impact of loan sales is to increase risk, but the direct results are at least partially offset by indirect effects. For example, some degree of market discipline would be exercised as purchasers of loans sold with recourse would be willing to pay less for weak banks' loans sold with recourse than they would pay for loans sold by strong banks. Moreover, empirical evidence confirms that the net direct and indirect effect of loan sales with recourse is that risk may not be significantly increased. However, risk-based capital standards may to some degree incorporate risk reduction resulting from market discipline. As for the uncaptured risk reduction, there is as yet no evidence on whether it would exceed the direct increase in risk resulting from recourse.¹⁸ An additional issue is that, although there is some theoretical evidence about gains from loan sales, there is no clear empirical evidence that loan sales have produced any gains other than perhaps providing banks a way to defer new capital issues. Further evidence about the gains from loan sales and about risk reduction arising from market discipline is needed before there would be reason to change the treatment of recourse risk under risk-based capital standards.

Notes

1. Regulators require that a bank's maximum credit exposure to any one borrower, or group of related borrowers, not exceed 15 percent.
2. Relaxation of interstate banking laws could increase reported loan sales because loans sold to affiliated banks should be subject to far fewer moral-hazard problems.
3. Loan buyers may also be protected by outside credit enhancements, such as guarantees purchased from insurance companies. However, outside credit enhancements only shift the adverse-selection and moral-hazard problems from loan buyers to the providers of the credit enhancements.
4. Benveniste and Berger include deposit insurance in their formal model, but their general argument for the advantage of debt sales with recourse also could be made in environments without deposit insurance.
5. Tier one capital consists of common and perpetual preferred equity, paid-in-capital in excess of par, and retained earnings.
6. Barham and Lefebvre (1990) have developed a model in which capital regulation is assumed to be a costly tax, and they have analyzed the optimal contract assuming an asymmetric information problem. Banks in their model have access to an *ex ante* loan-analysis technology that allows them to separate "good" from "bad" loans but that an insurer of securitized loans can use to perform an *ex post* analysis of failed loans to determine their quality. Barham and Lefebvre suggest that the optimal contract would be one in which the bank forfeits its entire capital if it is found to have misrepresented the quality of the loan. Bank regulators are unlikely to approve such draconian punishment.
7. If true, the tax explanation for sales would be a contributing factor in all loan sales. However, taxes alone could not explain loan sales unless the seller of the loans were required by the regulators to hold more capital than would be held by the purchaser of the loans.
8. Lehman Brothers (1990) reports that total capital issues increased from less than \$0.5 billion per year between 1976 and 1981 to no less than \$2.5 billion per year between 1982 and 1989. Common stock issues totaled over \$2 billion in three years: 1986, 1987, and 1989.
9. Several of the theoretical models discussed provide both a rationale for loan sales that is independent of existing safety and soundness regulations and a reason for loans to be sold with recourse that does not involve exploiting the government safety net. Moreover, the models that do not consider recourse also ignore moral-hazard and adverse-selection risk. Had these risks been considered, the other models of loan sales would likely have found the provision of recourse to be an important element.
10. An example of the effectiveness of market discipline on bank's off-balance-sheet risk taking may be found in the interest rate swap market, where some banks that had been dealers are being effectively prevented from competing in parts of the swap market because of increases in the banks' perceived risk of failure.
11. See Boot and Thakor (1991) for an application of this argument to bank loan commitments.
12. James (1988) and Pavel (1988) also look directly at the risk implications of loan sales. However, Pavel's data source on loan sales explicitly excludes loans sold with recourse, and James's data appear to have the same limitation.
13. These are the three primary goals of bank safety and soundness regulation. Commercial bank regulators have been assigned other responsibilities, such as consumer protection. This discussion focuses on the regulators' safety and soundness responsibilities because recourse risk does not raise significant issues for other responsibilities.
14. The risk-based standards could be modified to accord a lower weight to private-sector loans that satisfy some pre-specified criteria. However, any simple criteria are likely to lead to significant inaccuracies. For example, standards based on conventional financial ratios will not yield accurate risk measures across industries. Regulators could undoubtedly develop standards for different industries that would be far more accurate than the current system, even though the revised standards would still contain errors. The problem is that regulators could more easily be placed under strong political pressure to manipulate more complicated standards to allocate credit to politically powerful industries.
15. A case could also be made for including all noninsured liabilities, including uninsured deposits. However, deposits that lack *de jure* insurance frequently receive 100 percent *de facto* coverage by the FDIC. Thus, uninsured deposits should not be included in the capital regulations unless the FDIC eliminates all coverage of uninsured deposits.
16. Economies of scope exist when the cost of conducting two or more activities in the same firm is less than the total cost of conducting the activities in separate firms.
17. The approach to measuring risk would be theoretically correct in the sense that the portfolio weightings accurately reflected the variance of individual loans. The ideal system would analyze the risk of the entire portfolio rather than the risk of individual assets, as noted above.
18. The lack of empirical evidence may be due in part to the fact that the risk-based standards did not take effect until the end of 1990 and the full capital requirements will not be in place until the end of 1992.

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Are All Monetary Policy Instruments Created Equal?

Marco Espinosa

In November 1987 the *New Yorker* devoted parts of three issues to analyzing the workings of the Federal Reserve System. The author of these articles wrote, "The financial system, usually portrayed as a static balance sheet, actually is dynamic, like a pump house, and functions according to physical laws that a hydraulic engineer might understand. It is like a fantastic labyrinth of pipes, storage tanks, and pressure valves. . . . The Federal Reserve Board stands alongside the system like a supervising engineer who has the power to alter the flows inside the plumbing."¹

This type of journalism responds to the growing public interest in better understanding the monetary authority's role in the economy. It recognizes that this role should be examined in a dynamic framework. It also embodies the belief that monetary policy can alter the course of the economy.

But does the financial system really work like a pump house? Can monetary policy change the course of the economy?² On what basis do economists make monetary policy recommendations? As is discussed below, the analogy to a smoothly operating system like that of a pump house is not in fact particularly accurate.

In a physical science like chemistry, a researcher can conduct a laboratory experiment to learn the effects of, for example, mixing magnesium and lithium. In economics, when one wants to know the consequences of, for instance, lowering reserve requirements, there is no research lab available, and no controlled experiment is possible. Instead, economists build economic models—simplified versions of how real-world economies work. Economic models are sets of assumptions and the rules that make the assumptions consistent with each other. Implicitly or explicitly, whether they recognize it or not, economists always have models in mind when they analyze problems. Any prediction of, for example, the effect of lowering reserve

The author is an economist in the macropolicy section of the Atlanta Fed's research department. He thanks Eric Leeper, Mary Rosenbaum, and Steve Russell for very helpful comments. However, any errors are the author's responsibility.

requirements on the inflation rate or the rate of interest in the economy depends critically on the particular model applied. A benefit of using these simplified versions of real economies when addressing policy issues is that, among other things, using a model reduces the number of variables in the economy being analyzed at a given time, making it possible to examine particular problems more effectively and to verify the internal consistency of policy recommendations.

This article highlights some of the issues arising in a selection of models that attempt to analyze, in a formal setting, the consequences of some hypothetical monetary policies. In these models fiscal and monetary policy are constrained by the requirements of financing government expenditures, and the choice of ways to finance such expenditures affects the real interest rate (that is, the interest rate adjusted for inflation). They were chosen because policymakers generally seem to have such economies in mind when they explore alternative policy options. The models highlight the interaction of fiscal and monetary policies. The article provides examples of how these models can be used to address some monetary policy issues.

Although monetary policy is usually studied in isolation from fiscal policy, and vice versa, these types of government economic policies are necessarily linked to each other. Consider the following stylized description of fiscal policy. When the government decides on a level of expenditures to be financed domestically, it must also decide on how much of those expenditures will be financed by taxes and how much by the issue of debt such as Treasury bills and bonds (hereafter, for the sake of simplicity, debt is referred to as bonds). Because government expenditures minus taxes are defined as deficits, deficits implicitly determine the amount of bonds to be issued.

Given the amount of government bonds outstanding, a decision must be made as to whether or not to monetize those bonds—that is, whether to buy them with newly created currency. This decision, which determines the composition of the government's liability portfolio, is made by the monetary authority and is therefore identified by many economists as monetary policy.

It is true that most analysts study monetary and fiscal policies separately. However, it should be clear from the above description of these policies' interrelationship that analysts are implicitly making assumptions about one when studying the other.

The Impact of Fiscal and Monetary Policies.

Among the most controversial issues in macroeconomics is whether fiscal and monetary policies have

real effects. Because most macroeconomic models conclude that policy can affect macroeconomic activity only if it changes the real rate of interest, a policy is said to have real effects if it influences the real rate of interest in the economy.

A ground-breaking paper by Robert Barro (1974) looks at the choice between using taxes or government bonds to finance a given level of government expenditures. Barro shows that changes in the mixture of taxes and bonds chosen by the policy authority can have no real effects—that is, that the different mixes may have equivalent implications for the real economy. He labeled this situation “Ricardian equivalence.”

The basic assumptions behind Barro's finding are that in the long run the government budget has to be balanced and that private savers will buy bonds only if they know the bonds will eventually be paid off. Barro also assumes that the government's financing choices are limited to bonds and taxes. If, for example, the government were to reduce nondistorting taxes and issue more bonds to finance its expenditures, private savers would increase their savings in anticipation of the higher future taxes that would have to be levied to repay the new bonds. The increased savings could be channeled toward the purchase of the new bonds, allowing real interest rates to remain unchanged. This mechanism illustrates how the government financing scheme may affect the timing of savings but not the total amount of consumption or investment in the economy.

Barro's (1974) paper was seminal for formally presenting, in a dynamic setting (a framework that recognizes the intertemporal nature of economic decision making), a set of conditions under which the government's choice of bonds or taxes to finance expenditures is irrelevant (has no real effects). However, Barro's analysis failed to include new currency creation as a financing alternative. Stated differently, he did not analyze the choices available to the government regarding its liability portfolio (its holdings of government securities and currency). This portfolio can be modified through open market operations. In particular, the monetary authority can purchase bonds with newly created currency in an open market purchase, or it can sell bonds through an open market sale. Implicitly, Barro assumes that monetary policy does not depend on the state of the government debt.

S. Rao Aiyagari and Mark Gertler (1985) looked at budget financing schemes involving different combinations of taxes, currency, and government bonds. When they examined the economic implications of retiring government obligations by either currency creation or future taxes, they considered three cases. One was the

polar Ricardian case, in which all government obligations were retired via (backed by) future taxes. The other was the polar non-Ricardian case, in which all government debt was retired by issuing currency. Between these was the situation in which government expenditures are financed with a mix of taxes and currency issues. Aiyagari and Gertler found that open market operations have real effects except when current issues of bonds are backed 100 percent by future taxes.

The question of what backs the debt explicitly highlights the links between fiscal and monetary policies. In Aiyagari and Gertler's words, "The backing of the government bonds is a measure of the extent to which fiscal policy accommodates monetary policy, and vice versa" (1985, 38).

The Effects of Open Market Operations

The Irrelevance of Open Market Operations: The Modigliani-Miller Theorem. Monetary policy involves changes in the composition of the government's portfolio of assets and liabilities. This portfolio is analogous in some ways to the liability portfolio of a private firm. According to the Modigliani-Miller theorem (discussed in Neil Wallace 1981), when markets are complete a firm's value is the same regardless of how its liabilities are divided between equity and debt; in other words, the composition of a firm's liability portfolio is irrelevant in determining a firm's value. One way in which the composition of the government's liability portfolio can be changed is via open market operations. Just as swaps of debt and equity may not matter to the value of a private firm, swaps of bonds and currency may not change real interest rates in the economy.

Applying the Modigliani-Miller tradition to the government's liability structure, Wallace (1981) concentrates on monetary policy experiments. His work emphasizes the microeconomic foundations of macroeconomic policy prescriptions. In Wallace's model the government's asset portfolio consists of physical assets and its liability portfolio is composed of currency. Open market operations are defined as purchases of real assets with currency or vice versa.³ By engaging in open market operations, the monetary authority can affect the aggregate budget deficit, the distribution of future taxes, and the budget constraints to which the economic agents, like the government, are subject. Only if policies have no net effect on the budget constraints of economic agents would one expect to ob-

serve unchanged purchasing power and consumption patterns. In Wallace's analysis, fiscal policy—which he identifies as the budget deficit, net of interest payments—is taken as given. Auxiliary redistributive mechanisms keep agents' budget constraints unchanged across different government portfolio choices. Under these assumptions, his model generates irrelevance of open market operations.⁴

Should it be inferred from this type of model that open market operations do not matter and, if monetary policy is identified with open market operations, that monetary policy does not matter? One feature these models share is their assumption that currency and government bonds, the two types of liabilities that constitute the government's portfolio, yield the same real rate of return to the holder. In economists' terms, the models assume that bonds do not dominate currency in rate of return. This assumption is clearly at odds with the facts. Would a \$100 bill stored in a drawer for three months yield the same real rate of return as a three-month Treasury bill that costs \$100?

The value of these models rests on the fact that they provide a benchmark—a benchmark that indicates that under some conditions, however unrealistic, open market operations are irrelevant. It is then important to inquire what role these conditions play and why they may not hold.

When Open Market Operations Matter. In a 1985 paper, Wallace examines the effects of Barro's (1983) definition of open market operations. Barro describes the exchange of government bonds for currency as a combination of two policies. The first policy involves issuing currency and reducing current taxes by the same magnitude. The second policy involves raising taxes by the same amount and buying government bonds with the additional tax revenues. These policies leave the level of taxes unchanged but cause the quantities of currency and bonds to move in opposite directions. Wallace notes that these two policies constitute a pair of offsetting Ricardian experiments. In each case, Wallace's model would predict that the change in the government deficit has no real effects, so this sort of open market operation is irrelevant. Wallace also notes that in Barro's setting, without any further assumptions about transactions frictions (assumptions that might help explain rate-of-return dominance), currency and bonds must yield the same rate of return.

Wallace discusses open market operations in two alternative settings that provide such friction. In the first, currency has intrinsic value: it provides services similar to the commodities consumed. Taken literally, this is of course an inadequate description of currency's

use. However, it is a convenient way to try to capture the notion that currency provides a stream of consumable services. This device helps to explain the observed rate-of-return dominance; although bonds offer a higher rate of return, people will still choose to hold some currency. The other setting imposes a transaction restriction that requires the use of currency in each transaction involving savings. This version is also an extreme characterization of the role of currency in society, but it nonetheless may be a useful device to obtain rate-of-return dominance. Wallace shows that these models deliver both Ricardian equivalence and irrelevance of Barro-style open market operations.

Wallace also describes some alternative models in which legal restrictions on private intermediation (for example, the imposition of reserve requirements on commercial banks) generate rate-of-return dominance. In these models, Ricardian equivalence does not hold, and open market operations have real effects. Because Wallace views legal restrictions as the best vehicle for modeling rate-of-return dominance, he concludes that, in general, Ricardian equivalence is not compatible with rate-of-return dominance.

Stylized Policy Problems

This section explores models that constitute a relatively new approach to monetary policy and in which alternative policy experiments can be performed. In these models open market operations matter, and the underlying assumption is that there is a constant deficit to be financed forever. Not all issues of bonds are assumed to be “backed” by future taxes. In Aiyagari and Gertler’s terminology, monetary policy accommodates fiscal policy.

Inflationary Implications of a Tight Monetary Policy. Thomas J. Sargent and Wallace’s (1981) work is among the most controversial in the literature because of its policy implications. The authors analyzed the consequences of financing a given government deficit exclusively with unbacked bonds. The basic conclusion of their research is that in an economy in which the real rate of interest exceeds the rate of growth of the economy, the monetary authority’s apparent choice about whether or not to monetize a given government deficit is not in fact a real one; the real choice is *when* to monetize, not whether to do so. The logic behind this conclusion rests on the fact that when the real rate of interest exceeds the rate of growth in the economy, bonds cannot be rolled over indefinitely;

eventually the size of the debt will outstrip the economy’s ability to pay off the rolled-over debt. When taxes are not part of the menu of alternative government financing sources, monetizing later rather than earlier increases the cost of debt service and thus the amount by which the monetary authority will have to monetize in the future. Therefore, the longer monetization is delayed, the more inflationary it becomes. Sargent and Wallace’s assumption that the real rate of interest exceeds the rate of growth of the U.S. economy has been challenged as unrealistic (see Michael R. Darby 1984).

Welfare Implications of Some Alternative Monetary Policies. Many analyses of monetary policy have sought to find the “optimal” policy. As Wallace has observed, “The presumption seems to be that there is a unique best policy for the Fed to follow and the Fed’s problem is to find it” (1984, 15). Wallace explores that association in a model that captures some basic features of real economies.

What elements are desirable for a model that will examine the question of what the effects of alternative monetary policies would be among different groups of agents? Implicit in Wallace’s (1984) description of what is expected from the monetary authority is the notion that monetary policy is not irrelevant—that is, the monetary authority’s actions have real effects. The discussion above illustrates that under some assumptions open market operations, the basic instrument of monetary policy, have real effects. A particular case in which real effects are likely to occur in this specific type of model is when monetary policy is at least partly subordinated to fiscal policy—when the fiscal authority does not back its debt 100 percent with future taxes but expects the monetary authority to monetize part of its debt.

Wallace is also interested in generating rate-of-return dominance, so his choices lie among models in which currency has intrinsic value, models in which its use is enforced in every economic transaction, and models in which it is held because of some legal restriction. As discussed above, Wallace views legal restrictions as the natural choice among these options.⁵ Finally, in Wallace’s model some agents are “savers,” others are “borrowers,” and others are endowed with currency or bonds denominated in currency. Borrowers in this model borrow from private intermediaries, and savers hold deposits of these reserve-holding intermediaries.

In Wallace’s model, all borrowing and lending is assumed to be intermediated by commercial banks that operate competitively. These banks are required to hold currency reserves equal, at a minimum, to a fixed

positive fraction of their total liabilities (deposits). The banks lend to borrowers or the government at the market rate of interest and accept deposits from savers to whom they pay the weighted average of the rate of return on loans and the rate of return to currency.

It is assumed that government bonds and private loans compete on equal footing in the credit market. While it can be argued that private loans do not compete on the same basis because, for example, bonds are risk-free and private loans are not, it is feasible to think in terms of a kind of mutual fund that could put together a virtually risk-free portfolio for private loans. In any event, Wallace's interest here is in highlighting the fact that the government, like many other borrowers, competes for savings in the market.⁶

Wallace showed that a tighter monetary policy hurts borrowers, who end up facing a higher real rate of interest, and benefits the initial holders of currency or bonds by enhancing the purchasing power of their assets. Its impact on savers is ambiguous: the return on their deposits is the weighted average of the rate of return on currency and bonds, and these rates move in opposite directions. Clearly, monetary policy cannot be designed to make everybody happy.

Inflationary Implications of Some Alternative Monetary Policies. The Monetary Control Act of 1980 gave the Federal Reserve System responsibility for establishing required reserve ratios for a broad range of transactions deposits issued by all depository institutions. In addition, in 1984 the System returned to something very close to contemporaneous reserve accounting.⁷ Although in recent history reserve requirements—the requirement that commercial banks hold a fraction of their customers' deposits in a noninterest-bearing account at the central bank—have not been used as a monetary policy instrument, legislative and regulatory changes have created conditions under which the required reserve ratio could acquire a more active monetary policy instrument role.

Marco Espinosa and Steven Russell (1991) use Wallace's model to analyze a situation in which the monetary authority can choose between two policy instruments: the required reserve ratio, which can be changed directly, and the ratio of nominal bonds to nominal currency, which can be changed through open market operations. Because in practice the monetary authority is also concerned about inflation, the authors seek to compare the inflationary consequences of reducing real interest rates via these two instruments.⁸ It is assumed that the monetary authorities view the initial level of real interest rates as "too high" and target a lower real interest rate. Policy ex-

periments involving simultaneous changes in both instruments are not examined.

Like Wallace (1984), Espinosa and Russell (1991) want to capture rate-of-return dominance. The model should also be one in which open market operations matter and reserve requirements can play an active role. Wallace's (1984) model is flexible enough to incorporate all these features in addition to being tractable. Also, although Wallace introduces reserve requirements, he does not look at them as a policy instrument. Espinosa and Russell examine the implications of using the required reserve ratio as an active policy instrument.

In his analysis, Wallace concentrated on cases in which the real interest rate is greater than the growth rate of the economy. At the time Wallace was writing, the United States had just experienced a period during which real interest rates consistently exceeded real growth rates. Wallace found that the effects of open market operations were often perverse, in the sense that open market purchases reduce both the real rate of interest and the rate of inflation. Historically, real interest rates have been lower than the real growth rates. Therefore, another characteristic desired is for the model to be capable of delivering an equilibrium real rate of interest lower than the rate of growth in the economy. The assumption underlying Espinosa and Russell's research is that the monetary authority does not face perverse circumstances. It is their view that the relationship between interest rates and inflation envisioned by many policymakers and economists is a trade-off between lower interest rates and higher inflation rates. Any move to ease credit conditions creates inflationary pressures. They label this trade-off the "conventional wisdom." They therefore need to identify specifications of Wallace's model that are consistent with this position.

In Espinosa and Russell's model, as long as the monetary authority permanently issues currency, the inflation rate will be positive. The real rate of interest, on the other hand, may be less than, equal to, or greater than zero, depending on the state of the credit market. The real value of the revenues the government obtains from currency growth is called currency "seignorage." Similarly, in this research the real value of revenues obtained from issuing bonds is called bond seignorage. If the real rate of interest exceeds the rate of growth in the economy, no seignorage revenue can be extracted from the government bonds; in fact, the bonds represent an extra financing burden.

It follows from the discussion above that real currency and real bond balances can be thought of as a

“tax” base. The difference between the rate of growth in the economy and the rate of return to currency, and the rate of growth in the economy and the gross real rate of interest can be considered tax rates.

Given the fixed deficit, which it cannot modify, the monetary authority chooses the ratio of reserve requirements to be imposed on commercial banks and chooses between currency and bonds (the bonds/currency ratio) for the composition of its portfolio. The settings of these two variables describe monetary policy. Associated with each monetary policy are a real rate of inflation and a real rate of interest in the economy. These adjust to clear the currency and credit markets and to allow the government to finance its deficit.

It is supposed that the monetary authority attempts to reduce the real interest rate by reducing the bonds/currency ratio (conducting an open market purchase), holding the required reserve ratio fixed. The monetary authority can target a lower real rate of interest through open market purchases. However, the effect on the inflation rate in the economy depends on whether the case considered is perverse or conventional. When the conventional wisdom holds—that is, under the set of conditions identified by Espinosa and Russell—the inflation rate rises. If, on the other hand, the economy’s state resembles that assumed by Wallace—a rate of interest higher than the rate of growth in the economy—the rate of inflation in the economy will be lower.

The intuition behind these results is as follows: open market purchases have two effects, and these effects act in opposite directions. On one hand, an open market purchase causes the rate paid on government bonds to decline. On the other hand, the bond seignorage tax base—the real value of the government bonds present in the economy—is reduced. When the interest rate in the economy is already low, the tax base effect outweighs the tax rate effect. The resulting loss of income has to be made up from the alternative financing source—that is, from currency seignorage. It is the need for higher currency seignorage that explains the higher rate of inflation in the conventional case. In the perverse case, the need for less currency seignorage explains the deflationary result.

Espinosa and Russell show that under the assumptions of their model a lower reserve ratio always leads

to a lower real rate of interest. If in addition the conventional wisdom holds, a lower required reserve ratio leads to a higher rate of inflation. The model thus allows comparison of the inflationary effects of open market operations and reserve requirements.

Because their goal is to compare the magnitudes of inflation rate increases that are associated with using different monetary policy instruments to peg interest rates at levels below their current ones, Espinosa and Russell must ensure that each of the two rate-pegging experiments whose results are compared begins at the same position. Under these conditions they establish that, when the conventional wisdom holds, reducing the real interest rate to a particular level by cutting the required reserve ratio is always more inflationary than reducing the rate of interest to the same level via open market purchases.

The basic intuition behind this result is as follows: whenever the conventional wisdom holds, both conducting open market purchases and lowering reserve requirements produce a net loss of revenue from currency seignorage. However, because reducing the reserve ratio lowers the currency seignorage tax base, the loss of revenue it produces is larger than the loss produced by conducting an open market purchase.

Conclusion

Do monetary policies have real effects? The answer to this question depends critically on the definitions of monetary policy and of “money,” and on assumptions about the nature of the interaction of fiscal and monetary policies. The small sample of the monetary policy literature examined here highlights these issues. The examples of monetary policy analysis presented illustrate a methodology that formally specifies the assumptions postulated when a policy issue is under consideration. Although the assumptions made by these researchers can perhaps be challenged on any number of grounds, the model is at least internally consistent. The fact that such consistency often cannot be found in many informal policy recommendations points to the value of formal modeling in the process of policy analysis.

Notes

1. See Greider (1987, 60).
2. It is, of course, possible to envision environments in which monetary policy has no real effects. Many economists think that monetary policy has effects only in the short run or no effects at all. See, for example, Linden (1991) and the section on the irrelevance of open market operations in this article.
3. The reader will notice that this definition of open market operations differs from the definition provided above. However, it can be shown that a government intermediation of the kind described in Wallace is irrelevant, so open market operations as conventionally defined will be irrelevant. See Sargent (1987, chapter 8) for details.
4. Chamley and Polemarchakis (1984) modify some of Wallace's auxiliary redistributive mechanisms and show that under weaker assumptions a similar irrelevance result occurs.

- This and other related papers display different versions of irrelevance in the Modigliani-Miller tradition. What varies among the versions is the particular consumption allocation and price sequences held fixed across alternative financing schemes and the set of auxiliary redistribution assumptions.
5. See Wallace (1986) for a detailed explanation.
 6. Note that the aggregate dissavings (consumption that exceeds current income) of private borrowers at any given date depends on the interest rate paid in the credit market while the aggregate savings function of private savers at any given date depends on the rate paid on deposits.
 7. See, for example, Rosenbaum (1984) for a detailed description.
 8. Espinosa and Russell (1991) also deal with the case in which the monetary authority is interested in targeting the nominal interest rate.

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European Monetary Union: How Close Is It?

Michael J. Chriszt

Many attempts to establish monetary unions across national borders have failed, but a few successful unions still exist today.¹ A monetary union is a formal arrangement in which two or more independent countries agree to fix their exchange rates or to employ only one currency to carry out all transactions. One of the most ambitious efforts to date is now under way in the European Community (EC, or the Community), whose twelve member countries are striving toward European Monetary Union (EMU).² When full union is achieved, these nations, which account for nearly 40 percent of world trade, will carry out transactions with one currency through one central bank and will be subject to one monetary policy.³ One big obstacle to European Monetary Union is that it will require EC member states to forgo national monetary policies, instead subordinating themselves to a single monetary policy concerned with the interests of the European Community at large.

The EC's readiness to establish monetary union owes much to the European Monetary System (EMS) and, in particular, its exchange rate mechanism (ERM). Established in 1979, the EMS has provided exchange rate stability and the degree of economic convergence among EC member states necessary as a foundation for full monetary union. The purpose of this article is to explain the development of the European Monetary System, describe how its exchange rate mechanism works, and recount the EC's recent moves in the direction of monetary union.

The author is an economic analyst in the macropolicy section of the Atlanta Fed's research department. He is grateful to Jan Boucher and Mary Rosenbaum for guidance and to Mary Mathewes-Kassis and Jeff Watson for assistance.

A Rationale for Fixed Exchange Rates and Monetary Union

From a nation's point of view, there are economic and political reasons both for and against pursuing monetary union. One widely held explanation of why independent nations would choose to adopt a fixed exchange rate regime is that doing so has a number of positive welfare effects.⁴ A currency union can increase and stabilize the income level within a country by reducing uncertainty surrounding its currency's value. The fact that the zone of fixed exchange rates can be considered as one entity for purposes of producing goods and services allows resources to be allocated more efficiently. In addition, fixed rates may promote price stability because random shocks can be better absorbed by a group of countries with a broader, more diverse production base (natural resources, capital, and labor) than by a single country's economy. Moreover, eliminating individual countries' potential use of exchange rate management as a nontariff trade barrier should increase economic efficiency over the longer run. The fact that the need for foreign exchange transactions is reduced in a currency union also helps its member countries save the resources they would otherwise use for foreign exchange market transactions.

Countries may use monetary union or steps toward it to further political goals. Establishing a union would offset the influence of a larger country that might be brought into the group, in effect diluting the larger nation's economic power through the collective political power of the union participants' shared economic objectives. In addition, each of the member nations, even the more dominant ones, would gain economic influence vis-a-vis countries outside the union merely by being part of a federation that is stronger than any one member nation. Formal bonds among union members would also reduce the likelihood of a large outside state's dominating either the union as a whole or any single member country.

However, monetary union also carries costs for its members. The most fundamental potential cost has to do with agreeing to a fixed exchange rate. By floating its exchange rate, a country can use its currency's value as a policy instrument, actively influencing or passively allowing appreciation or depreciation. As mentioned earlier, monetary union requires that an individual country relinquish control over its exchange rate, thereby abandoning an important tool for maintaining economic and political sovereignty.

Evolution of the European Monetary System

The concept of economic and monetary union is inherent in the Treaty of Rome, establishing the European Economic Community in 1957. The treaty states that "the Community shall have as its task, by establishing a common market and progressively approximating the economic policies of member states, . . . a harmonious development of economic activities" ("Treaty Establishing the European Economic Community" 1987, 125). This idea was expanded in the Single European Act of 1987, which states that to "ensure the convergence of economic and monetary policies which is necessary for the further development of the Community, member states shall . . . take account of the experience acquired in cooperation within the framework of the European Monetary System" ("Single European Act" 1987, 549). Economic "convergence" has been identified with the improvement and cooperation necessary to harmonize living and working conditions in all EC member states (Horst Ungerer et al. 1990). The European Monetary System and the Exchange Rate Mechanism can be viewed as a means to achieve convergence, which is a necessary condition for economic and monetary union.

At the EC's inception, monetary unification was not an issue: the international monetary system was working well in 1958. During the 1960s, however, dollar and international payments crises led EC leaders to give serious consideration to formal monetary integration. Large fluctuations in member states' exchange rates were beginning to jeopardize gains from earlier progress toward more efficient and profitable commercial transactions among members; monetary cooperation and integration began to seem essential if the economic benefits of being an EC member were to be preserved and fostered.

Community heads of state initiated efforts to establish a monetary union in 1969, asking the EC Commission to prepare a plan for economic and monetary union. The resulting blueprint, known as the Werner Report (after Luxembourg's Prime Minister Manfred Werner), concluded that the first step would be to reduce exchange rate fluctuations among member states. Complete monetary union was scheduled to be in effect by 1980.

The EC's initial approach to exchange rate stabilization was structured within the Bretton Woods system (established by delegates from many nations in 1945 at Bretton Woods, New Hampshire, at a confer-

ence to plan postwar economic arrangements). Bretton Woods required participating countries to maintain their currencies' exchange rates within a 1 percent range against the U.S. dollar, whose value was fixed to gold at \$35 per ounce. Under this arrangement, EC currencies were held within 2 percent of each other. The Bretton Woods system collapsed in 1971, however. A new international monetary agreement—the Smithsonian Accord—emerged later the same year, allowing currencies to vary 4.5 percent against the dollar. This arrangement meant that EC currencies could move as much as 9 percent against other members' monies.

This range was considered by some EC countries to be too wide and unstable. To regain exchange rate stability, Belgium, Luxembourg, France, Italy, the Netherlands, and West Germany devised the European Joint Float Agreement in April 1972. This arrangement involved maintaining 2.25 percent fluctuation margins around established rates for EC currencies, while permitting the 4.5 percent margins against the U.S. dollar established by the Smithsonian Accord.

The Joint Float is better known as “the snake in the tunnel.” If the exchange rates between each EC currency and the U.S. dollar were charted over time and the charts overlaid each other, the image of a snake would appear: the exchange rates among EC members would fluctuate within a narrow band (the snake's body) that would never exceed 2.25 percent in width, while the body would squirm up and down in relation to the dollar within a 4.5 percent band (the tunnel) (Richard W. Edwards 1985, 537). When the Smithsonian agreement was abandoned in March 1973 and exchange rates were allowed to float, the snake lost its tunnel; the 2.25 percent margins were maintained, however, among EC currencies.

The Joint Float was meant to encompass all EC currencies, but within two years of its inception five of the EC's members—Denmark, France, Ireland, Italy, and the United Kingdom—had withdrawn for a variety of reasons. The economic turbulence of the 1970s and the limited progress toward economic and monetary convergence made keeping these members' currencies within the 2.25 percent band unfeasible. There were various unsuccessful attempts to restore these parameters throughout the decade, but EC leaders realized that the Joint Float guidelines could not achieve exchange rate stability. For the moment, plans to establish a monetary union were shelved.

Two main factors may explain why movements toward European Monetary Union failed at first. One significant development was the introduction of the

ambitious Werner Plan at a time of turmoil for the world's economies. The collapse of Bretton Woods and the oil crisis of 1973 created tremendous pressures—strains that could not be addressed without affecting exchange rates. Besides these external forces, among themselves member states failed to coordinate domestic macroeconomic policies to the extent necessary to bring about economic convergence (Dennis Swann 1984).

Establishment of the European Monetary System

The European Monetary System succeeded the Joint Float as a monetary plan in 1978 but did not begin formal operations until March 1979. All EC countries at the time became participants in the EMS, although the Italian lire was allowed a wider fluctuation margin; Britain chose not to participate in any of the arrangements, apart from actual membership, largely because of fears about losing monetary sovereignty.

The goal of the European Monetary System was to establish a greater measure of monetary and exchange rate stability in the Community. Its designers regarded the EMS as a central ingredient of a more complete strategy aimed at lasting economic growth and stability, a return to full employment, the harmonization of living standards, and a lessening of the EC's regional disparities (“European Council Resolution” 1978). Community leaders saw the EMS as a route to an effective long-term program for close economic cooperation and a zone of monetary stability—requirements for monetary union.

The EMS included an exchange rate mechanism to stabilize movements among EC currencies. The system also established financing arrangements to fund intervention in the currency markets as well as consultation procedures to ensure cooperation and clarity among EC states' monetary policies. Finally, the European Currency Unit (ECU) was installed as the exchange rate mechanism's denominator, or “benchmark.”

All EC member states embrace the European Monetary System, but not all participate in its exchange rate mechanism. For instance, Portugal and Greece have access to the ECU and its benefits because they belong to the EMS, but neither country fixes its exchange rate to the ECU—a requirement for ERM participation. The United Kingdom remained outside the ERM until October 1990.

How the Exchange Rate Mechanism Works

The European Currency Unit serves as the basis for determining exchange rate parities, or central rates, among EMS members. The ECU can best be described as a basket made up of fixed amounts of all EC currencies. Each currency's weight is decided by the relative importance of that country's GNP in total Community output and the overall share of each state's intra-EC trade. Weights are normally revised every five years. See Table 1 for the current composition of the ECU.

Table 1
Composition of the ECU

Currency	Weight (percent)
Belgian/Luxembourg Franc	8.1
French Franc	19.3
Lira	9.7
Guilder	9.6
Mark	30.4
Danish Krone	2.5
Punt	1.1
Peseta	5.2
Drachma	0.7
Pound Sterling	12.6
Escudo	0.8

Source: Commission of the European Community.

In addition to possessing bilateral central rates against each other, every EMS currency has a central rate against the ECU. For example, the deutsche mark's central rate against the French franc is FF 3.35, and its ECU central rate is ECU 2.06. Table 2 shows official cross and ECU rates used to track currency fluctuations in the EMS.

Maximum deviations from bilateral parity grid rates permitted in the EMS agreement are defined by intervention points that are 2.25 percent above or below each bilateral central rate.⁵ For example, if the mark strengthens against the franc, its upper limit in relation to the French currency would be roughly FF 3.43 $[(3.35 \times .0225) + 3.35]$. Should the mark depreciate against the franc, the lower limit would be FF 3.27 $[3.35 - (3.35 \times .0225)]$.

The European Council Resolution establishing the EMS states, "Intervention in participating currencies is compulsory when the intervention points defined by the fluctuation margins are reached" ("European Council Resolution" 1978, 10). When this occurs, the central banks involved must engage in reciprocal buying and selling of their currencies on the exchange markets. For example, if the mark appreciates to a standing at FF 3.43, the Bundesbank must sell marks in exchange for francs and the Banque de France must buy francs for marks.

Although central banks usually make foreign exchange market interventions in participating currencies, early interventions—before compulsory intervention limits are reached—are often made using third currencies, especially the U.S. dollar. Rather than letting their currencies fluctuate within the entire allowable range, the authorities in some EMS countries try to maintain their currencies' position within a narrower band. Carrying out the more frequent interventions necessary to remain within these self-imposed margins using EMS currencies would be a cumbersome process for the central bank of the country maintaining its narrow margins; each intervention would require consulting with the central banks whose currencies would be involved in the transaction. Because the United States has not required any such concurrence involving foreign exchange intervention, a large part of intramarginal EMS interventions are made in dollars. In addition, because the dollar is a leading reserve currency, EMS central banks usually have ample dollar reserves with which to carry out interventions.

The EMS includes a device to ensure that one currency's strength or weakness does not put unmanageable strain on the system. This "divergence indicator" measures a currency's deviation from all parity grid rates by comparing the currency's exchange rate with its ECU central rate. If a currency deviates from the central rate by three-fourths of its permitted fluctuation range, it has crossed a "threshold of divergence" ("European Council Resolution" 1978, 10). According to the European Council Resolution,

When a currency crosses its "threshold of divergence," this results in a presumption that the authorities concerned will correct the situation by adequate measures, namely:

- (a) diversified intervention;
- (b) measures of domestic monetary policy;
- (c) changes in central rates;⁶
- (d) other measures of economic policy.

("European Council Resolution" 1978, 10)

When a currency reaches its threshold of divergence against its ECU rate, only the issuer of that currency must take corrective action. (The EMS provides credit facilities for members with insufficient foreign reserves.) The divergence indicator is a signal for policy action to commence. If the central bank in question refuses to take adequate measures, it must give reasons for its inaction to other EMS central banks. Further consultations will, if necessary, take place in the appropriate European Community bodies in order to alleviate the situation.

Recent Moves toward European Monetary Union

Although economic and monetary cooperation and union were alluded to in the EC's establishing treaty, member states were unwilling to embrace any major commitment to this goal before the late 1980s. The Madrid summit in June 1989 unanimously adopted the first phase of a three-phase plan by Jacques Delors, President of the European Commission, to push the EC toward economic and monetary union.

The first phase calls for closer cooperation between member state governments in economic and monetary policy. Phase Two foresees the establishment of new Community institutions, including the European System of Central Banks (see the box on page 6 for a detailed look at the envisioned EC central bank), and Phase Three would institute a single currency and a single monetary policy decided and implemented by the EC central bank.

The Community is in Phase One now; conflict over timing and implementation has impeded progress on Phases Two and Three. At the October 1990 summit in Rome, however, eleven of twelve EC heads of state approved a text establishing a timetable for the final phase, with only Britain's Prime Minister Margaret Thatcher dissenting. The text states that on January 1, 1994, the agreed-upon start for the second phase, a new Community institution will be established to strengthen the coordination of monetary policies, to develop the instruments and procedures needed for the future conduct of a single monetary policy, and to oversee development of the ECU. Within three years from the start of the second phase, the European Commission and the council of the new monetary institution will report on progress made so that provisions can be arranged for the start of the third phase.

Table 2
European Monetary System Rates as of July 1, 1991*

	Spot	ECU	Position versus Weakest ERM Currency (percent)
Peseta	114.02	128.490	5.14
Belgian Franc	37.33	42.0674	1.90
Lira	1356.00	1528.08	1.77
Guilder	2.0565	2.3175	1.05
Pound Sterling	1.6155	0.6976	1.00
Mark	1.8265	2.0583	0.97
Punt	1.4650	0.7692	0.86
Danish Krone	7.0035	7.8923	0.45
French Franc	6.1855	6.9705	0.00

* Comparisons of individual currencies within the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS). The first two columns of figures show conversion rates per dollar (except the pound sterling, which is expressed in dollars per pound) and the European Currency Unit (ECU), respectively. Column three shows the position of each against the weakest ERM currency.

Source: Reuters News Service.

Recent developments may have made the Rome summit's timetable appear too ambitious. The painful economic adjustments required by the former East Germany following German economic and monetary union have shown Community leaders that a European-wide monetary union may have some perils, especially for the countries that are not as economically well-off. The initial impact of the Persian Gulf crisis and its effect on oil prices also reminded EC members that coordination is difficult during times of economic distress, when it is tempting to use sovereign discretionary policies to address domestic conditions. The current work of EC leaders forging EMU is now focused more on fostering economic and monetary convergence within the Community, rather than establishing schedules for eventual union.

The outcome of the June 1991 European Council summit leaves the twelve EC members facing difficult negotiations on economic and monetary union. The members have not reached agreement on the future shape of the European Community and on how much sovereignty they should have to relinquish to achieve monetary union. The EC summit's official communiqué said that at the next European Council summit, in December 1991, the draft texts,

The Proposed European Central Bank

A common central bank has been deemed crucial for the European Community to achieve its established goal of monetary union. To this end, a committee of EC central bank governors—the counterparts to the chairman of the Federal Reserve System—drafted statutes in November 1990 for the European System of Central Banks and the European Central Bank (ECB). The EC's present Intergovernmental Conference on Monetary Union is expected to finalize the plan by the end of 1991.

Organizational Features

According to the plan, the European System of Central Banks will consist of the ECB and the central banks of the member states. EC members are obliged to ensure that national laws, including the statutes of their national central banks, are compatible with ECB legislation and existing EC treaties.

The decision-making bodies of the ECB will be its executive board and council. The board will comprise a president, a vice president, and four other members, all chosen by EC heads of state after consultation with the European Parliament, while the council will incorporate the board and the twelve member-state central bank governors.

The execution of routine operations will be handled through the central bank system's federative structure. The structure is modeled on the principle of subsidiarity, which holds that functions should be performed by the agency that can most effectively handle them, at a position as low within the hierarchy as possible and thus nearest to the constituency affected by such functions. National central banks will be used as operational arms of the system, while the executive board will address matters of policy.

The system's structure meets two important requirements for making policy with Community-wide goals. Because monetary policy decisions will be placed in the hands of the central decision-making bodies, national self-interests are likely to be subordinated to ECB goals. Yet member states will continue to play an important role in executing the system's day-to-day tasks through both the ECB and the individual central banks.

The Basic Principles

Price stability will be the system's primary objective. However, this goal does not mean that monetary

policy will be carried out without regard to other Community economic policy objectives. The system will also support the Community's general economic policy as established by the relevant EC institutions.

The statutes' authors hope to ensure the ECB's democratic legitimacy and accountability through its formation process and reporting requirements. Democratic legitimacy is conferred by the statute's requirement that member states' governments approve the statute before it may be implemented. Accountability is addressed through the statute's calls for an annual report to be presented to EC heads of state, the Council of the European Community, and the European Parliament. In addition, the ECB will report regularly on the system's activities and must publish their financial statements. Further accountability is established by authorizing the president of the Council of the European Community and a Commission member to attend ECB Council meetings.

More Work Ahead

Although the draft statute for the European System of Central Banks and the ECB deals fully with organizational provisions, the statute still needs work in two major areas. First, the plan does not yet address transitional arrangements: the decisions on the necessary steps to be implemented in Stage Two, the transition to Stage Three, the ECB's start-up procedures, and the implications of full participation in the system by some member states at different dates than others—the so-called “two-speed” Europe, in which poorer EC states do not immediately participate in monetary union because of economic differences. Second, certain technical questions—especially those relating to income distribution—some legal questions, and the location of the ECB's headquarters are still under consideration.

Also unresolved are questions concerning the responsibility for exchange rate policy, the exact procedure for giving operational powers to the executive board, and the need for collateral in lending to credit institutions. The Committee of Governors intends to complete work in these areas in the course of the ongoing Intergovernmental Conference.

which contain all the necessary factors for the implementation of EMU, should be finalized. A phrase was added indicating that Britain maintained its reserve on the goal and timetable of the monetary union. The remainder of the report stressed the need for satisfactory and lasting progress on economic

convergence beginning immediately, during the first stage of EMU.

Although most members agree on the EMU goal, they are still at odds on whether to set up a European central bank in 1994 or 1996 and on how independent it should be from political influence. Britain's posi-

tion appears to be that a single currency should emerge when and if the economics of such a move permit it and not through imposed timetables (Ralph Atkins and David Marsh 1991). An alternative plan under consideration would create a two-tiered monetary union: a core group—Germany, France, and the Low Countries—would proceed rapidly to union, to be joined by other European Community members when their economies had developed sufficiently, thus avoiding a painful adjustment process. Although this two-tiered plan has all but been dismissed, it nonetheless reflects the multifaceted nature of the ongoing European Monetary Union negotiations.

Conclusion

The European Monetary System and its exchange rate mechanism are operating as planned, even though members have not entirely agreed on the timing or characteristics of a monetary union.⁷ The EC's Single Market Program—EC 1992—is likely to encourage continued economic convergence, which would ease the progress toward union. In addition, relaxing the timetable for EMU should allow member countries to plan for and apply the market forces necessary to bring economies closer together as a prelude to concentrating their efforts on monetary integration.

Notes

1. See Graboyes (1990) for a detailed discussion of past and present monetary unions.
2. European Community members are Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom.
3. Statistics on world trade (in 1989) were found in International Monetary Fund (1990).
4. For a more detailed discussion of this explanation, see Grubel (1981, 512-27, 641-63).
5. The upper and lower rates are actually 2.2753 percent and 2.2247 percent, respectively. These bands ensure that the buying rate for central bank A of currency B is equal to central bank B's selling rate of currency A because they represent the exact arithmetical inverse. As the total allowable fluctuation remains 4.5 percent ($2.25 + 2.25 = 2.2753 + 2.2247$), the difference is insignificant.
6. A change in central rates, or a parity grid realignment, which means currency revaluation or devaluation, is considered a drastic solution to exchange rate digressions. Central rate changes are infrequent, and none have been made since 1987. (See issues of *Financial Times* for a table that shows parity grid realignments).
7. See Ungerer et al. (1990, tables 17-24) for a detailed look at competitiveness and convergence measures.

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Review Essay

The House of Morgan: An American Banking Dynasty and the Rise of Modern Finance

by Ron Chernow.
New York: Atlantic Monthly Press, 1990.
812 Pages. \$24.95.

Ellis W. Tallman

Books more than two inches thick often intimidate the casual reader. Keeping facts in mind and maintaining reading momentum through several hundred pages can be difficult. Ron Chernow's *The House of Morgan*, a National Book Award winner, manages, despite its more than 800 pages, to avoid the pitfalls of many books of similar ambition. Anyone even slightly interested in its subject should find the book highly rewarding reading.

At its simplest level, *The House of Morgan* is a historical chronicle of a financial institution and the personalities associated with it. It is more, however. The book provides an overview of the evolution of the financial intermediation industry using the Morgan banks as a focal point. Chernow combines major episodes in the history of the Morgan institutions with an informed view of the development of U.S. financial markets. In Chernow's words, the story "holds up a mirror in which we can study the changes in the style, ethics, and etiquette" of the financial intermediation industry.

Other books that have examined the Morgans (notably *Morgans: Private International Bankers*, by Vincent P. Carosso) are informative and useful, but often such financial histories are geared toward specialists and include extensive and cumbersome footnotes and financial data. Other, more popularized treatments may be sensationalistic and loosely documented, concentrating on issues attracting the press. *The House of Morgan: An American Banking Dynasty and the Rise of Modern Finance* defies the dichotomy of popular versus scholarly historical texts.

*The reviewer is an
economist in the macropolicy
section of the Atlanta Fed's
research department.*

Chernow presents a generally rigorous treatment of the Morgan institutions as players in the evolving financial industry. While maintaining historical accuracy, he also successfully conveys the excitement and intrigue of major incidents like the Panic of 1907. His candid portraits of the Morgan bankers not only depict these men as influential financial decision makers but also describe their human qualities, allowing the reader to identify with these individuals who have rarely been viewed as sympathetic.

The House of Morgan covers more than 150 years in the evolution of banking institutions associated with the name of Morgan, starting in the 1830s in London with George Peabody and Junius Spencer Morgan's wholesale bank, which dealt primarily in raising capital from large-scale investors in Britain and then funding U.S. state governments. By beginning the story before the advent of the great J. Pierpont Morgan, Chernow gives the reader a perspective on the development of the House of Morgan in an economy that itself continues to evolve.

Most images of Pierpont Morgan, considered the epitome of the private banker, present him as a remote figure, grimacing in front of unwanted photographers or organizing relief for the financial markets during the Panic of 1907. Chernow's portrait reveals a man with such financial power and will that he essentially designed the structure of numerous manufacturing and transportation industries. For example, he orchestrated the formation of General Electric and U.S. Steel, as well as many railroad mergers, in the midst of "the first great wave of financial mergers in U.S. history." According to Chernow, Morgan viewed the displacement and numerous bankruptcies resulting from the railroad industry's bitter price wars in the late 1800s as evidence of the "chaos" of competition. In sharp contrast to the competitive free market thinking of today's dominant capitalists, Pierpont Morgan believed that the controlled oversight of consolidated enterprises created order and prevented the disruptions that free competition could produce, like the railroads' initial overbuilding and subsequent bankruptcies.

As a provider of capital to burgeoning industries, Morgan was in an enviable position. Because obtaining capital was difficult in the 1890-1910 period, bankers could command high rates and fees for their services. Like bankers at other large institutions of the time, financiers at Morgan banks parlayed their gains by exerting influence over the firms they helped finance. Morgan bankers were usually on the board of directors of client firms and actively participated in their management. Chernow refers to this period as the Baronial

Age. During this era the Morgan bank apparently held a high code of banker ethics, proving loyal to its clients even while maintaining control over them.

Pierpont Morgan preferred dealing in primary claims to firms' cash flows (that is, debt claims); thus, bonds collateralized by firms' assets were the Morgan banks' main financial assets. Through their active involvement in management, Morgan bankers played the monitoring role for firms that debtholders are expected to play. On the other hand, Pierpont Morgan considered the market for stock equity (secondary, or residual, payment promises) to be speculative and volatile. His conservative view of equity markets, however, did not prevent him from amassing wealth and power.

Bankers were among the most influential men in the country at this time because they provided a scarce resource—capital. Pierpont Morgan was perhaps the most powerful man of his time, exercising control of the organization of industry while gaining prestige among bankers and government officials alike. His role as private central banker during the Panic of 1907 remains an impressive act of personal authority likely never to be duplicated.¹ Despite this power, he was not nearly the richest man of his day; industrialists like Andrew Carnegie or John D. Rockefeller were far wealthier.

From the time of its founding, the Morgan Empire, made up of private institutions with associated banks in Philadelphia, London, and Paris, has had an international perspective; the links between Great Britain and the United States have been especially strong. Chernow highlights this international aspect in the section of the book dealing with the period he dubs the Diplomatic Age (1914-48). He suggests that bankers were at their most powerful at the outbreak of World War I. During the war they financed the fighting nations rather than individual firms. Throughout the Diplomatic Age, the role of sovereign debt was the most notable financing activity of the large banking houses. Chernow candidly describes financial maneuverings to arrange sovereign debt for less than admirable regimes, including the provision of investment capital for fascist Italy, imperialist Japan, and post-1930 Germany. However, bankers had much less influence on the nations they dealt with than they had held over firms during the Baronial Age. Thus, the bankers had little recourse in response to the numerous defaults on sovereign debt. For example, Latin American countries defaulted on loans during the 1930s (only Argentina under Peron eventually repaid its loans).

Another major shaper of the Morgan institution during the Diplomatic Age was the Great Depression

and its aftershocks. Chernow helps put to rest a variety of myths that were propagated among the popular press. For example, he suggests that the Federal Reserve Bank of New York acted appropriately following the 1929 stock market crash by providing adequate liquidity. Although it has become generally recognized in the economics literature that the Federal Reserve made mistakes later in the Depression, the popular press often (incorrectly) suggests that the Fed acted improperly following the stock market crash.

On the other hand, the accuracy of Chernow's analysis of the failure of the Bank of the United States in 1930 is questionable. The fourth-largest deposit bank in New York, the Bank of the United States catered to

Chernow fails to emphasize effectively a number of the regulatory changes that set up bank risk-taking behavior later in the period following the Great Depression.

immigrants, primarily Jewish. Unsuccessful in its attempt to get a \$30 million loan from private bankers, the bank failed. Its customers lost nearly 30 percent of their deposits, and the managers of the bank were imprisoned for fraud. Some analysts, including Chernow, interpret the lack of support for the failed institution, with its largely ethnic depositors, as evidence of anti-Semitism. However, such explicit concern for the depositors affected by bank failures is a modern perspective—evolving since federal deposit insurance was established—and it seems misguided to project it onto bankers in 1930.

In the era before deposit insurance, bankers attempting to quell bank runs simply assessed the balance sheets of a failing bank to determine whether the bank was merely short in liquidity or was inherently insolvent. During the Panic of 1907, Pierpont Morgan allowed a bank run to close the Knickerbocker Trust when he was unable to determine its condition in time to decide to take action that would have prevented a run. Soon after, however, he provided liquidity to the Trust Company of America during its run because

Benjamin Strong, later to become New York Fed Governor, examined its books and deemed it solvent. In the case of the Bank of the United States, it is likely that the bank was determined insolvent and not worth risking \$30 million to save. The author, by concerning himself with the depositorship, infuses post-Depression concern about systemic risk into pre-Depression bankers. If in fact the institution had been bailed out, it would have been the first instance of the “too big to fail” doctrine implemented in the U.S. banking system.

The massive number of bank failures and the recurrent bank panics during the early 1930s fueled the public's growing distrust of financial institutions, especially those on Wall Street. Chernow describes Congress as a lightning rod for popular attacks on financial institutions as the perceived source of the problems. In response, Congress organized an investigation into banking practices. These Pecora hearings (named after Ferdinand Pecora, counsel for the Senate Banking and Currency Committee) presented the inside network of Wall Street to average citizens in 1933. Chernow argues that these revelations of the financial elite's business practices further aggravated citizens' outrage and populist opposition to Wall Street.

Among the targets of anti-Wall Street forces was J.P. “Jack” Morgan, Jr., who proved easy prey to attack for political ends. Portrayed as much less formidable than his father, Jack Morgan nonetheless found his experience in front of the Senate committee similar to his father's during the 1913 Pujo Committee investigation into the existence of a “Money Trust.” The two generations of Morgans were on the front lines defending Wall Street in Congressional hearings. The combative experiences, Chernow suggests, left both men personally scarred. The 1913 hearings came on the eve of the establishment of the Federal Reserve System; a central bank was already a topic of interest for Congress. In 1933, the Pecora hearings and populist fervor led to legislation constraining Wall Street's power.

Chernow depicts the Glass-Steagall Act of 1933 as a political maneuver, led mainly by populist forces, to punish the powerful financiers. He provides additional useful information about the underlying causes of Glass-Steagall, defusing the idea that securities affiliates of banks caused insolvencies and the major bank runs. The act, by separating investment and commercial banking activities, forced the House of Morgan to choose between the two. Morgan chose the latter but soon created Morgan Stanley (a spin-off company) as an investment bank.

The Morgan banks changed substantially after the separation of Morgan Bank and Morgan Stanley. Initially, the two firms carried on business with the traditional Morgan discretion and discrimination. They continued to engage in relationship banking, in which the banker performed financial services for a single client and would rarely also serve a major competitor in that client's industry. Chernow emphasizes the Morgan banks' exclusivity; to have accounts with them was a mark of prestige.

The Morgan banks maintained their stature despite the limited activities they engaged in. Morgan Stanley, for example, did not initially have a sales force. In fact, it did not sell, distribute, or trade securities but instead concentrated on underwriting. Shifts in the industrial structure later forced Morgan Stanley to alter its business perspective. Morgan Bank concentrated on providing financing to businesses. The institution was significantly affected as financial markets developed and the industry grew to a point at which the largest blue-chip firms could negotiate financing directly from the capital market more cheaply than through a bank. In 1959, Morgan Bank merged with Guaranty Trust, forming Morgan Guaranty Trust and shifting its focus toward trading Treasury securities, municipal securities, and Federal funds.

The period following the Great Depression involved enormous regulatory changes for banking and financial institutions and the evolving market structure. In his discussion of the Morgan banks and the financial industry they were part of, Chernow fails to emphasize effectively a number of the regulatory changes that set up bank risk-taking behavior later in the period. For example, deposit insurance, which subsidized banks' risk taking, was instituted. Regulation Q was imposed, limiting the interest rate that banks could pay on deposits and effectively restricting competition for deposits. The regulatory changes insulated banks from competition and supported overpopulation in the banking industry. Gradually, bank regulations were relaxed—but there was no reduction of deposit insurance—and banks were competing for business among themselves and other financial institutions. Although a discussion of the regulatory changes and their side effects is not directly related to the Morgan banks, providing it would have given the reader a fuller understanding of the U.S. banking industry's evolution and the relevant adaptations of the Morgan banks.

The book's final section, titled "the Casino Age," reveals something of Chernow's own attitudes toward modern financial markets and recent activities involving mergers and acquisitions. Tracing the evolution of

the Morgan banks in this rapidly changing financial market environment, he suggests that a developed capital market and deregulation altered the playing field for both traditional and investment banking. Had he sufficiently examined the post-Depression regulatory changes such as those discussed above, his analysis of deregulation would have been more effective. The author fails to link the most relevant determinants for bank risk-taking behavior, and thus the discussion of deregulation and banking practices remains incomplete.

In general, banking and securities industry deregulation reduced the profit margin on traditional bank loans and underwriting and even reduced the commission on stock sales and purchases. By doing so, deregulation reintroduced competition for deposits, uncommon for post-Depression banks. In order to survive these changes, the Morgan banks, along with the financial industry in general, had to adapt or become extinct.

Through his dramatic chronicle of the 1980s, Chernow presents a financial environment changing at a pace that was out of control. Once mutually loyal and long-lasting, banking relationships have become whatever combination of client and bank is expedient. Bankers, notably investment bankers, are no longer controllers of capital but "hired guns" at the bidding of industrialists. This turning of the tables does not mean that the industrialists now run the banks. Rather, highly developed industrial structures in conjunction with more efficient primary and secondary markets in financial assets have decreased the need for relationship banking.

In such a competitive financial market the returns to traditional banking services are low; the lack of lasting banker-firm relationships makes even such low-profit activities somewhat uncertain. Investment bankers turned to alternative methods to make a profit. As the 1980s progressed, investment banks were generating a larger share of their profits from taking positions in risky financial deals—that is, risking their own capital. Chernow notes, for example, that Morgan Stanley established a fund for and took positions in leveraged buyouts (LBOs).

Morgan Stanley had one of the most successful mergers and acquisitions groups among investment banks. Providing insight into the kinds of maneuvers and deal making involved in mergers and acquisitions, Chernow describes the strategies that changed Morgan Stanley's image: once an esteemed and exclusive private club, it became a cudgel bearer, pounding target firms into submission. The details of a select number of hostile takeovers illustrate how the banker code of

ethics operative in the Baronial Age disappeared. In its wake is an impersonal environment in which an investment bank's client or former client is vulnerable to a hostile takeover by another of the same bank's clients. The descriptions of the insider trading scandals that occurred during the 1980s at Morgan Stanley and at Morgan Grenfell, the associated London bank, represent the banker's equivalent of a "fall from grace." In particular, the Guinness scandal at Morgan Grenfell in 1986, in which the investment bank engaged in stock price manipulation, sullied the hallowed name of Morgan.

Morgan Guaranty Trust made a high proportion of its profits during the 1980s from trading securities and taking risky positions. The general impression Chernow creates is that bank intermediaries are doing less intermediation and more risk taking with their own capital—whether through real estate investment trusts, Latin American loans, or commercial real estate investments, and despite opportunities limited by Glass-Steagall and other regulation. A recurring theme is that these risk-taking practices developed over time as the market for provision of capital became more competitive. Deregulation has sped up the process, but the existence of deposit insurance clearly raises "moral hazard" problems for banks as risks are essentially subsidized.

The verdict on whether the mergers and acquisitions, LBOs, and the assorted financial activities of the 1980s have been successful must wait for time to produce further evidence. Proponents of such activities argue that the potential for hostile takeover keeps a firm's management working to maximize the firm's value. Detractors—and Chernow seems to be among them—consider such practices too costly in the long term, citing the failure of some highly publicized takeovers and the misuse of massive amounts of resources to cover exorbitant debt payments.

Chernow contrasts modern mergers and takeovers with the earlier merger wave under Pierpont Morgan's leadership. The wave of mergers at the turn of the century was part of Morgan's grand design, intended to keep business activity controlled. Chernow notes that in the 1970s the firms' directors or management initiated mergers, which were seen as opportunities for

profit. In contrast, mergers and takeovers in the 1980s, the author argues, were often recommended to the firms by investment bankers, who received fees from such deals. Chernow suggests that under this system some firms became involved in deals that may not have been in their best interests. However, Chernow does not acknowledge that a firm's board of directors ultimately must be held responsible for the firm's important business decisions regardless of the sales tactics employed by investment bankers. He also fails to emphasize the crucial role played by the tax laws—namely, the tax deductibility of firms' interest payments—as a factor motivating firms to increase the leverage on their balance sheets.

The Morgan banks, once an elite institution dominated by individual personalities, have gradually become one of many faceless financial firms in an increasingly impersonal financial market. The banker will likely never again be as enigmatic or powerful as Pierpont Morgan, so Morgan's role in financial history will remain legend. Despite the challenges the Morgan banks have faced over their long history and the tremendous competition they face in today's financial markets, the Morgan banks in the United States, Morgan Stanley and Morgan Guaranty, remain preeminent institutions.

Today's relatively more efficient capital markets provide more readily available financing for firms so that the marketplace can be the determining factor for success or failure of technological innovations. Along with benefits from greater efficiency, competition in financial markets has eroded profit margins on traditional banking services, leading to increased risk taking by investment and commercial banks. Well-run firms will likely survive, if not thrive, under changing regulatory structures, and financial industries will continue to pursue new markets and methods to earn profits.

Not surprisingly, *The House of Morgan* ends inconclusively. Chernow's thoroughly researched and well-written chronicle shows how financial intermediaries, notably the Morgan banks, came to be the kinds of institutions they are today. Given the financial industry's continuing evolution, the future of the industry and the Morgan banks remains unknown.

Note

1. For additional discussion of Morgan's role in the Panic of 1907, see Ellis W. Tallman and Jon R. Moen, "Lessons from

the Panic of 1907," Federal Reserve Bank of Atlanta *Economic Review* (May/June 1990): 2-13.

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