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BUSINESS REVIEW

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JULY/AUGUST 1989

THE COMMUNITY REINVESTMENT ACT: INCREASED ATTENTION AND A NEW POLICY STATEMENT

Paul S. Calem

With the increase in bank mergers and acquisitions has come more attention for the Community Reinvestment Act. First passed in 1977, the CRA calls on every bank and thrift to serve the credit needs of its entire community—including low- and moderate-income areas—in a manner consistent with safe and sound banking practices. Over the years, however, bankers, regulators, and community groups have developed differing perceptions about the CRA. Community groups have been protesting some banks' merger proposals on CRA grounds, and regulators have been mediating the disputes. To help dispel the controversy, federal regulators have issued a CRA policy statement offering guidelines for all parties concerned.

HOW DO STOCK RETURNS REACT TO SPECIAL EVENTS?

Robert Schweitzer

It's no secret that stock markets often react to new information. Unexpected news about a firm can change its stock price, simply by suggesting a different picture for the firm's profit potential or riskiness. To evaluate the effects of new information, economists conduct "event studies," statistical techniques for analyzing the pattern of stock prices and returns when a special event occurs. Event studies have examined how stock returns react to mergers and acquisitions, to regulatory decisions, and to changes in a firm's capital structure. Some of the findings have important market and regulatory implications.

The Community Reinvestment Act: Increased Attention and a New Policy Statement

*Paul S. Calem**

Accompanying the recent jump in bank mergers and acquisitions has come increased attention for the Community Reinvestment Act of 1977. The CRA calls on every bank and thrift to serve the credit needs of its entire community,

including low- and moderate-income areas, in a manner consistent with safe and sound banking practices. In effect, it requires banks not to discriminate on the basis of neighborhood characteristics such as income or racial composition.

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The Act requires federal regulators—the Federal Reserve, the Comptroller of the Currency, the Federal Deposit Insurance Corporation, and the Federal Home Loan Bank Board—to encourage commercial banks, savings and loans, and savings banks to meet community credit

needs. In addition, the CRA obligates regulators to monitor banks' community reinvestment activities. It also requires regulators, when ruling on certain applications by a bank or its holding company, to consider the bank's record of community lending.

At the same time, the federal regulators are expected to ensure that banks meet certain standards for safety and soundness. Accordingly, the regulatory agencies must pursue CRA goals while permitting banks to make prudent credit-allocation decisions.

Community groups and lawmakers have questioned in recent years whether banks have made sufficient efforts to comply with the CRA. The community groups, also, have expressed dissatisfaction with regulatory enforcement of the CRA. Moreover, they have been filing numerous protests of banks' proposed mergers and acquisitions, challenging the community reinvestment records of the applicants. Similar concerns have been expressed in Congress, where in 1988 several amendments were proposed to expand CRA regulation. So far these amendments have not been made law.

The concerns of lawmakers and community groups have been fueled by studies that report wide disparities between low-income or minority neighborhoods and other areas with respect to mortgage lending by banks and thrifts. Community groups view these studies as evidence of discriminatory lending practices. Unfortunately, such studies are not conclusive on the issue of discrimination. Those who disagree with the community groups' interpretation can point to the inability of such studies to quantify many of the factors that influence bank lending patterns. As a result, such studies cannot reconcile differing perceptions about bank willingness to lend in minority communities or about their willingness to comply with the CRA.

Clearly, bankers, regulators, and community groups have developed different perceptions about the CRA. A new CRA policy

statement, however, released by the four regulatory agencies on March 21, 1989, may help dispel much of the controversy. The statement discusses and clarifies how banks can adequately fulfill their CRA responsibilities. Further, it strongly encourages financial institutions to keep the public informed about their community reinvestment activities. It also encourages community groups to comment on banks' CRA records on an ongoing basis rather than wait until the bank files an application.

THE CRA AND COMMUNITY REDEVELOPMENT

The Community Reinvestment Act was passed in 1977 and took effect in October 1978. It was not the first law aimed at increasing the availability of credit to economically disadvantaged areas, or at rectifying alleged discrimination in lending practices. (See *Congress Moves to End Discrimination and Encourage Community Redevelopment: 1960-75*.) Nevertheless, the CRA has been the Act most frequently used by community groups in recent years to gain support for community redevelopment.

The Goals of the CRA. Congressional passage of the CRA was motivated primarily as a response to alleged disinvestment in low-income and minority neighborhoods by financial institutions.¹ CRA proponents argued that financial institutions were exporting the funds obtained from neighborhood depositors and ignoring community credit needs. They also argued that banks were discriminating against low-income and minority neighborhoods by "redlining" those areas. (A financial institution is said to be redlining a neighborhood when it restricts the number or dollar amount of loans to the area, irrespective of the credit-worthiness of individual loan applicants and

¹For an analysis of the congressional intent in adopting the CRA, see Canner [7]. For records of the Senate hearings on the CRA, see [14] and [15].

the value of their collateral.)

CRA proponents also argued that unavailability of credit was a primary cause of urban decay. That allegation has been difficult to prove, however, because of the limitations of the data available to address the issue. But regardless of whether lack of available credit was a primary cause of the decline of some neighborhoods, it may have been a contributing factor. If an individual is denied a home improvement loan or potential buyers of his property are denied mortgage credit, that individual may reduce upkeep of his property or abandon it altogether. As a result, the properties of his neighbors may lose value, and some of them may decide to reduce upkeep or abandon their properties as well.

The CRA can be viewed as an effort to check this sort of acceleration of neighborhood decay and abandonment. The Act reminds banks that, having been granted public charters and special privileges such as deposit insurance, they have an obligation to help meet the credit needs of their entire community. Moreover, by encouraging *every* bank in this way, the CRA helps remove a significant obstacle to stabilizing a neighborhood—each bank's fear of being the only one lending in blighted neighborhoods.

The CRA applies to all commercial banks, all savings banks, and all savings and loans. Their

Congress Moves to End Discrimination and Encourage Community Redevelopment: 1960–75

Several laws that preceded the Community Reinvestment Act of 1977 were designed to end discrimination in housing and credit markets and spur urban renewal. A series of laws passed in the 1950s and 1960s made the mortgage insurance offered by the Federal Housing Administration more readily available to low-income and inner-city borrowers.

The series culminated in 1968 with the passage of the Housing and Urban Development Act. Section 103 of that Act designated older, declining urban areas as worthy of special consideration, including the waiver of various eligibility requirements for obtaining FHA insurance. But the major pieces of anti-discrimination legislation came during the next 10 years.

The Fair Housing Act, Title VII of the Civil Rights Act of 1968, prohibits discrimination in the sale, rental, financing, or marketing of housing. Discrimination based on the buyer's race, religion, or ethnic background, on the neighborhood's racial, religious, or ethnic composition, or on the age of the property is forbidden. (In 1988, the provisions of the Fair Housing Act were extended to protect "handicapped" persons and "familial status.")

The Equal Credit Opportunity Act (ECOA), enacted in 1974, prohibits discrimination against credit applicants on the basis of race, color, religion, national origin, marital status, or age. The ECOA also prohibits discrimination against persons deriving income from public assistance, or against persons who have exercised any right under the Consumer Protection Act.

The Home Mortgage Disclosure Act (HMDA), enacted in 1975, requires depository institutions to disclose publicly, by census tract, the number and dollar amount of their originations and purchases of home mortgages and home improvement loans. Supporters of HMDA believed that public disclosure would deter institutions from "redlining" inner-city neighborhoods and would facilitate enforcement of the Fair Housing Act.

responsibilities under the CRA may be met in a variety of ways, including lending for business, agriculture, education, and home purchase and improvement, or to finance state and local governments.

Regulations for Financial Institutions. The four regulatory agencies are directed to assess periodically each financial institution's efforts

to meet community credit needs in a manner consistent with safe and sound operation. When considering a bank's application to open a branch, to acquire another bank, or to merge with another bank, a regulatory agency must consider each institution's record of community lending.

To implement the CRA, the Federal Reserve System issued Regulation BB in 1978, and the other federal regulatory agencies adopted regulations virtually identical to it. These regulations require an institution to issue a CRA statement, to post a public notice about the CRA, and to establish a file for comments from the public on the institution's CRA performance. The CRA statement must contain a map showing the local community that the institution serves, and it must list the types of loans the institution is willing to make. Any written comments received from the public over the past two years must be kept on file and be made available for public review. The CRA notice must explain how to obtain copies of the institution's CRA statement, and make known where and to whom comments on the institution's CRA record may be sent.

The regulations also list 12 criteria to be used in assessing an institution's record of community service. These include the institution's efforts to assess its community's needs, its efforts to market credit services to the entire community, its efforts to ensure that no segment of its community is improperly excluded, its record of opening and closing branches, its participation in local community development programs and government-supported lending programs, and the geographic distribution of its residential and small-business loans.

As required by the CRA, the four regulatory agencies periodically review the community lending records of the institutions they supervise, including the comments contained in each institution's public file. These reviews are carried out in conjunction with regularly scheduled supervisory exams. The CRA examiners

prepare a written report to the institution's directors, suggesting ways in which the institution can improve its record. In addition, the examiners assign a confidential CRA rating to the institution. A rating of 1 (strong) or 2 (satisfactory) is a passing grade, indicating compliance with CRA. Institutions rated 3 (less than satisfactory), 4 (unsatisfactory), or 5 (substantially inadequate) are expected to take steps to improve their performance.

Also as required by the Act, the regulatory agencies, when deciding whether to approve an institution's application (an application, say, to acquire another bank), consider the institution's community reinvestment record, along with competitive, financial, and managerial factors. Members of the public may formally protest an application on the basis of the applicant's or acquiree's record, provided the protestants submit their written comments within a specified period.

Agencies Try to Smooth the Way. Often, on receiving a protest, a regulatory agency will arrange private meetings between the applicant and protestant at which the parties try to iron out their differences. In many cases, these meetings lead to a negotiated agreement, which generally involves a commitment by the applicant to take specific measures to improve its CRA record. For instance, the applicant might agree to form a Community Advisory Board.² Or the applicant may pledge to increase its participation in government-insured credit programs. Sometimes, applicants have promised to extend a minimum dollar volume of loans to targeted neighborhoods over a specified period. But regardless of whether such an agreement is reached, the regulatory agency must decide whether the applicant's CRA rec-

²A Community Advisory Board consists of representatives of the local community, who periodically meet with bank management and provide advice on lending opportunities.

ord is adequate for approval of the application.³

The regulatory agencies have set certain limits on the influence they are prepared to exert over the community reinvestment activities of financial institutions. In the first place, they will not pressure a lender into making credit decisions that are inappropriate from the viewpoint of safety and soundness. In addition, the agencies have sought to avoid credit allocation, by not setting reinvestment targets as a measure of lender performance. Depository institutions are not asked to commit to specific targets in connection with compliance exams or protested applications. Furthermore, financial commitments that institutions make to community groups in connection with protest agreements are not generally endorsed by the regulators.

Both the Federal Reserve and Federal Home Loan Bank Board have sought to facilitate bank compliance with the CRA by hiring community reinvestment specialists who disseminate advice and information. The FHLBB has assigned a Community Investment Officer to each of its 12 district banks; similarly, the Federal Reserve System established Community Affairs units at its 12 Reserve Banks. These specialists advise banks, thrifts, and community groups on the CRA and on ways to support community development. They also act as go-betweens, bringing the concerns of community groups to the attention of lenders.⁴

Increased Participation by Banks. Banks and thrifts generally have expressed support for the CRA in principle. Many banks believe that community reinvestment was always an integral part of their role as providers of de-

posit and credit services, and that they were responsive to community needs long before the CRA was adopted. In fact, some banks' special programs aimed at community reinvestment predate the CRA.⁵

As envisioned by the original proponents of the CRA, bank participation in neighborhood redevelopment projects has increased over the past 11 years. This participation has taken many forms. (See *Public/Private Partnerships: Banks Reinvesting in Their Communities*, p. 8.) One important form has been CDCs, or community development corporations. Chartered to provide loans and other support for community development projects, CDCs often focus on special community needs such as low-income housing or small-business revitalization. CDC subsidiaries of banking organizations are granted special powers usually not available to other bank subsidiaries—for instance, the authority to take equity positions or own real estate.

The CRA also has helped sensitize banks to the needs of their communities. This increased awareness has taken many forms, ranging from foreign-language signs in bank lobbies to special marketing programs aimed at low-income areas.

RECENT DEVELOPMENTS

Loosened constraints on interstate banking have swelled the number of bank applications for mergers or acquisitions. Community reinvestment advocates have been scrutinizing these applications, and the number of protests filed with regulators has increased dramatically. The Federal Reserve saw an average of about five protests per year between 1980 and 1984; the

³For a more complete description of the CRA regulations and protest procedures, see [16].

⁴Bankers may also benefit from the ideas and advice on CRA compliance offered by their own trade associations, such as those in a recent *American Banker* feature section [18].

⁵For instance, the "Philadelphia Mortgage Plan," a cooperative effort by Philadelphia-area banks to increase the availability of mortgages in low-income neighborhoods, was instituted in 1975. The Plan currently is supported by 11 lending institutions.

Public/Private Partnerships: Banks Reinvesting in Their Communities

Prompted in part by the CRA, many banks have been aiding community redevelopment by supporting locally based public/private partnerships that provide loans, grants, and technical assistance to private development initiatives. Some banks participate directly, collaborating with representatives of government, business, foundations, and community organizations. Others channel their support through institutions such as the Local Initiatives Support Corporation (LISC) and the Enterprise Foundation.

The New York City-based LISC, founded in 1980, raises corporate and foundation funds for the support of community development in over 20 U.S. cities. The Maryland-based Enterprise Foundation, launched in 1982, is a charitable foundation that organizes and supports local nonprofit groups engaged in housing rehabilitation. The Foundation provides small seed-money grants and low-interest loans, offers advice on design and construction methods to cut costs, and helps neighborhood groups obtain additional financing and business support.

Many of the public/private partnerships with which banks are involved are members of the NeighborWorks Network, a national network whose principal members are the local, nonprofit Neighborhood Housing Services (NHS) partnerships. NHS partners include neighborhood residents, local businesses, financial institutions, insurance companies, and charitable foundations. The partners support neighborhood rehabilitation by contributing time, expertise, loans, insurance protection, and other services on a voluntary basis. Moreover, each NHS makes available a revolving loan fund for residents whose low income or poor credit history make them ineligible for bank loans.

The NeighborWorks Network receives additional support from the Neighborhood Reinvestment Corporation, a congressionally chartered, public nonprofit corporation. The Corporation receives a federal appropriation and provides grants, training, and technical assistance to the NeighborWorks system. The Corporation's board of directors includes representatives of the financial regulatory agencies.

number jumped to 19 in 1985 and 20 in 1986, rose to 35 in 1987, and fell back slightly to 30 in 1988. At the Office of the Comptroller of the Currency, the number of protests rose from zero in 1984 to three in 1985, to eight in 1986, to nine in 1987, then back to zero in 1988.⁶

The Involvement of Community Groups. The increase in protest activity since 1986 can be attributed not just to the new interstate merger activity but also to heightened activism

on the part of local community advocates and the organizations that assist them. The latter include the Center for Community Change, the National Training and Information Center, and the Association of Community Organizations for Reform Now. CFCC and NTIC provide legal and technical advice to local groups concerning the CRA and neighborhood revitalization. ACORN is an association of local community groups with chapters nationwide.

Cutbacks in federal aid for housing and community development made community groups eager to obtain loans and assistance from banks. In addition, regulators cut back on resources allocated to CRA examinations and consumer protection, in order to meet the in-

⁶Almost no interstate bank mergers in 1988 came under the jurisdiction of the OCC. The FDIC and FHLBB rarely have received protests.

creasing costs of other supervisory functions (costs that were required because more banks were experiencing financial difficulties and because increased diversification by banks was making their operations more complex). Perceiving that CRA enforcement had eased, community groups felt compelled to take up the slack.⁷ Another contributing factor was the fear that acquisitions of local banks by out-of-state banks would siphon funds from local communities.

Community groups contend that protesting bank applications is an unwelcome task that would be unnecessary if banks were fulfilling their CRA responsibilities. They contend that the regulatory agencies devote insufficient resources to supervising banks' compliance with the CRA, and they would like the agencies to apply stricter standards in assessing bank performance. They especially would like to see more lending in low-income and minority neighborhoods by banks receiving passing grades from regulators. Alternatively, they would like to see more favorable terms (such as smaller minimum down-payments) on such loans.⁸

Allegations of Discrimination. In arguing that compliance has been inadequate, community groups point to recent studies suggesting that the redlining of low-income and minority neighborhoods remains a common practice. A number of such studies have been widely publicized. A series of articles in the *Atlanta*

Journal/Constitution (May 1-4, 1988) reported wide differences between predominantly white and predominantly minority neighborhoods in Atlanta with respect to the number of home-purchase loans extended by depository institutions. These differences persisted even after controlling for differences in median family income and the number of single-family homes. Similar results were reported regarding lending patterns in Detroit, Wilmington, and Boston, in separate articles in the *Detroit Free Press* (July 24-27, 1988), the *Wilmington News Journal* (November 20, 1988), and the *Boston Globe* (January 11, 1989).⁹ These studies, because they were based on data reported by depository institutions in compliance with the Home Mortgage Disclosure Act, did not include lending by mortgage bankers.¹⁰

These reports and associated allegations of mortgage redlining have attracted the attention of lawmakers. Both the House and the Senate tacked community reinvestment provisions on to bills to repeal the Glass-Steagall Act in 1988. The Senate version of the bill required that a bank's community reinvestment record be evaluated in connection with applications to engage in nonbanking activities, such as discount brokerage. The House version included several CRA amendments. One called on the federal banking agencies to develop guidelines for rating a bank's community reinvestment performance and to base such ratings on comparative performance. Another called for approval of applications to be contingent on

⁷According to Fishbein [10], who relied on data supplied by the public interest organization Bankwatch, total examiner hours spent per year on CRA compliance and consumer protection fell about 75 percent at the FDIC, OCC, and FHLBB between 1981 and 1984. At the Federal Reserve, total examiner hours per year declined about 25 percent. In 1986, the Federal Reserve switched from an 18-month to a 24-month CRA exam cycle for banks rated satisfactory or higher.

⁸For an elaboration on community group grievances, see Fishbein [10] and Brown, Brown, and Fishbein [5].

⁹In addition, the *Atlanta Journal/Constitution* published an analysis of rejection rates on loan applications at thrift institutions, using data collected by the FHLBB. The report found rejection rates to be substantially higher among blacks and other minorities, even after controlling for income.

¹⁰The HMDA data only include figures on bank lending by census tract. In fact, even mortgage subsidiaries of bank holding companies were not included in HMDA data prior to this year.

the applicant's CRA rating. While a final bill to repeal Glass-Steagall did not pass Congress last year, the issue of CRA reform may reappear.

THE REDLINING CONTROVERSY

Although recent allegations of redlining have attracted a great deal of publicity and attention, the studies underlying these allegations are fraught with shortcomings. Studies of the geographic distribution of mortgage loans generally cannot measure accurately a neighborhood's demand for loans. This is a critical omission, since it is difficult to allege that a bank is refusing to supply credit if there is no demand. In addition, some of the valid economic factors that might explain why loans are not supplied may correlate with a neighborhood's racial or income characteristics. Consequently, allegations of redlining that are based on such studies can be challenged.¹¹

Measuring Mortgage Demand. A neighborhood's demand for mortgages is influenced by numerous variables (see *Factors Affecting Mortgage Demand*). Some of the demand variables may be correlated with per capita income or percentage of minority population and thus may incorrectly suggest the presence of redlining. For instance, fewer people may be moving into predominantly black, inner-city neighborhoods because of a decline in public services or the closing of factories in those areas. Or housing turnover may be proceeding more rapidly in middle-income areas than in low-income areas because of locational convenience and better condition of the housing stock. Or more homes may be sold in neighborhoods with young, well-educated residents, who tend to move more frequently than others do. As a result, minority or low-income neighborhoods

may appear to be redlined.

Most existing studies assume that total neighborhood demand for mortgages varies in proportion to the number of residences in the area. But that is a crude assumption, since the demand for mortgages depends on many other variables. A few studies, including those by Canner [6] and Avery and Buynak [2], assume that mortgage demand varies in proportion to the total number of real estate transfers in a neighborhood. However, some transfers do not require mortgages, such as those resulting from death, divorce, or cash purchases. On the other hand, some mortgages are not connected to transfers, such as those issued for refinancing. A major drawback to using transfers is that such data are costly to obtain.¹²

Other Problems Confronting Researchers. Any analysis of mortgage lending patterns is further complicated by the need to consider default risks and costs. To protect the interests of their stockholders and the FDIC, banks must avoid making unsound loans—loans that carry a high risk of default and loans that would involve substantial losses in the event of default. Banks must evaluate borrower creditworthiness—the likelihood that a borrower will repay a loan according to schedule. In addition, banks must assess the expected future value of a property being mortgaged, which would serve as collateral in the event of default. If a borrower is not considered creditworthy, or if a property value appears to be unstable, then a bank is likely to deny the mortgage or require a higher down-payment.

¹¹See Benston [4] and Canner [8] for reviews of the redlining literature.

¹²Data on mortgage applications by census tract, which might serve as a proxy for mortgage demand, are also difficult to obtain. Moreover, the usefulness of such data would be reduced by the pre-screening of mortgage applicants—because many potential applicants might be dissuaded from applying at an initial, interview stage. The impact of pre-screening could vary across neighborhoods, making applications data a poor proxy for mortgage demand.

Factors Affecting Mortgage Demand

The demand for mortgages depends both on the potential number of property transactions and on the propensity of potential buyers to seek mortgages and not alternative sources of financing. In the first place, the potential number of property transactions depends upon the number of owner-occupied units in the neighborhood (there will be little demand for mortgages in a neighborhood composed primarily of rental apartments). But the potential number of property transactions depends on other factors as well, such as the age and educational levels of a neighborhood's population. For instance, a neighborhood in which many people are near retirement age is likely to have a relatively large number of homes for sale, as many people prefer to move into smaller homes or apartments upon retirement.

The potential number of property transactions in an area also is affected by circumstances that make the area less attractive to current residents and more attractive to new residents or investors. Thus, neighborhood housing turnover might be affected by city-wide demographic or economic conditions, or by changes in property tax rates or in the distribution of city services.

What impact such circumstances might have upon a neighborhood would depend upon neighborhood characteristics. Relevant variables could include the area's accessibility to business and manufacturing districts; the quality of neighborhood schools and shopping; amenities such as parks, trees, and clean streets; disamenities such as traffic congestion, crime, or noise; the median income of the residents; and the age and condition of the housing stock. For instance, a clean, quiet neighborhood primarily populated by manufacturing workers might experience a high turnover rate as the local economy becomes more services-oriented. Or housing turnover may be relatively rapid in some central-city areas if there is an increase in the proportion of single or childless young professionals in the city's work force, as such individuals tend to seek housing in downtown areas.

The frequency with which potential buyers seek mortgage financing also can vary across neighborhoods. Some buyers might instead turn to cash or personal loans to finance the transaction. For example, in the metropolitan area of Louisville, Kentucky, individuals used cash or personal loans to finance some 36 percent of properties in the city compared to 14 percent in the suburbs, according to Koebel [12].

But legitimate criteria for determining credit-worthiness might be correlated with neighborhood racial or income composition, and future property values also might be correlated with those neighborhood characteristics. As a result, legitimate credit decisions may give the appearance of redlining or discrimination. (See *A Bank's Credit Decision: Evaluating Potential Losses*, p. 12.)

For instance, borrowers may be considered poor credit risks because they are unable to make minimum down-payments, or because they would have almost no savings or liquid assets left over after making minimum down-

payments.¹³ Or, for another instance, housing values may be declining in some low-income

¹³Down-payment requirements can be as low as 5 percent for mortgages that are insured by private mortgage insurance companies or by a government program such as FHA or VA. But some borrowers may not meet even such minimal down-payment requirements. Or banks might perceive mortgage insurance itself as risky because, in the last few years, the private mortgage insurance industry has been beset by some financial problems. Moreover, some borrowers may be unable to afford the insurance premium, while others may be unable to obtain mortgage insurance because of risk factors. Also, insurers themselves have, at times, been accused of redlining; see, for instance, [17].

A Bank's Credit Decision: Evaluating Potential Losses

A borrower's inability or unwillingness to repay a mortgage imposes costs on the lender. These costs include the legal expenses related to taking possession of the property, the expenses related to maintaining the property until it is sold, and the amount by which the unpaid loan balance and interest exceed the property value.

Thus, before granting a loan, a bank must evaluate the potential for default by the borrower. Loan applicants are evaluated based on such factors as their income and credit history and the adequacy of the collateral. Loans viewed as risky may not be offered. When they are offered, the bank, in order to lower its risk exposure, may require a higher down-payment that would reduce the value of the loan relative to the value of the property. Alternatively, such loans may be offered only to those borrowers who obtain mortgage insurance.

Borrower characteristics can influence a bank's perception of the borrower's probability of default. Defaults often occur when a borrower is unable to meet monthly mortgage obligations because of a decline or disruption in income or an increase in nonmortgage expenses. Hence, low-income borrowers may be viewed as more risky, since they generally work in more cyclical industries, tend to be younger and less experienced, and therefore are more prone to disruptions in income. Similarly, borrowers with little savings beyond what they would use for their mortgage down-payment represent greater default risks, as they have no liquidity available for emergencies. The risk of default also is likely to be higher for a borrower who has nonmortgage debts or liabilities or a poor credit history.

Since neighborhood and property characteristics affect the value of the collateral, they influence both the risk of default and the costs associated with foreclosure. A borrower who has experienced a disruption in income is more likely to default if the sale of the property would not provide sufficient cash to repay the mortgage.

Sometimes, borrowers default even though they are capable of meeting their monthly mortgage obligations. Such voluntary defaults occur when the value of a property falls sufficiently below the outstanding mortgage balance and the owner has little equity in the property. In this case, an owner might decide it is no longer worthwhile to continue paying the bills and walk away from his obligation.

Homes that are poorly constructed or poorly maintained, homes located near abandoned, dilapidated properties, and homes in areas with declining city services or amenities (or in areas with increasing crime or disamenities) may be more vulnerable to a decline in value. Hence, such properties may represent a greater risk and cost of default.

Several empirical studies have looked at the relationship between foreclosure rates, as a proxy for default risk, and borrower/neighborhood/property characteristics. Neighborhood variables such as the rate of decline of housing prices, per capita income, the unemployment rate, and condition of the housing stock generally are found to be correlated with foreclosure rates. For instance, a carefully done study by Barth, Cordes, and Yezer [3] found foreclosure rates to be higher in cities with lower per capita income, in blighted neighborhoods, on properties in poor condition, and on houses constructed of wood siding.

In addition, lower appraised property value was associated with a higher loan-to-value ratio, and lower income per person in a household was associated with a higher monthly-payment-to-income ratio. These factors, in turn, were associated with higher foreclosure rates.

neighborhoods for reasons unrelated to credit availability, such as a company moving out of the area. Banks may then make fewer loans in those areas because, as time goes on, fewer properties will constitute adequate collateral.

Studies of neighborhood lending patterns cannot adequately control for variations in default risk and cost across neighborhoods. Existing methodologies do not allow the risk and cost effects of some variables, such as median income, to be distinguished from redlining. And some neighborhood variables that affect default risk, such as average household assets, are not included because of lack of data. Borrowers' nonmortgage liabilities and overall credit records also are not available.

A further problem is that of lender specialization. Many commercial banks concentrate on nonmortgage lending and thus are adept only at making conventional mortgages. But mortgage finance companies (known as mortgage bankers) specialize in mortgage lending, and their personnel develop expertise in all aspects of that business. As a result, mortgage bankers may be more flexible than banks in setting mortgage terms, or more efficient at processing applications for insured mortgages. Therefore, individuals in low-income or minority neighborhoods may prefer to rely on mortgage bankers for residential loans. In that case, banks would face fewer applicants for mortgages in those neighborhoods—and so would necessarily grant fewer mortgages. One could not infer, then, that banks are redlining those areas.¹⁴

Some Interesting Findings. While studies of mortgage lending patterns do not yield conclusive evidence of redlining, they do provide some interesting insights. These studies con-

sistently find that the number of mortgages in an area increases with median family income or income per capita. They typically find that the number of mortgages is inversely related to one or more of the following variables: percentage of households below the poverty level; age of the housing stock; neighborhood blight as indicated by the number of vacant or deserted buildings; and percentage of minority population. Also, the literature confirms that most insured mortgages are provided by mortgage companies and that mortgage companies have a larger share of total mortgages in poor and minority neighborhoods.¹⁵

Although the allegations of discriminatory lending by banks can be challenged, the issue of whether banks are doing enough to comply with the CRA covers more than just the question of redlining. The question of discrimination aside, the problem remains whether banks are doing enough to help meet credit needs in low-income and minority neighborhoods. Community groups have been expressing disappointment with the overall compliance efforts of banks. On the other hand, some bankers feel that community groups have unrealistic expectations and are too quick to protest bank applications on CRA grounds.

Against this background of controversy, the regulatory agencies recently released a new CRA policy statement. The statement attempts to clarify what the agencies expect from financial institutions in the way of complying with CRA, and what they expect from community groups in the way of communicating their concerns to banks.

THE NEW POLICY STATEMENT

The new statement on CRA policy released by the four regulatory agencies is expected to

¹⁴Alternatively, minority home-buyers might be steered toward mortgage companies by real estate agents, or they may be reluctant to deal with banks because of a past history of discrimination by banks.

¹⁵See, for instance, Ahlbrandt [1], Dingemans [9], and Hutchinson, Ostas and Reed [11].

help dispel the controversy over the CRA. First, the statement provides financial institutions with guidelines for an effective compliance program. The guidelines call for an ongoing effort by financial institutions to ascertain community needs, through outreach to local government, business, and community organizations. In addition, the guidelines call for a continuing commitment by banks to develop, market, and advertise products and services that are responsive to community needs. Other important elements include management involvement and oversight and an employee training program. The policy statement implies that the regulatory agencies, in evaluating compliance, will focus on an institution's attempts to comply with these guidelines.¹⁶

Further, the policy statement suggests a number of specific steps an institution can take toward assuring compliance. These include making special efforts to meet identified credit needs within the community (for instance, participating in government-insured lending programs); providing services that would benefit low- and moderate-income persons (such as low-cost checking accounts); advertising the availability of such services; directly marketing credit services to targeted groups, such as small-business owners and real estate agents in low- and moderate-income neighborhoods; establishing a community development corporation; and underwriting or investing in state and municipal bonds.

In addition to clarifying how banks can meet their CRA responsibilities, the statement strongly encourages steps toward improving communication among banks, regulators, and community groups. Each institution is advised to include in its standard CRA statement updated information on its community reinvestment activities. Also, each institution is advised to carefully document and record the

steps it takes to fulfill its CRA responsibilities. At the same time, the policy statement encourages community groups to file comments on an institution's compliance record at the earliest possible time rather than during the applications process.

The statement also spells out regulatory policies regarding examinations and reviews of applications. It states: "When considering public comments received during the applications process, the agencies will take into account whether the institution has provided to the public an expanded CRA statement, and whether the commenter has submitted comments to the institution outside of the applications process." The policy statement also emphasizes that, in conducting compliance examinations, the regulatory agencies will carefully consider comments from the public regarding an institution's performance. In addition, the statement suggests that the agencies will be more inclined to deny applications from banks whose compliance record is found to be inadequate than to rely on commitments to future action.¹⁷

While the new CRA policy statement stresses some new approaches to CRA enforcement, some things won't be changing. Safety and soundness considerations still apply to all lending decisions. And the regulators still want to avoid credit allocation.

The new CRA statement is expected to help banks implement more effective compliance programs. It will provide community groups with a better idea of what they can expect from banks and regulators. It will likely be a catalyst for improved communication. And it could help alleviate community groups' doubts about bank compliance with the CRA.

¹⁷The Federal Reserve also may have signaled a more aggressive stance when it issued its first denial ever on CRA grounds, a few weeks before the new policy statement was released. The denial involved an application by Continental Illinois to expand into Arizona.

¹⁶See the Joint Statement [19].

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How Do Stock Returns React to Special Events?

*Robert Schweitzer**

Investors expect stock prices to react to some special events as a matter of course. They're rarely as certain, however, about the timing and magnitude of that reaction, and sometimes they aren't even sure of the direction.

This much, however, is known: unexpected events can change the stock prices of a firm by changing the profit potential or riskiness of that firm. And if the financial markets pick up information about an impending event, that event can change stock prices days or weeks

before it actually occurs—and continue to influence stock prices for some time thereafter.

That stock markets quickly digest all new public information about firms and transmit it rapidly into changes in stock prices underlies a methodology now being used frequently in financial analysis. To provide some insights into how the equities market reacts to new information, financial economists have conducted "event studies," statistical techniques for analyzing the pattern of stock prices and returns when a special event occurs.

Event studies offer insight into such issues as the extent to which shareholders of acquired firms gain abnormal returns during mergers, and the extent to which bad news affects banks'

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stock returns. Some of these studies have implications for how forthcoming regulatory and market changes will affect banking firms.

The methodology of event studies may appear complicated, but the basic idea is quite simple. Many such studies have been conducted to analyze specific events in both the corporate finance and banking fields. A review of some of these studies shows how much stock returns can change in response to new information about a group of firms or a particular industry.

THE METHODOLOGY OF EVENT STUDIES

Event studies examine the stock returns for some specific firms (or for an industry) before and after the announcement of a special event—a merger, say. The returns for a certain holding period are calculated by adding the stock's dividend for the period to the change in the stock's price (a capital gain or loss) and dividing by the initial stock price. The capital gain (or loss) is included, since the investor could realize this gain (or loss) by selling the stock. Changes in the stock's price, then, have a major effect on the stock's returns.

News of a significant event could alter the pattern of stock returns for a firm (or industry). Suppose an event is taken as good news—that is, investors believe the event portends a bright future for the firm. The firm's stock price will increase as a result. This price increase represents a capital gain, which raises the return on the firm's stock.

But the stock returns might have changed for other reasons. The stock's price, and hence the returns, could have changed just from the overall movement in the stock market itself. The magnitude of this change will depend on the degree to which the firm's stock moves with the overall market. Stock analysts report that some stocks move almost in a one-to-one relationship with the stock market, while others do not move with the market at all. The

difficult part of event studies is to make adjustments for overall movements of the stock market, as well as for other events unrelated to the specific announcement under study. To do so, event studies follow four basic steps.

Identification of the Event. The first step is to identify the event and the date on which it occurred. Usually, the event of interest is a single, one-time occurrence—a merger of two firms, for example. Other event studies investigate the impact on a group of firms (or on a specific industry) of a frequently occurring event, such as earnings announcements. Compared to studies of one-time events, this second type usually provides more reliable results because it covers a group of companies over different periods. If the results are the same for different firms at different points in time, we can be more confident of the event's impact.

Estimation of Abnormal Returns. The event-study methodology calls for examining the returns on a firm's stock around the date selected and separating out the portion of the total returns that is a reaction to the event. Part of the returns on a firm's stock reflects ups or downs in the overall stock market. The remainder reflects the unexpected event.

To separate the general movement of stock returns from an individual stock's return, economists calculate what are called "abnormal returns." Abnormal returns, also called "excess returns," represent the firm's return after subtracting out returns attributable to overall movements of the stock market.

Statistical models of the firm's stock returns are used to determine "normal returns"—an estimate of the firm's returns in the absence of the event. The estimated normal returns are subtracted from the actual returns, with the difference being the abnormal returns. (For details on the approaches to estimating normal returns, see *Estimating Returns*, p. 25.) The pattern of the abnormal returns should show the event's impact, if there is one.

Grouping of the Abnormal Returns. Once obtained, the abnormal returns for the firms under study are grouped for analysis. The usual approach is to calculate the cross-section average and cumulative abnormal returns for the firms. The cross-section average abnormal returns are calculated by summing the abnormal returns and dividing by the number of firms in the study; the averages take into account the possibility that the event may have different impacts on the firms in the sample. (Using data for many firms provides evidence as to whether the impact of the event is more than just a one-time occurrence for a single firm.) Cumulative abnormal returns, representing the sum of the average abnormal returns to a point in time, show the impact of the event over time. If the equities market does not anticipate an event, the cumulative average abnormal returns up to the event date should be approximately zero.

In Figure 1, Panel A shows what the cumulative abnormal returns would look like for an event that has a one-time positive impact on stock returns. The cumulative abnormal returns are zero until the event date, plotted as Day 0; on the event date, the abnormal returns jump. Panel B, on the other hand, shows the event having a one-time negative impact. In both panels, however, the event has a lasting effect in that the cumulative abnormal returns do not return to zero. If the event is anticipated, the pattern of cumulative abnormal returns would look like Panel C; here, the returns start to move up several days before the event date, then jump on the event date.

Analysis of the Data. The final step in the event-study process is to interpret the abnormal returns data. The examples plotted in Figure 1 are not taken from actual data. But the data plotted in Figures 2 and 3 (pp. 20 and 21) are from actual, and fairly typical, event studies. In Figure 2, we see the impact of a decision in a major lawsuit on two firms' abnormal returns. In Panel B, the cumulative abnormal

FIGURE 1
Plots of Cumulative Average Abnormal Returns (CAARs)

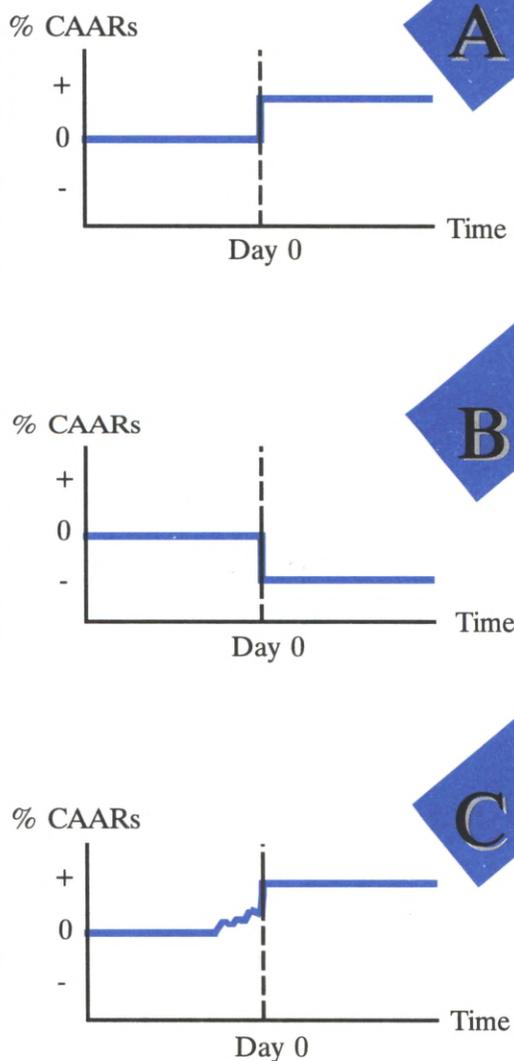
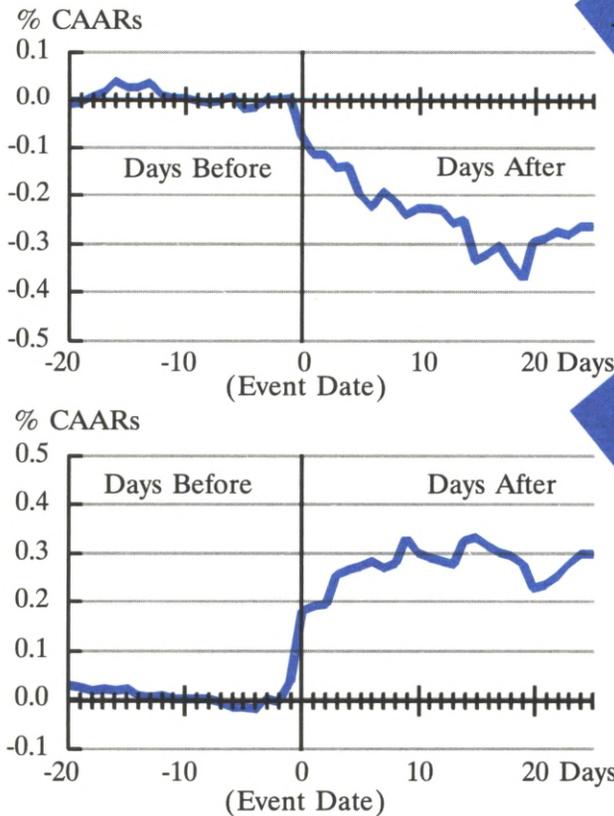


FIGURE 2
Cumulative Average Abnormal Returns (CAARs)



SOURCE: Fields, M. Andrew, "The Shareholder Wealth Effects of the Texaco-Penzoil Court Case," University of Delaware Working Paper (1988).

returns show that the decision has a positive impact on the one firm's stock. On the other hand, Panel A shows a negative impact on the stock of the other firm.

Figure 3 shows the impacts, on two different groups of banks, of a regulatory change—an anticipated event. The cumulative abnormal returns are plotted for 30 days before and after the event, itself shown as Day 0. The top panel of Figure 3 shows cumulative abnormal re-

turns indicating that the event has a positive effect on stock returns for one group of banks. Focusing on the event date, Day 0, we see that the returns tend to increase about 27 days before the event and that the positive effect is still present 30 days after the event. That the pattern of returns increases before the event indicates that the market anticipated this event.

The bottom panel of Figure 3 shows the pattern of returns that might develop if the event had a negative impact on the stock of another group of banks. Note that the cumulative returns drop sharply before the event date. This pattern indicates that the market reacted negatively to the event even before it was announced.

After examining the plot of the abnormal returns, financial economists then ask whether the pattern of returns is statistically significant or whether it is attributable to chance. To

arrive at this answer, economists perform statistical tests on the abnormal returns data, seeking evidence to support their financial theories about the event's economic significance.¹

Shortcomings of the Event-Study Approach. The event-study approach is not without its

¹The details of the statistical tests are presented in Brown and Warner (1980) and (1985).

critics. Financial economists cite several shortcomings. First, if researchers are unable to identify the exact event date, they could end up looking at the wrong pattern of abnormal returns and attribute, incorrectly, a stock's response to a specific event. Then again, they may not observe any trend in the pattern of returns at all.

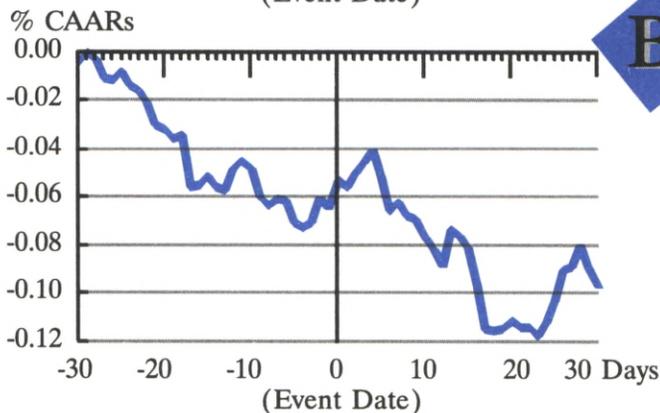
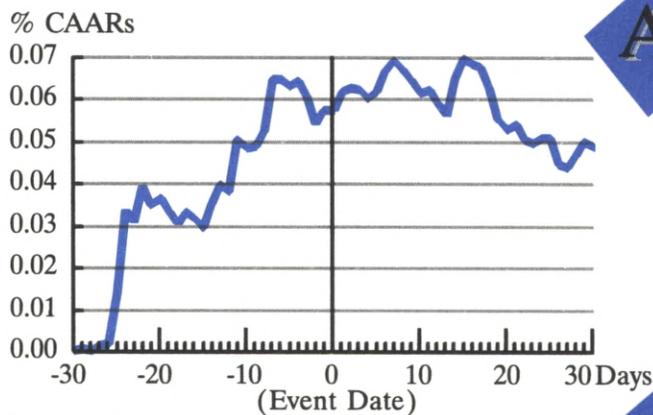
In some event studies, establishing the exact date of the event can be very difficult. In studies of legislative events, for example, financial economists generally have trouble determining which date to focus on. New laws are often discussed before they are introduced, and there is usually a considerable period of debate. Moreover, the impact of the legislative change, because of its newsworthiness, will be recognized by investors and affect stock prices even before the bill actually becomes law. A way around this problem is to look at an event "window" framing the possible event date within a period of several days.

A second shortcoming is data contamination by other events, which makes the results of event studies difficult to interpret. The confounding of several events often enters into event studies, particularly when the event date is difficult to determine. For example, we might study the effect on firms' stock prices of announcements of unexpected earnings changes. But if some of the firms were involved in

mergers around the same time as the unexpected earnings announcements, it would be difficult to determine if the abnormal returns were attributable to the merger or to the unexpected earnings announcements.

The third shortcoming is the difficulty of estimating what the firm's normal returns would be in the absence of the event itself. The firm's stock price could have changed because of factors unrelated to the market's movement or

FIGURE 3
Cumulative Average Abnormal Returns (CAARs)



SOURCE: Black, Harold, M. Andrew Fields, and Robert Schweitzer, "Changes in Interstate Banking Laws: The Impact on Shareholder Wealth," Working Paper #88-16, Federal Reserve Bank of Philadelphia (November 1988).

to the event itself. For example, banks' stock prices may change because of general interest-rate movements in ways different from those of nonbanking firms. Complex modeling of the normal returns can improve the accuracy of the estimates.²

WHAT CAN WE LEARN FROM EVENT STUDIES?

Event studies have been done for a wide range of issues, only some of which will be reviewed here. (See the Bibliography, pp. 27-29, for a detailed list of event studies, by topic.) Financial economists have studied the effects of single and multiple events, including mergers and acquisitions, regulatory changes, announcements of changes in capital structure, and announcements of bad news. The studies covered here, focusing on investigations in the fields of corporate finance and banking, help illustrate how much stock returns can be affected by announcements of new information.

Announcements of Capital Structure Changes. Financial economists have grappled for some time with the issue of optimal capital structure—that is, whether a firm's capital structure (its mix of equity and debt) affects its value. Recent financial research indicates there might be an optimal capital structure for the firm.³ Thus, changes in capital structure, which represent changes in a company's leverage position, could be reflected in a firm's stock returns. Firms employ financial leverage when they use debt, which has a fixed interest cost, rather than equity (common stock) to finance their operations. A firm's announcement of its

intentions to issue new debt or equity therefore signals information to the financial markets about that firm to which investors might react.

Several event studies examine the impact of firms' intentions to issue new securities.⁴ These studies test the impact on stock returns of leverage-changing capital structure adjustments, and all conclude that the market sees the announcement to issue new equity as bad news. The research shows statistically significant negative abnormal returns (about 3 percentage points, on the announcement date) associated with the leverage-decreasing events of selling new equity or repurchasing debt. A 3-percentage-point change would mean, for example, a drop in returns from, say, 11 percent to 8 percent. The research on leverage-increasing events, such as the announcement to issue new debt, is inconclusive. Most of these studies report results that are not statistically significant, suggesting that the market does not respond to leverage-increasing events in the same way as it does to leverage-decreasing events.

The impact of capital structure changes on stock returns for bank holding companies has attracted recent attention because of the adoption of risk-based capital standards. These new capital standards will require bank holding companies (BHCs) to hold different amounts of capital based on the riskiness of their assets and off-balance-sheet activities.⁵ To meet these new capital-to-asset ratio standards, some BHCs will be required to issue new equity.

⁴See Kolodny and Suhler (1985), Masulis and Korwar (1985), Asquith and Mullins (1986), and Mikkelsen and Partch (1986).

⁵The details of the new risk-based capital standards are presented in Robert Avery and Allen Berger, "Risk-Based Capital and Off-Balance-Sheet Activities," Finance and Economics Discussion Series (FEDS) #35, Board of Governors of the Federal Reserve (1988); and Jeffrey Bardos, "The Risk-Based Capital Agreement: A Further Step Towards Policy Convergence," Federal Reserve Bank of New York *Quarterly Review* (Winter 1987-88) pp. 26-34.

²Kane and Unal (1988) discuss the problems of estimating normal returns and offer solutions involving more advanced techniques.

³For more details on the optimal capital structure literature, see Thomas Copeland and Fred Weston, *Financial Theory and Corporate Policy*, 3rd edition, chapters 13 and 14 (Reading, MA: Addison-Wesley Publishing Co., 1988).

Applying the event-study approach to returns for 36 major bank holding companies, James Wansley and Upinder Dhillon (forthcoming) tested the impact of announcements by major bank holding companies about adjustments in their capital structure. Their results showed that banks' stock returns display the same negative reaction to new equity issues that was found for industrial firms. However, the negative reaction reported for banks was only around 1.5 percentage points, compared to 3 percentage points for industrial firms. The size of the negative reaction for banks, though, is closer to the negative reaction of almost 1 percentage point that Paul Asquith and David Mullins (1986) reported for utility firms.

Mergers and Acquisitions. Event studies have also been used to analyze the impact of mergers on firms' returns. Research by Michael Jensen and Richard Ruback (1983) shows that the shareholders of targeted firms gain substantial, and statistically significant, positive abnormal returns of almost 30 percentage points. In the case of unsuccessful merger attempts, shareholders of targeted firms gained some positive returns when the merger was initially announced, but lost these gains when it became clear that the merger would not go through. As for the bidding or acquiring firms, studies yield no evidence that mergers increase their returns.

The effect of interstate bank mergers on banks' stock returns was investigated by Jack Trifts and Kevin Scanlon (1987), who report significant positive abnormal returns for the acquired or target banks. The share prices of acquired banks, in fact, were found to increase around 20 percent. For the acquiring banks, however, the research failed to show significant abnormal returns, as was the case for industrial firms.

In a study that used a sample larger than that of Trifts and Scanlon, Marcia Cornett and Sankar De (1988) studied 153 bank merger bids and reported significant positive abnormal

returns both for the target bank and for the bidding bank. They reported a gain of 9 percent for shareholders of the acquired banks—not nearly as large as the 20 percent increase in share price reported by Trifts and Scanlon. Nonetheless, the evidence is strong and very convincing that shareholders of acquired banks do gain in interstate bank mergers.

Bank Regulatory Changes. Because changes in laws and regulations can influence the way firms operate and thus affect firms' earnings, they could alter firms' abnormal returns. Larry Dann and Christopher James (1982) investigated the removal of deposit interest rate ceilings on the stock prices of stock-owned S&Ls. They detected a negative cumulative abnormal return of 8 percentage points 15 days after the change in interest rate ceilings. This is not surprising, since thrift institutions received net benefits from regulated deposit rates in the form of a lower cost of funds. As a result, the benefits of these reduced-cost deposits should have been capitalized in thrifts' share prices; thus, when deposit rate ceilings were removed, thrifts' share prices fell.

In another study focusing on the banking industry, Michael Smirlock (1984) examined the removal of the ceilings on deposit interest rates in the 1970-78 period to see if bank stock returns reacted to this deregulatory event. Using a data set of 17 large banks listed on the major stock exchanges, Smirlock found that bank stock returns were unaffected by the removal of interest rate ceilings. This finding is in contrast to the Dann and James results for S&Ls; however, we must remember that this study focused on larger banks, which were not as dependent on rate-ceiling-protected deposits for funding.

Bad-News Announcements in Banking. When a firm faces some bad news that substantially alters the prospects for its earnings or its riskiness, investors typically react quickly by bidding down the price of its stock. But not all bad news affects firms' stock prices to the same

degree. Analysts have begun to use event studies to determine the extent of stock returns' reactions to announcements of bad news. Many examples of bad-news events can be found in the banking literature. Looking at three different bank failures—U.S. National Bank of San Diego in 1973, Franklin National Bank of New York in 1974, and Hamilton National Bank of Tennessee in 1976—Joseph Aharony and Itzhak Swary (1983) assessed the reaction of bank stock returns using a data sample of other banks' stock returns. The sample included 73 commercial banks: the 12 money-center banks, 31 medium-sized banks (with total deposits of around \$5 billion), and 30 smaller banks (total deposits around \$1 billion). The stock prices of these banks showed little response to the announcement of the three bank failures.

Later, Robert Lamy and G. Rodney Thompson (1986) studied the announcement effects associated with the 1982 failure of Penn Square Bank of Oklahoma. They reported a significant negative abnormal return of about 1 percentage point, on the day Penn Square was closed, for a sample of 54 major banks all traded on the New York or American stock exchanges—a result that could be linked to the market's perception that Penn Square, at the time of its failure, had complex lending relationships with many money-center banks. Thus, the failure of Penn Square, though only a medium-sized bank, had adverse implications simply because of its relationships with other, much larger banks.

In another study, Swary (1986) investigated the market's reaction to the bad-news announcement in 1984 that Continental Illinois National Bank was in financial distress. This event study, conducted on a portfolio of large banks, found significant negative abnormal returns (approximately 3 percentage points) following the news of Continental's problems. These returns could be explained by investors' downward valuation of other banks' stock. This revaluation might have occurred because in-

vestors believed that depositors, especially uninsured depositors, would have less confidence in major banks, and this loss of confidence would increase the cost of funds for these banks. An increase in their cost of funds would put downward pressure on banks' earnings.

Another bad-news event that attracted considerable attention was Citicorp's announcement in 1987 that it had increased its loan-loss reserves to offset potential defaults on its Latin American loans. Theoharry Grammatikos and Anthony Saunders (1988) studied the impact of this event and the announcements made subsequently by other major American banks having large Latin American loan portfolios. Using a sample of 112 U.S. banks, the researchers found that the Citicorp announcement had only a weak negative effect on other banks' returns.⁶

Meanwhile, another study, conducted on the 12 major money-center banks by Jeff Madura and William McDaniel (forthcoming), showed that the market for bank stocks had anticipated the Citicorp announcement. In yet another study, by James Musumeci and Joseph Sinkey (1988), the effect of the announcement was found to be significantly positive for Citicorp and a sample of 25 large bank holding companies. All these studies show that Citicorp's announcement had effects on other major banks much like previous studies showing the news of bank failures in the 1980s having an effect on major banks.

SUMMARY

Event studies such as those just described provide investors, financial managers, and regulators with new data about how firms' stocks behave and about how quickly new

⁶The effect of subsequent announcements by other banks, however, was found to differ across banks in the sample; some experienced large negative abnormal returns while others had positive abnormal returns. The study therefore reports that no general conclusions can be drawn.

information affects firms' stock returns. Such studies have helped document the extent to which the shareholders of acquired firms or acquired banks gain abnormal returns in mergers. They also have helped identify and quantify cases in which bad news affecting one bank or group of banks has had so-called contagion effects on other banks.

Event-study research might prove useful as well in helping to assess the impact on bank holding companies' stock prices when some BHCs issue new capital to meet the new risk-based capital standards. All these examples of event studies suggest that the methodology will likely continue to have widespread uses in the fields of banking and finance.

Estimating Returns

To conduct an event study, the analyst must measure a security's performance against a benchmark. The benchmark is usually the return that the security would have achieved had the event not occurred. Thus, the key to this analysis is to determine a model of the return-generating process for the security in question.

Several methods have been used to model the return-generating process. The simplest way is by mean-adjusted returns. Under this approach the abnormal returns would be:

$$AR_{jt} = R_{jt} - \bar{R}_j \quad (1)$$

where:

AR_{jt} is the abnormal return on the security of firm j in time period t ,

R_{jt} is the observed return on the security of firm j in time period t , and

\bar{R}_j is the mean return for the security of firm j over a given sample period.

This technique assumes that the expected returns for a firm's security are constant and equal to the historical average return and, thus, that any changes from the mean should be abnormal returns.

Another simple approach involves market-adjusted returns. Here it is assumed that the abnormal returns are those that are above the market return. Under this approach the abnormal returns would be:

$$AR_{jt} = R_{jt} - R_{mt} \quad (2)$$

where R_{mt} is the return on the market portfolio in time period t . Financial economists usually use an index return, such as the Standard & Poor's 500-stock index, for the market return.

Most event studies employ a more complicated return-generating process called the market model. In this model the returns for a security are assumed to be linearly related to the returns on the market. The market model requires the analyst to estimate the parameters of the following equation using regression analysis:

$$R_{jt} = \alpha + \beta R_{mt} + \epsilon_{jt} \quad (3)$$

where α , β are regression parameters, and ϵ_{jt} is the error term for time period t . Once these regression parameters are estimated, the security's normal returns (called \hat{R}_{jt}) are then estimated using the estimated parameters ($\hat{\alpha}$, $\hat{\beta}$) and the return on the market by substituting into equation (3)

$(R_{jt} = \hat{\alpha} + \hat{\beta} R_{mt})$. The abnormal returns are the difference between the estimated normal returns to the actual:

$$AR_{jt} = R_{jt} - \hat{R}_{jt} \quad (4)$$

where \hat{R}_{jt} is the estimated return for time period t from the regression equation.* This approach recognizes that few stocks move one-for-one with the overall market.

Once the abnormal returns have been estimated, the cross-section average abnormal returns are then calculated. They are:

$$AAR_t = \sum_{j=1}^N AR_{jt} / N \quad (5)$$

where AAR_t is the average abnormal return for time period t , and N is the number of firms in the study. The average abnormal returns are then summed to find the cumulative average abnormal returns. They are:

$$CAAR_t = AAR_t + CAAR_{t-1} \quad (6)$$

where $CAAR_t$ is the cumulative average abnormal return for time period t .

*For more details on these approaches, see Brown and Warner (1980) and (1985).

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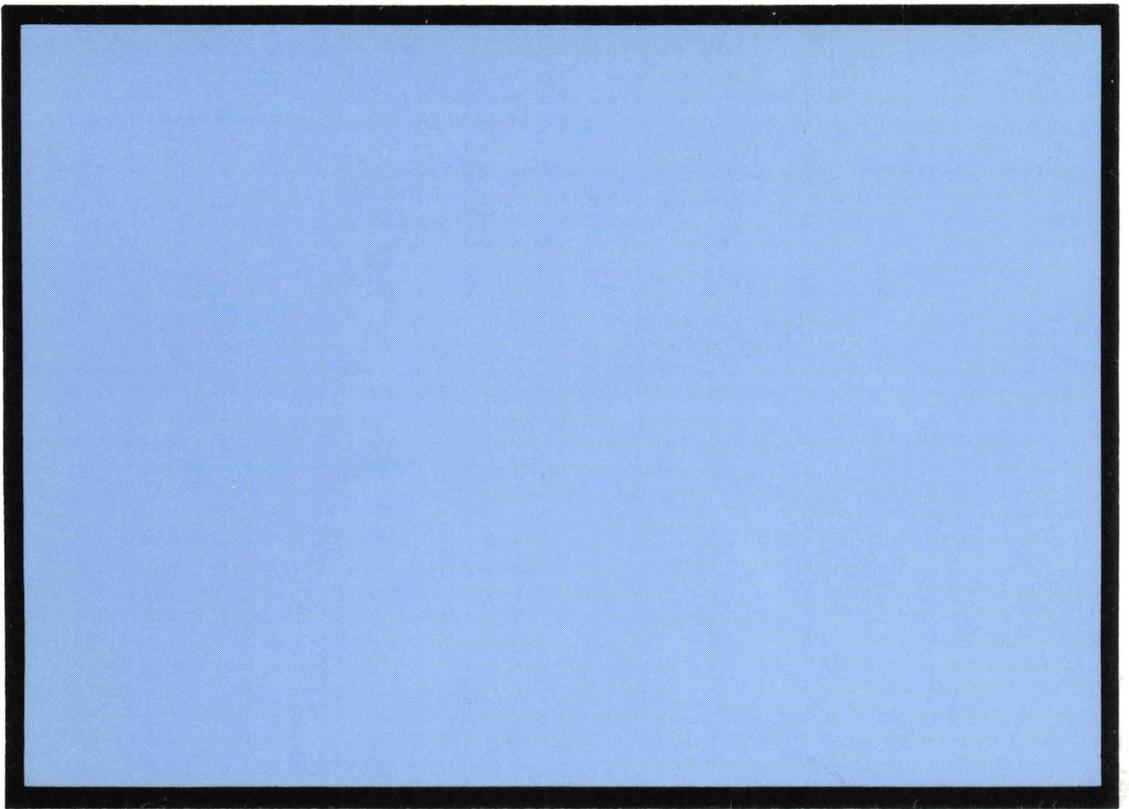
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