Regional Outlook

Federal Deposit Insurance Corporation — Third Quarter 1998

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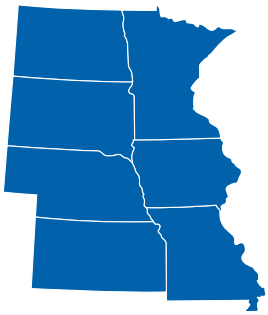

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In Focus This Quarter

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◆ ***CLOs Lure Another Major Bank Asset off the Balance Sheet*—Securitization of corporate loans and bonds is in full swing, with 1997 issuance exceeding that of securities backed by credit card loans. Collateralized loan obligations (CLOs) and collateralized bond obligations, securities with deal- and issuer-specific risks, are potential bank investments that may grow in popularity if a current proposal to lower the risk weights for AAA-rated securities is enacted. Banks with an ample supply of low-margin commercial loans are expected to issue more CLOs to an increasingly demanding secondary commercial loan market. An institution's CLO strategy may have implications that should be considered when evaluating its capital adequacy trends.** *See page 8.*

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◆ ***The Payment System: Emerging Issues*—The payment system is the heart of the U.S. economic infrastructure, moving value at the rate of 90 times the U.S. gross domestic product each year. The banking industry, although historically central to this movement, now faces a tangle of new technologies, new exposures, and new competitors that challenges its hold on the payments business. Its regulators face a different dilemma—that of how much intervention, if any, these changes warrant and how best to prevent the systemic exposures that increasingly large and rapid flows of money can create. Together, the issues they face frame a payment system that is fast becoming a technical and political contest.** *See page 14.*

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The Asian Economic Crisis: Implications for the U.S. Economy

- **The impact of the Asian economic crisis on the U.S. economy has been increasingly evident, with some sectors experiencing slower growth as conditions in Asia continue to deteriorate.**

- **U.S. exports to Asia have decreased in recent months owing to falling demand for commodities, manufactured goods, and agricultural products.**

- **Slower U.S. growth resulting from reduced export sales and lower corporate profits could affect institutions throughout the nation.**

The economic crisis in Asia is now more than one year old, yet the consequences of the unprecedented slide in currency values are still reverberating throughout the global economy. There are growing indications that some sectors of the U.S. economy are beginning to experience slower growth directly attributable to problems in the Asian economies. It is difficult to assess how significant and long-lasting the effects of the crisis will be, but it is clear that earlier views that the crisis would pass quickly and be followed by renewed growth were too optimistic. The consensus among economists and analysts now is that the recovery will be measured in years, not months.

Causes of the Crisis

Most economists agree that the Asian economies[1] are in the midst of a steep and severe recession. For example, Indonesia's gross domestic product fell by more than 12 percent in the first half of 1998, a decline second only to the drop in economic activity in the Soviet Union following its collapse in the early 1990s. While Indonesia may be the most startling example of economic deterioration in Asia, the other Asian nations also have experienced weakened stock markets, falling real estate values, rising corporate bankruptcies, and growing problem loan portfolios among financial institutions. It is generally agreed (with the benefit of hindsight) that the conditions that precipitated these events included the following[2]:

- **Reduced Export Competitiveness:** Most of the Asian economies had effectively pegged their currencies to the U.S. dollar. Between mid-1995 and early 1997, the U.S. dollar increased in value by more than 42 percent against the Japanese yen and by 23 percent against the German mark. This increase significantly worsened the international competitiveness of many Asian firms relative to Japanese or European competitors in export markets, since the value of their currencies and the price of their exports rose along with the U.S. dollar. By late 1995, export growth among the Southeast Asia economies was slowing, and by mid-1996 it was near zero.

- **Excess Production Capacity:** Although Asian savings rates were among the highest in the world, domestic saving was not sufficient to fund the desired levels of investment in factories, roads, housing, and telecommunications. The resulting inflow of foreign capital funded rapid capacity expansion in key sectors such as autos, chemicals, and microchips. For example, capital inflows to Thailand totaled $1.9 billion in 1980 but rose to $15.2 billion by 1996. The increase in production capacity put downward pressure on prices and reduced earnings growth in key export sectors.[3]

- **Rapid Asset Price Appreciation:** Real estate, land, and share prices on the region's stock markets soared during the 1980s and early 1990s. In Indonesia, for example, the Jakarta Composite stock index

[1] Unless otherwise noted, "Asia" refers to the economies of China, Hong Kong, Indonesia, Japan, Malaysia, the Philippines, Singapore, South Korea, Taiwan, and Thailand.

[2] A comprehensive survey of recent events and links to other information sources is available at the *Asia Crisis Home Page,* www.stern.nyu.edu/~nroubini/asia/AsiaHomepage.html.

[3] A case in point is the growth of the auto industry. During the past several years, Korea invested heavily in new auto plants to satisfy both domestic and export demand. By 1999, Korean capacity is expected to reach 4.66 million light vehicles annually—2 million more than domestic demand. In Japan, excess capacity of 2.8 million vehicles is expected through 2002. Worldwide excess capacity in light vehicles is expected to reach more than 20 million units by 2002—more than the total 1997 production of General Motors, Ford, and Chrysler combined (*Wall Street Journal,* March 2, 1998). The result has been downward pressure on prices of domestically produced autos—down by 1.9 percent on the basis of the first-quarter 1998 producer price index—and imports, which have experienced price increases of less than 1 percent since mid-1996.

increased by nearly 53 percent in the two-year period ending in the first quarter of 1997.

- **Deteriorating Credit Quality:** Slower export growth and eroding competitiveness hampered Asian firms' ability to repay debt incurred to finance the growing levels of investment. Some Korean conglomerates were burdened with a debt load equal to 300 to 400 percent of equity. As much as two-thirds of this debt was short-term, with a maturity of less than 12 months. Additionally, the debt denominated in foreign currencies, such as the U.S. dollar, ballooned as local currency values dropped. With some firms struggling to repay mounting debt, banks began to experience a further deterioration in credit quality.

Some of the uncertainty about the strength and speed of the recovery in Asia is attributable to concerns about the faltering Japanese economy. As the second largest economy in the world and the engine of growth in the region, Japan must have a healthy economy if sustainable growth is to occur in the rest of Asia. With Japan currently in a deep recession and the outlook for its economy clouded by the halting pace of financial reform efforts, there is considerable uncertainty about how quickly economic and financial weaknesses throughout the rest of Asia can be repaired.

Impact on the U.S Economy

The Asian financial crisis could affect the U.S. economy through several avenues. Some firms and industries may be directly exposed, especially if they have operations in Asia. Banks may be exposed through changes in the financial condition of Asian borrowers. Other firms may be less directly exposed to economic conditions but will be affected by changes in relative prices and trade flows between the United States and Asia. The drop in Asian purchases of U.S. exports has hit agricultural products, commodities, and manufactured goods. As some recent corporate earnings announcements have shown, the crisis has been associated with profit growth that has failed to meet the market's expectations.

Banking

The U.S. banking industry has a smaller direct lending exposure to the Asian economies than either European or Japanese banks. As shown in Table 1, U.S. banks had outstanding loans of $22 billion at the end of 1997, which accounted for 8.5 percent of all international lending to Indonesia, Malaysia, the Philippines, South Korea, and Thailand. To the extent that exposures exist, however, large banks and not smaller regional or community banks account for most of the lending. While the overall direct lending exposure of the U.S. banking industry may be relatively small, the indirect exposure resulting from changing economic conditions in the United States as a result of the crisis could potentially affect small and large institutions in all areas of the country.

Agriculture

Key to understanding the impact on agriculture is the fact that in world markets, agricultural commodities are priced and traded in terms of U.S. dollars. The steep decline in value of Asia's currencies means that the price of imported agricultural commodities has rapidly risen. Over a longer period, higher import prices tend to stimulate production in the importing countries that can displace demand for imports. Thailand, for example, is positioned to increase production of poultry and sugar. Other world producers, such as Australia, whose currency also has fallen in value, are now more competitive suppliers of some agricultural products to the Asian market than the United States.

On the basis of analysis performed by the U.S. Department of Agriculture's (USDA's) Economic Research Services,[4] U.S. exports of red meat and poultry are expected to drop by 5 to 6 percent in fiscal 1998 and 1999 as a result of the Asian crisis. Exports of grains are projected to fall by at least 2 percent in fiscal 1999 as other world producers increase production in response to changing relative prices among major grain exporters. Overall, USDA expects agricultural exports to fall by 3 to 6 percent in fiscal 1998 and 1999, compared with the level of exports had the Asian crisis not occurred.

Commodities

Asian countries have become increasingly important commodity consumers in recent years. As a result, com-

[4] "World Agriculture and Trade," *Agricultural Outlook,* pp. 10–11.

TABLE 1

International Claims by Nationality of Reporting Bank End December 1997									
Total International Claims (million U.S. $)		U.S.		Japan		Europe*		Other	
		Claims	Percent	Claims	Percent	Claims	Percent	Claims	Percent
Indonesia	58,388	4,898	8.4	22,018	37.7	15,044	25.8	16,428	28.1
Malaysia	27,528	1,786	6.5	8,551	31.1	12,997	47.2	4,194	15.2
Philippines	19,732	3,224	16.3	2,624	13.3	9,317	47.2	4,567	23.1
South Korea	94,180	9,533	10.1	20,278	21.5	29,614	31.4	34,755	36.9
Thailand	58,835	2,533	4.3	33,180	56.4	14,782	25.1	8,340	14.2
Total	**258,663**	**21,974**	**8.5**	**86,651**	**33.5**	**81,754**	**31.6**	**68,284**	**26.4**

* Includes France, Germany, Netherlands, and United Kingdom
Source: Bank for International Settlements

modity markets have been affected by falling demand for basic materials and fuels in Asia. The abrupt halt of construction activity in the region has reduced Asian imports of metals and metal products. Consequently, world copper and nickel prices fell more than 36 percent during the year ending June 1998. Asian developing countries also had stepped up their demand for petroleum products, accounting for two-thirds of the increase in world petroleum consumption between 1992 and 1996. As economic activity in Asia slowed, oil demand softened and world inventories expanded, causing prices to tumble from $20 per barrel in July 1997 to less than $14 per barrel in June 1998. To the benefit of U.S. consumers, the drop in oil prices has reduced the prices of gasoline and other refined petroleum products, but it has cut into profits of oil producers. While there are few indications of widespread financial problems in the industry, smaller and less geographically diversified producers may be exposed to adverse price and inventory changes.

Manufacturing

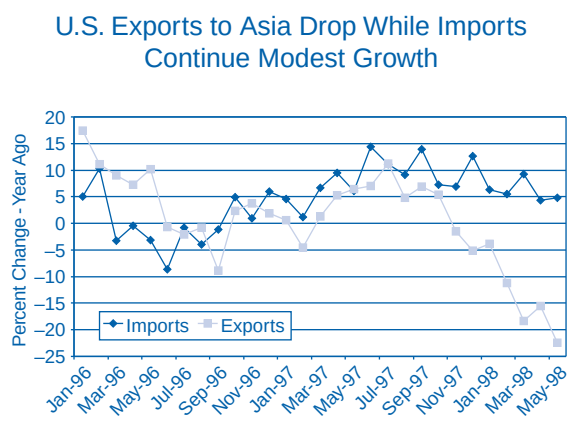
Asia accounts for a large and growing share of U.S. trade in manufactured goods. Between 1990 and 1996, U.S. exports of manufactured goods to Asia increased from $75 billion to more than $140 billion, accounting for nearly one-third of the increase in total U.S. exports of manufactured goods. For the U.S. economy as a whole, machinery, food products, and chemicals are the most exposed to a drop in Asia's demand for U.S. exports. Together, these industries account for nearly 70 percent of U.S. exports to Asia.

Between 1990 and 1996, U.S. imports of manufactured goods from Asia rose from $176 billion to more than $285 billion. Increased imports from China accounted for about one-third of the gain. U.S. imports from Asia are dominated by machinery and manufactured goods, including electronics and semiconductors, which together account for 93 percent of imports.

Asia's demand for U.S. exports will continue to weaken following the dramatic increase in import prices resulting from the drop in currency values. The latest trade data show that the dollar volume of U.S. goods exports to Asia (including both manufactured goods and other commodities) fell by 22.5 percent in May 1998 compared with one year earlier (Chart 1).

Changes in the volume of exports at the national level do not adequately describe the variation in the export exposure of different regions of the country. Chart 2 (next page) shows the percentage of state-level exports

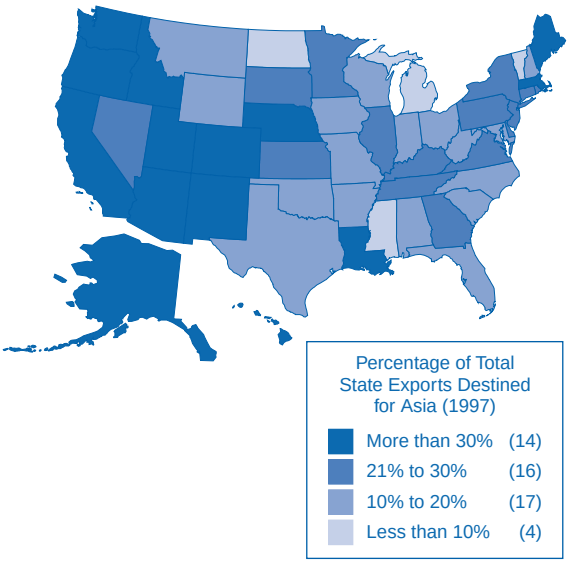
CHART 1



Source: Bureau of the Census

CHART 2

Western and Midwestern State Exports Are Vulnerable to Changes in Asian Demand



Source: Bureau of the Census, International Trade Administration

that are destined for Asia.[5] Clearly, Western states are most exposed to changes in the demand for U.S. exports, especially electronics, transportation equipment, and industrial machinery. A significant share of exports from the Midwest also is destined for Asia, including chemicals and machinery such as construction equipment.[6]

In the initial stages of the crisis, the consensus view suggested that the United States would be overwhelmed by cheap imports from Asia, as Asian countries exported their way to economic recovery. Although there has been an increase in U.S. imports from Asia, the growth has been well below expectations. In May 1998, goods imports were up by just 4.8 percent over the previous year. The reason that U.S. imports of Asian goods have not been greater is due in part to the severity of the economic downturn and the weakness of Asia's financial institutions. Many Asian manufacturers are dependent on components imported from neighboring countries or purchased on world markets. With the drop in currency values, all imported goods, including finished goods and intermediate goods that are used in the manufacturing sector, have become more costly. At the same time, Asia's weak financial systems have come under increasing pressure as the economic slump deepens. Many banks cannot, or will not, lend. Consequently, Asian firms cannot secure the capital to acquire imported inputs or to finance the sale of exports abroad. As the "credit crunch" abates, imports from Asia should rebound, placing greater pressure on U.S. manufacturers.

Corporate Profits

Profits of U.S. producers also will be affected by falling prices for import-competing goods and plummeting Asian demand for some U.S. exports. Although U.S. producers of import-competing goods will be under increasing competitive pressure, firms that use imported components from Asia will benefit from an effective reduction in costs. U.S. exporters may see disappointing Asian market profits offset by continuing strong sales in the U.S. and European markets. For these reasons, the impact of the crisis on corporate profits must be viewed in the context of gains and losses caused by changing relative prices of a firm's products and inputs.

A number of recent earnings announcements have failed to meet analysts' expectations. According to IBES International,[7] the crisis has contributed to a reduction of profit growth, although most of the slowdown is attributable to both falling prices and weak demand for semiconductors and oil. Operating profits of all companies tracked in the Standard & Poor's 500 stock index increased by 4.4 percent in the first quarter of 1998, the smallest increase since 1991. Excluding the energy and technology sectors, profits of the S&P 500 firms increased by 8.6 percent in the first quarter. On the basis of these results, the impact of the crisis on corporate profits appears to be highly concentrated among firms in a few industries.

Summary and Implications

The consequences of the Asian economic crisis continue to unfold. The slowdown in growth in most Asian economies has already reduced U.S. export shipments and put downward pressure on prices of commodities and agricultural products. How long this trend will con-

[5] The state-level export data are from the Export Locator series published by the Bureau of the Census. These data tabulate the value of exports as determined by the location of the exporter, which may differ from the location of the producer. Although these data are an imperfect measure of state-level export performance, they are still of value in assessing regional exposures and remain the most complete data available.

[6] A state-by-state analysis has been prepared by the U.S. Treasury and the U.S. Department of Commerce.

[7] As quoted in the *Wall Street Journal,* June 22, 1998, p. C1.

tinue is uncertain, but most analysts have dismissed the chances of a speedy recovery in Asia. Although most economists are not anticipating a recession in the United States in the foreseeable future, the indirect impact of the Asian crisis will be felt to some extent across most regions of the country.

Lenders should be cognizant of their customers' exposure to a continued drop in demand for exports or to further deterioration in the pricing environment. More generally, slower U.S. growth could affect even those borrowers that have little or no direct exposure to export markets. What is clear for insured institutions is that at this stage of the economic expansion and with a number of uncertainties about the global economic outlook, lending and strategic decisions predicated on an assumption of continued robust economic growth should be carefully scrutinized.

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Paul C. Bishop, Economist

Table 2

Kansas City Region: Merchandise Exports to Asia—1997

Includes China, Hong Kong, Indonesia, Japan, Malaysia, the Philippines, Singapore, South Korea, Taiwan, and Thailand

Industry Sector	Volume ($ Millions)	Export Growth 1993-97	Percent of Exports to Asia by Industry*	Export Exposure to Asia**
Total Exports to Asia	7,539.9	38%	100%	23%
Top Five Export Industries				
Food Products	2,065.5	33%	27%	41%
Agricultural & Livestock Products	1,556.7	43%	21%	23%
Industrial Machinery & Computers	993.9	51%	13%	20%
Electric & Electronic Equipment	697.0	39%	9%	28%
Scientific & Measuring Instruments	602.3	64%	8%	28%
Total of Top Five Export Industries	5,915.3	42%	78%	27%

* Percent of Region's total exports to Asia from each of the top five export industries.
** Percent of Region's total world exports for each industry destined for Asia.
Source: International Trade Administration

CLOs Lure Another Major Bank Asset off the Balance Sheet

- **Securitization of corporate loans and bonds is in full swing, with 1997 issuance exceeding that of securities backed by credit card loans.**

- **Collateralized loan obligation (CLO) and collateralized bond obligation (CBO) issuance has grown dramatically since 1996. Both CLOs and CBOs are potential bank investments that may grow in popularity if a current proposal to lower the risk weights for AAA-rated securities is enacted.**

- **These bonds may offer a higher yield than other AAA-rated securities, but they also may carry both deal- and issuer-specific risks that warrant closer scrutiny.**

- **Banks with an ample supply of low-margin commercial loans are expected to issue more CLOs to an increasingly demanding secondary commercial loan market.**

- **Securitizing investment-grade commercial loans has implications for capital adequacy.**

CBOs and CLOs are fixed-income securities that share many similarities with other asset-backed securities. In a CLO or CBO, commercial loans or bonds are pooled and securitized, and participation certificates in the underlying assets are sold to investors. The first CLO and CBO transactions occurred in the late 1980s, but issuance was slow until last year. During 1997, the estimated volume of corporate bonds and commercial loans securitized was $54 billion, more than double the amount securitized in 1996. In fact, the combined issuance of CBOs and CLOs in 1997 was more than the amount of credit card loans securitized during the year. The amount of securitized commercial loans and corporate bonds is expected to continue to grow this year, with an increasing number of deals backed by commercial loans[1] (see Chart 1).

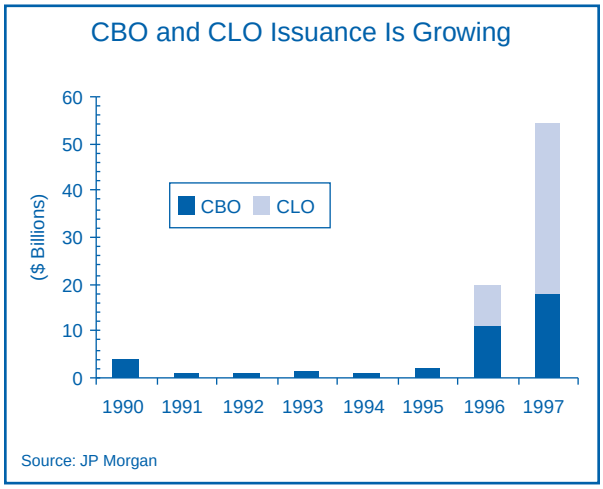
[1] *CBOs/CLOs: An Expanding Securitization Product,* p. 1, JP Morgan, September 1997.

CBOs and CLOs: A Natural Development in the Asset-Backed Securities (ABS) Market

The growth of the CLO market can be explained by several supply and demand factors. On the demand side, strong investor appetite for ABS has produced tremendous growth in the securitization of consumer loan segments such as credit card, auto, and home equity loans. The increasing comfort level of the capital markets with these asset classes and the various structures used to securitize them has facilitated the ABS market's expansion into nonconsumer loans, including corporate debt obligations and bank commercial loans. CBO and CLO structures represent a natural progression from the securitization of a pool of consumer loans to the securitization of a diversified package of corporate bonds or bank loans.

Increased standardization of terms among commercial lenders and more information flow on returns, defaults, and recoveries also have made commercial loans and corporate debt more desirable to institutional investors and an asset class viable for securitization. In addition, CLOs provide a way for investors, including banks, to own a credit-enhanced interest in a diversified pool of loans without directly owning the individual loans. Investors are increasingly considering collateralized bond and loan products as higher yielding alternatives to other ABS.

CHART 1



Foreign and, to a lesser extent, domestic banks have been large purchasers of CLOs and CBOs. Bank investment in CLOs and CBOs primarily has been in the most senior, highest investment-rated tranches. Together, foreign and domestic banks are estimated to have purchased almost one-half of the highest rated classes of CLO and CBO securities issued in 1997. Insurance companies dominated the purchase of the middle or mezzanine class of CLOs and CBOs.[2]

Last year the Federal Financial Institutions Examination Council proposed lowering the risk weighting for AAA-rated ABS from 100 percent to 20 percent. Bank investment in AAA-rated ABS products, including CLOs and CBOs, could increase substantially if the proposal is approved.

Lower Capital Requirements, Higher Return Ratios Attract Banks to CLO Market

On the supply side, issuers of CLOs backed by *investment*-grade loans are motivated by regulatory capital treatment, return on capital, and relationship management. While the CLOs originated in the late 1980s were designed to purge the lender's balance sheet of lower quality commercial loans, the recent bank-issued CLOs have been secured by higher credit quality, lower margin commercial and industrial loans.

A bank that is capital constrained may view the CLO structure as an alternative to issuing additional equity. But more often, banks are motivated to securitize investment-grade commercial loans because by doing so they effectively subject themselves to the market's capital requirements for such loans instead of their regulator's. Tight competition has compressed the margin that banks earn on investment-grade loans to the point that more institutions are considering investment-grade lending to be an inefficient use of capital. As margins have declined, the CLO market has helped relationship managers rationalize lower pricing from the perspective of return on capital. *Since investment-grade and non-investment-grade-performing commercial loans have the same risk weightings for regulatory capital purposes, removing the higher quality, lower yielding assets from the balance sheet tends to leave existing bank capital supporting higher return activities.*[3] *In this way, a bank can improve certain profitability measures, but possibly with a higher risk profile.*

Table 1 (next page) illustrates the effects of a CLO on a bank's capital and return ratios. In order to compare the on- and off-balance sheet transactions, the costs of the CLO and the associated reserve requirement are analogized to the on-balance sheet funding costs and capital requirement if the assets remained on the balance sheet. The assumptions reflect the spreads and reserve requirement of a typical transaction. While the execution of the CLO costs more than the on-balance sheet financing of the loans, the risk-adjusted return on capital (RAROC) is greater with the CLO. The reserve requirement is minimized by the tiering of tranches in the securitization, which provides credit enhancement to the senior classes. The reserve fund, if retained by the issuing bank, represents recourse to the bank from the sold assets and requires capital at 100 percent under "low-level" recourse.

CLOs also may be used to facilitate corporate borrowing relationships. For example, banks that want to maintain relationships with corporate borrowers but are restrained by concentration limitations, either by borrower or by industry, may use CLOs to alleviate concentrations without disrupting borrower relationships.

Large commercial banks with significant holdings of investment-quality commercial loans are likely candidates to issue CLOs. CLO issuance by investment banks could grow as these institutions secure a stronger foothold in the commercial loan market. In 1997, foreign banks were the primary issuers of CLOs, but more U.S. banks are expected to issue CLOs in the future. Japanese and Asian banks may increase their CLO activity as they come under pressure to improve capital ratios and remove distressed loans from their balance sheets.

[2] *CBOs & CLOs—An Attractive Investment Class,* p. 5, Merrill Lynch & Co., Inc., December 1997.

[3] Pursuant to the Basle Accord, commercial loans generally receive a 100 percent risk weighting regardless of the credit rating of the loan. Proponents of CLOs have argued that banks can improve their risk-adjusted return on capital by removing the higher quality, lower earning commercial loans from the balance sheet.

Table 1

CLOs Can Facilitate a Higher RAROC on Investment-Grade Assets	
Assumptions:	
Amount of Loans in CLO:	$1 billion
Loan Portfolio Yield:	Libor + 50 bpts
Bank Funding Costs:	Libor – 10 bpts
CLO Funding Costs:	Libor + 24 bpts
Bank Retains 1% Reserve Fund:	$10 million
Before CLO	
Yield Less Funding Cost	(L+50) less (L–10) = 60 basis points
Net Spread Earned	.006 × $1 billion = $6 million
Risk-Based Capital Requirement	(8% on $1 billion) = $80 million
RAROC	$6 million/$80 million = 7.5%
After CLO	
Yield Less Funding Cost	(L+50) less (L+24) = 26 basis points
Net Spread Earned	.0026 × $1 billion = $2.6 million
Risk-Based Capital Requirement	(100% of Reserve Fund) = $10 million
RAROC	**$2.6 million/$10 million = 26%**

Source: Bear, Stearns & Co. Inc.

Arbitrage Opportunities Motivate Most Securitization of Subinvestment-Grade Debt

Issuance of CLOs backed by *subinvestment*-grade loans and most CBOs, which commonly are backed by a mixture of bonds with a subinvestment-grade weighted average, typically is motivated by the potential to capitalize on wide spreads between investment and subinvestment-grade debt. The securities backed by subinvestment-grade collateral, often referred to as "arbitrage" CLOs and CBOs, contain higher yielding, riskier securities such as high-yield debt, distressed bonds, highly leveraged loans, and emerging market debt. By assembling a diversified pool of higher yielding investments, asset managers can limit aggregate event risk and create a security with a lower required yield than the underlying collateral. Securitizations can include a combination of loans and bonds and are sometimes referred to as collateralized debt obligations or CDOs.

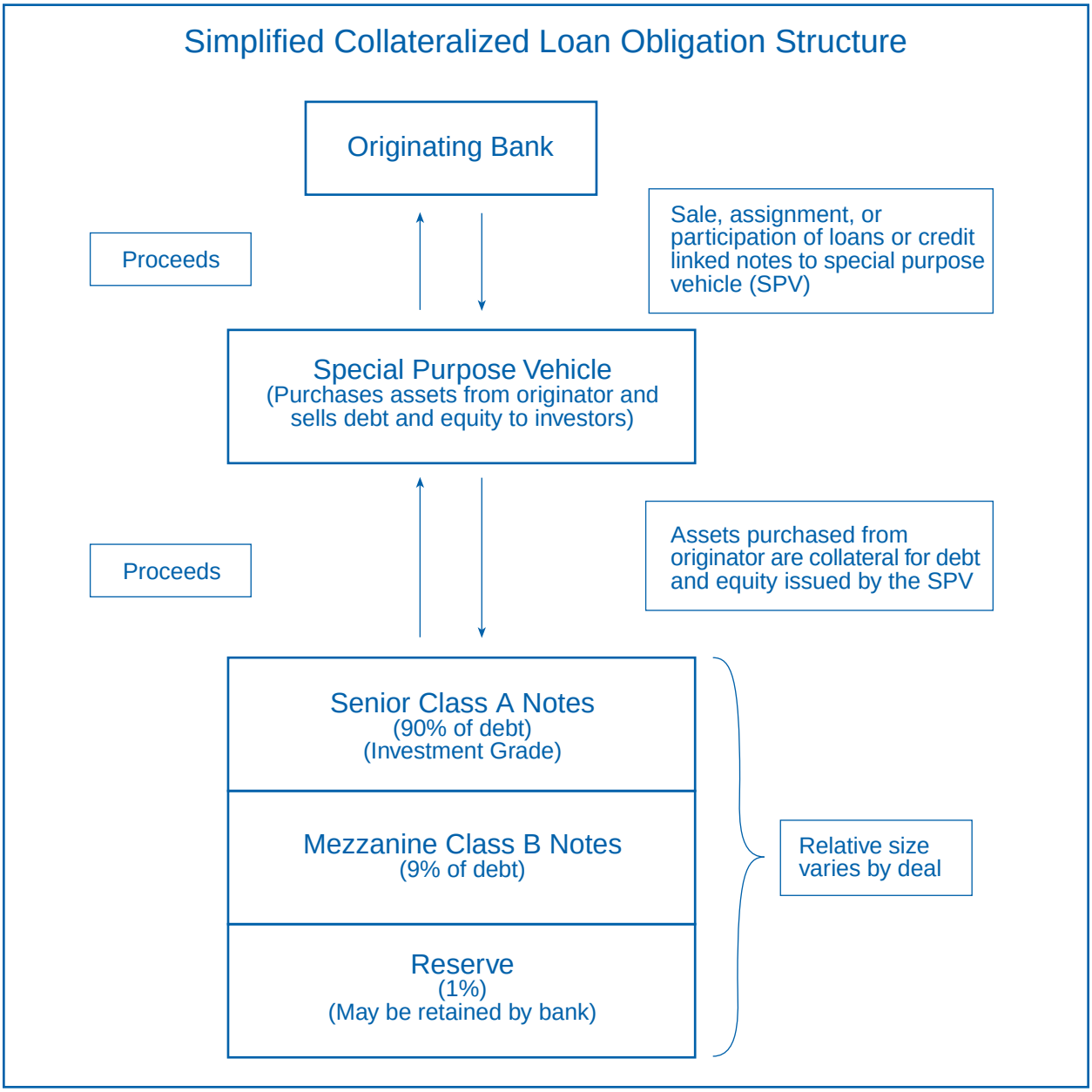
A Closer Look at CLO Structures

While the structures of CLOs and CBOs are similar, banks' involvement as issuers of CLOs, and the forces driving this issuance, elevate the importance of considering CLO structures. Chart 2 presents the basic structure of a CLO. Although specifics may vary, most CLOs use a stand-alone special purpose vehicle (SPV) or trust to purchase a diversified pool of assets from a bank originator or issuer. The purchase of the assets by the SPV is funded through the sale of debt securities to investors. The structure of the SPV may include one or more tranches of debt that are secured by the pool of assets owned by the SPV. The classes of debt are distinguished by their priority of claims on the cash flow from the collateral, with the most subordinated pieces functioning as an equity investment in the pool.

The senior tranche is usually the largest, has the greatest amount of credit protection, and earns the highest credit ratings in the CLO structure. *The rating of the senior class typically is higher than the average rating of the underlying pool of assets due to the tiering of claims among the debt classes and credit enhancement in the CLO.* The junior tranches of debt may be below investment grade or not rated. The reserve or "equity" portion may be retained by the issuing entity as a form of credit enhancement or sold to third-party investors who want a potentially higher return investment.

CLO collateral has included both funded and unfunded loan commitments, loan participations, and different types of credit default swaps. Loan assignments also may be transferred through a CLO but are less commonly included because of bank issuers' desire to main-

CHART 2



tain borrower relationships. The issuer may transfer the actual loan, the cash flow from the loan, or the default risk to investors.

CLOs typically rely on an asset manager or servicer to "manage" or protect the investors' interest in the collateral. The investment style or role of the asset manager may change depending on the purpose of the CLO. Securitizations that use an asset manager to actively manage the performance and market value of the collateral are referred to as "market arbitrage" or "market value" transactions. In these deals, the asset manager can trade assets into and out of the securitized pool in order to maximize the market value of the securitized portfolio. In contrast, most bank-issued CLOs are designed as "cash flow" transactions, in which the asset manager's role is more as a servicer than as a portfolio trader. These structures rely primarily on the ability of the collateral to make stable cash flow payments over a predetermined period and emphasize the credit quality of the collateral and the predictability of interest and principal payments rather than liquidity and market performance, as in market value transactions.

An Introduction to Delinked and Linked CLO Structures

The variables in structuring a CLO are many. The relative size of the senior and subordinated tranches, the form of credit enhancement, the ability of the asset manager or servicer to adjust the asset pool, and the method and degree to which ownership of the underlying loans is conveyed to investors vary among CLOs. Despite the variations, two basic structures have emerged: "delinked" structures and "linked" structures. The primary difference between these two is the extent to which the SPV "owns" the securitized assets. An issuer may consider many factors when determining the type of structure to use, including the ability or desire of the issuer to transfer the loans without notifying the borrower, the credit quality of the loans, the investment rating of the bank issuer, and the desired capital treatment of the securitized loan.

In a delinked structure, the collateral is transferred from the issuer to the SPV. Delinked structures are generally treated as "true sales" for accounting purposes, and the loans in the CLO are removed from the issuer's balance sheet. Delinked CLOs are structured to insulate the investor from the credit quality problems or insolvency of the issuer. Ratings on delinked CLOs are predicated on the projected performance of the collateral and the credit enhancement structure rather than the credit quality of the issuer. Some delinked CLOs are similar to structures used in credit card securitizations that capitalize on the flexibility of a revolving master trust. The master trust structure is advantageous because it allows for the securitization of different types of assets, such as fixed or floating rate or revolving or term loans.

In linked transactions, also known as credit linked notes, the issuer retains ownership of the underlying collateral, and the *cash flow generated by the collateral pool* is conveyed or sold to the SPV. All or part of the credit risk from the underlying assets is transferred to the CLO investor using credit derivatives. As in delinked CLO structures, credit protection is provided through the layering or tranching of the debt sold and other credit enhancements.

Investors in linked CLOs are not completely insulated from the credit risk of the issuer. Because the issuer retains ownership of the underlying loans, a default or bankruptcy by the issuer could affect the transmission of cash flow to the CLO investors. As a result, investors in linked CLOs bear both the credit risk of the securitized loan pool and, to some degree, the risk that the issuer may become insolvent. *Because of this dual exposure, ratings on linked structures are typically capped by the credit rating of the issuer.*

The accounting and regulatory capital treatments of delinked and linked CLOs also differ. Linked structures generally do not qualify for sale treatment under generally accepted accounting principles because the assets remain under the control of the issuer. Issuers of linked CLOs may be granted some regulatory capital relief under the Basle Accord if the cash received from the securitization is assigned as collateral for the underlying loans. The Basle Accord, which governs capital adequacy requirements for Bank for International Settlements member countries, reduces the risk weighting on commercial loans that are secured by cash or certain types of risk-free marketable securities such as Treasury bills.[4] While linked CLOs may provide some form of capital incentive for foreign banks under the Basle Accord, linked structures offer little relief to U.S. banks because U.S. banks must maintain minimum leverage capital ratios in addition to risk-based capital ratios. Since the securitized loans count as assets of the bank issuer in a linked structure, the leverage ratio (roughly, book equity to book assets) is not reduced. Consequently, the linked CLO structure has been more popular among foreign banks.

The Role of Investment Rating Agencies

Although the approach may vary among rating agencies, the criteria used to determine the investment rating for CLOs are similar. Rating agencies evaluate the ability of the securitization vehicle to make interest and principal payments to holders of the debt. This analysis requires an evaluation of the credit quality of the underlying collateral pool, including the projected cash flow

[4] Under the Basle Accord and the U.S. risked-based capital guidelines, assets collateralized by cash or Treasury securities generally receive a preferential risk-weighting that may range from 0 to 20 percent. For background information regarding the risk weightings for collateralized transactions applicable to federally regulated institutions, see Federal Deposit Insurance Corporation Financial Institution Letter number 64–96 dated August 22, 1996.

generated by the pool, the credit enhancement, and any additional protection provided to the investors based on the structure of the securitization. The rating agencies set limits on the amount of industry and borrower concentration in a pool and statistically evaluate the effect of diversification among loans when estimating potential defaults and losses from the securitized assets over the life of the transaction. If the underlying collateral is not already rated—most commercial loans are not—the rating agency will grade the underlying loans and assign a rating to the security on the basis of the credit quality of the loans and the underwriting criteria used by the lender. Estimates of default probabilities, timing of default, and recoveries in the event of default are assigned to the loans and vary by collateral type and credit grade. These estimates are generally based on historical default studies authored by the various rating agencies.

Implications for Insured Institutions

The advent of CLOs poses new opportunities and risks to banks. The ability to transfer all or part of a commercial loan's credit risk to investors may have several consequences. When issuers of CLOs securitize their highest grade assets, they are effectively lowering the weighted average credit quality of their retained assets. An institution's loan loss reserving policies and capital adequacy should take into account the implications of its CLO strategy.

While the issuance of CLOs may be confined to larger banks that have considerable commercial loan portfolios, smaller banks or other types of institutions that desire a greater exposure to this type of lending may consider investing in CLOs. These instruments offer banks the opportunity to invest in a diversified pool of commercial loans. Because of credit enhancement features and diversification advantages, the most senior debt issued by the CLOs can earn a higher investment rating than the average rating on individual loans in the pool. Despite the investment rating, banks that invest in CLOs should be aware that CLO structures are less standardized than other ABS investments, and therefore, performance and underlying risk will be both issuer and deal specific.

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Allen Puwalski, Senior Financial Analyst

The Payment System: Emerging Issues

- **Essential to the transfer of value in the U.S. economy, the once-arcane and bank-centered payment system is undergoing considerable change as new technologies bring new opportunities, new exposures, and new competitors into the payments business.**

- **For most banks, the major issues lie in small-value payments, where they struggle for advantage in adapting new technologies into new products and services while protecting their traditional payments business from technologically adept nonbank competitors.**

- **For regulators and a handful of the largest banks, large-value payments present the most serious challenges, as technology has enabled increasing payment velocity and volume but also has created the potential for systemic failures.**

The payment system is the heart of the U.S. economic infrastructure, moving an estimated $670 trillion annually among consumers, businesses, financial institutions, and governments.[1] Despite this volume—an amount equal to roughly 90 times the U.S. gross domestic product—the payment system remains transparent to most users because of its dependability in moving value safely. Historically, banks have been essential to this movement, reaping, according to the ***Bank Administration Institute,*** an estimated $117 billion each year in revenues both as payment agents and as the holders of the funds from which those payments are made.

Broadly speaking, the payment system encompasses the numerous payment products, players, and the infrastructure that together transmit value throughout the economy. More specifically, it can be defined as a collection of individual systems constructed around specific payment products. Credit cards, for example, represent a payment system. So do debit cards, checks, foreign exchange, and even cash. This product-based definition is a relevant one for many bankers, since it centers on the products and services that generate revenue rather than on the less glamorous "back office" functions that are measured instead by their cost. A second definition segments the payment system by payment size. Using this definition, the payments world is divided into systems that carry *small-value* or *retail* payments and those that carry *large-value* or *interbank* payments. This latter classification is oriented more toward infrastructure than product but is convenient from a regulatory perspective because the seriousness of the risk posed varies considerably by payment size.

However defined, the payment system today is a source of new opportunities and exposures—a result of a host of new technologies that the "information revolution" has spawned. These technologies create different issues for banks and regulators. For banks, the issues involve adapting the technologies into new products and services while protecting their payments business from nontraditional competitors that specialize in its creation and use. For regulators, the issues involve managing the risks—principally systemic risk—that accompany the large increases in payment volume and velocity enabled by technology. Taken together, these issues frame a payment system that can be both a political and a technological battleground, with significant incentives for participants to shape payment products and channels in a way that favors their own objectives.

Small-Value Payments: A Technological Brawl

Nowhere has the battle to shape the payment system been more contentious than in the small-value segment, where emerging information technology can best be leveraged into new fee-based retail products. There are two battles here. The first involves *maintaining the monopoly over the payments infrastructure* that connects each bank with the Federal Reserve and, by extension, with every other depository institution in the United States.[2] While this infrastructure is interbank—that is, it is dedicated to settling accounts between institutions and does not directly extend to their customers—the ability to aggregate and settle individual retail payments through it has enabled the banking industry to maintain its centrality to the nation's monetary flows.

[1] Estimate for 1996 from the National Automated Clearing House Association; www.nacha.org/resources/marketing/direct-payment/us-payments-96.gif.

[2] Depository institutions were granted exclusive access to this infrastructure upon its creation by the Federal Reserve Act of 1913.

The second battle involves exploiting new technologies either to attract new customers or to serve existing ones more profitably. This battle is both highly visible and highly technical and underscores the potential of the passing of information to eclipse the passing of value as the most critical profit opportunity in payments. The best example of this potential is *bill presentment*, the process of posting vendor invoices—such as credit card or utility statements—on the Internet to facilitate electronic payment. The crucial question concerns where the customer transaction data will lie. If they lie on vendors' sites or on the sites of nonbanks that concentrate such data, those entities will effectively "own" the customer by owning the information needed to cross-sell or otherwise add value during the billing process. Owners of customer-specific data also can tailor new services—a process that can develop loyalty as well as related sales. Losing this battle would be doubly costly for banks because, regardless of where the data reside, electronic payments will eliminate most of the float in the payment process, to the benefit of vendors and largely at the expense of banks.

Another battle is building between banks and nonbanks with respect to *digital cash* and *stored value* applications. These applications are directed at the micropayment sector—that is, payments that are normally considered too small for credit cards. Whether they reside on a computer or a smart card, these applications substitute electronic data for actual cash, with the amount stored on each card covered dollar for dollar by balances on account with an issuer. The struggle is for the right to issue this value, and the ***American Bankers Association*** has contended that regulated depository institutions alone should be permitted to do so.[3] The battle here is for more than just fees, for the interest on the balances that back this electronic value could provide issuers with substantial new sources of income.

With some new payment technologies, the distinction between opportunity and risk can blur. As the Internet enables the distance between shopper and shopkeeper to increase, the need to authenticate unseen customers, merchants, and banks increases as well. At the same time, the open nature of the Internet requires that the privacy and integrity of transaction information be protected. The building blocks to accomplish this are neither simple nor easily interwoven—successfully combining cryptographic protocols, specialized security hardware, and existing information systems is a dif-

[3] *The Role of Banks in the Payments System of the Future,* www.aba.com.

Emerging Issues in Small-Value Payments

Maintaining the payment system monopoly. Access to Federal Reserve payment services has historically been limited to depository institutions. Maintaining that monopoly—and thus maintaining its centrality to current and future payment products and services—is an important issue to the banking industry.

Electronic bill presentment is the process of presenting bills and receiving payments electronically. Internet bill presentment may be one of the most hotly contested services, because the owner of the site where invoices are posted could cross-sell to customers as well.

Digital cash and stored value are applications in which electronic data substitute for cash. Such applications can run on either smart cards or personal computers. An important issue is who holds the balances that back electronic value, because, unlike with paper cash, issuers may be able to earn interest on the digital balances held by consumers.

Securing online transactions. Ensuring the integrity, privacy, and authenticity of electronic transactions is widely desired by those engaged in electronic commerce. With larger payments, desirability will become necessity. Current implementations use combinations of encryption algorithms and specialized hardware.

Banks as certificate authorities (CAs). Authenticating Internet payers and payees may require a complex public key infrastructure in which trusted organizations supply decryption keys to authenticate the counterparties to a transaction. Some banks are already acting as CAs. Others are weighing the benefits and largely uncertain exposures of providing such a service.

Electronic Funds Transfer '99 (EFT 99). On January 2, 1999, the U.S. government will be required to make benefit and vendor payments electronically. This mandate raises issues of how to provide service to the "unbanked," how to provide service internationally, and for vendors, how to integrate remittance data with the payment itself.

Development of financial electronic data interchange (EDI) standards. For bank commercial customers to benefit from electronic payments, banks must be able to handle remittance information—information that accompanies payments and identifies sender and transaction detail. Standardizing such data is an important step in enabling banks to receive them and pass them on to their customers.

Point of sale check truncation. Checks are costly to handle and time-consuming to collect. Check truncation reduces cost and eliminates float by converting the check into an electronic transaction at the point of sale. Although banks will have fewer checks to handle under check truncation, they will lose float and the return on investment in check-handling equipment.

ficult matter in itself if the whole is not to be weaker than the individual parts.

The VISA and MasterCard Secure Electronic Transaction (SET) protocols, designed to protect Internet credit card transactions, illustrate the complexity that banks and their customers will need to navigate in *securing online transactions*. Under SET, all banks and merchants will use digital certificates to authenticate themselves to consumers and each other for each Internet transaction.[4] These certificates are electronic messages that contain a decryption key for the sender that is itself authenticated by a trusted third party. The infrastructure for storing, distributing, and vouching for these keys, known as a Public Key Infrastructure (PKI), will contain several tiers of certificate authorities (CAs) and will be difficult and costly to implement. Banks not only will use these certificates, but many are considering becoming—or have already become—CAs themselves. While *banks acting as certificate authorities* may represent a logical progression in banking services, there is little evidence of a homogeneous legal infrastructure or legal precedent sufficient to guide digital signature disputes. These voids leave unanswerable the question of whether the expected gains from providing such services will compensate for the potentially long-tailed liability from doing so.

A major stimulus for electronic payments could come on January 2, 1999, when the U.S. government is required by law to convert its vendor and benefit payments from paper checks to electronic transfers—the so-called *Electronic Funds Transfer '99 (EFT 99)* program. Three separate challenges arise from this mandate. The first is that the "unbanked"—those segments of the population that are socially, economically, or geographically distanced from a financially bank-centric world—must eventually be provided with a cost-effective means to receive, store, and spend their electronic value.[5] The second challenge is that the EFT mandate applies internationally as well as domestically. Given the need for each international payment to settle in two currencies and countries, the ability to provide efficient cross-border EFT will vary considerably from country to country.[6]

Perhaps more challenging to many financial institutions is that electronic payments to vendors, unlike those to individuals, will require electronic remittance data to accompany the payment itself. This information goes beyond simple routing instructions and includes the information—such as purchase order or invoice numbers—necessary for the vendor to apply the payment correctly. According to a study by ***Booz-Allen & Hamilton,*** only slightly more than 5 percent of financial institutions were able to receive and forward such remittance information as of early 1997.[7] Developing this capacity will therefore be an industrywide challenge. Once again, there is an opportunity disguised as a cost. The development and implementation of *financial electronic data interchange (financial EDI)* standards will enable financial institutions to retain control of—and add value to—business-to-business transactions when commercial payments migrate to the Internet.

The U.S. government is not alone in seeking an end to costly paper-based payments. Vendors too are pressing for the elimination of the slow check presentment process wherein checks must physically be moved from vendor to vendor bank to issuer bank before funds can be transferred. *Point of sale check truncation* shortens this process by converting the check into an electronic payment at the point of sale, leaving the customer with an executed check and the vendor with a transaction that will settle like a debit card—and in doing so eliminates much of the potential for check fraud. While this process is beginning to displace physical presentment, the outlook for banks is mixed. As the volume of checks that must be physically handled decreases, so too will the income from float and the returns from past investments in check-handling capacity.

Large-Value Payments: Making the World a 'Good and Final' Place

Unlike small-value payments, the issues surrounding large-value payments are not strategic ones for banks, and less technological wizardry pervades them. Instead, the common factor is the systemic risk posed by payment failures. For this reason, regulators—particularly the Federal Reserve and the world's other central banks—take very seriously the payments "plumbing" that is otherwise obscure even to many bankers. In an

[4] Depending upon card brand and SET version, consumer certificates may be required as well.

[5] Because of resistance from bankers and benefit recipients, compliance waivers are envisioned that will make the program largely voluntary until the details of the special electronic transfer accounts (ETA) are worked out.

[6] www.fms.treas.gov/eft.

[7] *Remittance Data Study,* Booz-Allen & Hamilton; www.fms.treas.gov/eft/remit.html.

electronic and intangible world where a bank's accumulated exposures can routinely exceed its equity, the overriding objective for payment system designers, users, and regulators is "good and final" payment—a term referring to funds that are both irreversible and fully collected.

Recognition is building concerning the payment system's *vulnerability* and just how critical it is to the U.S. economy. An October 1997 report issued by the ***President's Commission on Critical Infrastructure Protection (PCCIP)*** warned that "the nation's core payment systems…seem to present a serious physical vulnerability within the financial system."[8] The source of that vulnerability, in the eyes of the commission, stemmed not so much from a lack of security as from the critical importance of those systems to settling financial transactions throughout the economy and the lack of available alternatives if they failed. As such, it was feared that the payment infrastructure provides an enticing target for cyber-terrorists and information warriors and that such threats will only grow in the future.

Concentration refers to the fact that while banks are central to payments and all enjoy equal access to Federal Reserve payment services, some banks are clearly more central than others. According to March 1998 Call Report data, a mere 25 banks hold nearly two-thirds of the U.S. banking industry's transaction accounts.[9] Should one of these large banks suddenly fail, its inability to fund settlements could result in a loss of payment system liquidity and disruption of domestic and foreign financial systems alike. While this concentration is not new, what *is* new is the considerable increase in concentration that the new megamergers promise.[10] How and whether to inoculate the payment system from the weight of these super-institutions will become an issue for the regulatory community.

The criticality of a nation's payment system is not confined within its own borders. Because of globalization and the increasing velocity of payments, threats to one country's system become threats to those of other countries as well. There are a number of these emerging cross-border concerns. The most immediate and visible is the *Year 2000* or *Y2K problem*. Because banks and the payment networks that join them are heavily computerized, the latent points of vulnerability to software and hardware failures have grown factorially with the number of interconnected internal and external systems. In this context, the concern is that any banks that have failed to correct their Y2K exposures will transmit that failure via the payment system to other institutions throughout the world, delaying or even arresting settlements in the process. This concern is heightened because, in both Asia and Europe, bank resources needed to fix Y2K are being consumed instead by more immediate problems. In Asia, it is surviving the decay in currencies and credits. In Europe, it is *the Euro,* which rates as an issue in itself—demanding the modification

Emerging Issues in Large-Value Payments

Payment system vulnerability. According to the PCCIP, the nation's core payment systems may present a serious physical vulnerability within the financial system.

Payments concentration. Payment services are concentrated in a relatively few large banks, and that concentration is growing as megamergers are creating a smaller number of superbanks.

Y2K. The Year 2000 problem threatens to disrupt payments by transmitting computer problems via the payment system from banks that have not fixed the problem to banks that have.

The Euro. Bank and interbank systems in Europe and abroad must be modified to accept the Euro. In addition, the resources required to implement the Euro must be diverted from resolving Y2K problems.

Foreign exchange settlement risk. Foreign exchange transaction exposures can be many times a bank's capital. The failure of a major creditor to pay could drain essential liquidity from international markets.

Achieving finality in gross payment systems. Making a given country's domestic payments irrevocable and immediate is a major step in avoiding the international spillover of internal financial crises.

Collateralizing net payment systems. According to the BIS, systems that do not permit immediate final settlement must be collateralized to ensure the eventual satisfaction of member positions in the event of a participant's failure. Like finality, collateralizing helps prevent the internationalization of a domestic failure.

[8] www.pccip.gov/report_index.html, p. A39.

[9] Transaction accounts, in essence, are those accounts from which third-party payments can be made. The data used here are based only on transaction accounts held on behalf of other public and private financial institutions here and abroad—accounts from which interbank transfers are made.

[10] As of March 31, 1998, the top three U.S. bank holding companies held approximately 25 percent of all reported interbank transaction deposits. The mergers announced through June 30, 1998, would increase that concentration to over 34 percent.

of bank and interbank payment systems throughout the world in anticipation of that currency's January 1, 1999, launch.

Although less well known to the general public, *foreign exchange settlement risk* remains of considerable concern to the Bank for International Settlements (BIS) and its member central banks. This exposure arises because cross-border payments, unlike domestic payments, have no single central bank to guarantee settlement, leaving U.S. banks exposed to their foreign counterparties and correspondents—sometimes for several days—for more than $244 billion in daily trades.[11] Potential solutions to this problem include netting—offsetting risks so that only the differences are due—and simultaneous settlement. An ongoing effort by several of the world's largest banks to provide simultaneous cross-border settlement, a project known as the Continuous Linked Settlement Bank, will require considerable international cooperation since it will effectively span the central banks in each country whose currency it settles.

Efforts by individual countries to solidify their payments infrastructure are ongoing as well. *Achieving finality* in payments—a term meaning that a completed payment is irrevocable—is the most prevalent, and recognizes that payments must be irreversible to establish the liquidity for those that follow. One way of speeding up finality is with real time gross settlement (RTGS) systems. "Real time" means that there is no delay in settlement. "Gross settlement" means that transactions are settled in the full amount for which the original payment instructions were entered. FedWire, the U.S. Federal Reserve's large-value payment system, is an RTGS system. Many other countries also have them, and still more are developing or planning them. Complementary to RTGS systems are net or provisional settlement systems, which total up the accumulated debits and credits for each participant over the course of some period—usually one day, offset them against each other, and settle at the end of the period. The New York Clearing House's Clearing House Interbank Payment System is one such system. Although their use leads to smaller, or *netted,* settlement amounts for each participant and substantially lower liquidity demands on the payment system as a whole, payments in such systems are not final until the last creditor pays. Thus, there is a daily threat of recalculation and a potentially fatal change in mem-

[11] *Settlement Risk in Foreign Exchange Transactions,* March 1996, and *Central Bank Survey of Foreign Exchange and Derivatives Market Activity,* May 1996; Bank for International Settlements; www.bis.org/publ.

Sources of Additional Payment System Information

Electronic Bill Presentment

Checkfree . . . . . .www.checkfree.com/ebill
Microsoft-First Data
Corp . . . . . .www.msfdc.com

Digital Cash and Stored Value

Cybercash . . . . . .www.cybercash.com
Digicash . . . . . .www.digicash.com
Mondex . . . . . .www.mondex.com
VISACash . . . . . .www.visa.com

Securing Online Transactions

Certicom . . . . . .www.certicom.com
Entrust . . . . . .www.entrust.com
RSA . . . . . .www.rsa.com
SETCO . . . . . .www.setco.org

Certificate Authorities

Certco . . . . . .www.certco.com
Digital Signature Trust . . .www.digsigtrust.com
GTE Cybertrust . . . . . .www.cybertrust.gte.com
Verisign . . . . . .www.verisign.com

Electronic Funds Transfer '99, Financial EDI, and POS Check Truncation

National Automated
Clearing House
Association . . . . . .www.nacha.org
U.S. Treasury Financial
Management Service . .www.fms.treas.gov/eft

Payment System Vulnerability

President's Commission on
Critical Infrastructure
Protection . . . . . .www.pccip.gov

The Euro, Foreign Exchange Settlement Risk, Payments Finality, and Collateralization

Bank for International
Settlements (BIS) . . . .www.bis.org/publ
Federal Reserve Board
of Governors . . . . . .www.ny.frb.org
New York Clearing
House Association . . .www.chips.org
U.S. Federal Reserve . . . .www.bog.frb.fed.us

bers' liquidity positions if a major creditor bank fails. For such systems, the BIS is encouraging member *collateralization* levels sufficient to cover at least one, and preferably two, of each system's largest net creditor banks at any one time.[12] While these are not new issues in developed nations, the increasing extent to which financially underdeveloped and underregulated countries are involved in global payments confers new importance on the development of finality and collateralization in payment systems worldwide.

Differing Perceptions, Common Threat

Banks are united neither in their perceptions of these issues nor in their desire for regulation to address them. With respect to small-value payments, large and small banks have disagreed over whether the Federal Reserve should withdraw from providing retail payment services—a debate that ended in favor of the small bank faction earlier this year when the Fed announced that it would remain an active and, according to some large banks at least, a subsidized competitor in clearing and settlement. There also has been disagreement, again along lines of size, over whether the issuance of new products such as stored value cards should be limited to regulated depository institutions. In large-value payments, the differences are due more to relevancy than competition. Few small banks will feel compelled to address foreign exchange exposures or the vulnerabilities of the national and international payments infrastructure.

Whatever their individual perceptions of the issues surrounding the payment system, all banks are susceptible to its interruption. Likewise, they are strategically vulnerable—individually and as an industry—if they fail to preserve their role as a trusted gateway for the settlement of their customers' obligations. This is perhaps the most critical of all payments issues facing banks, for while their daily operations may depend on their continued success in maintaining the payment system's dependability, nothing short of their payments franchise may rest on their ability to market this success to their customers as a feature essential to the entire range of current—and future—payment services.

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[12] *Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries* (Lamfalussy report), November 1990; BIS; www.bis.org/publ.

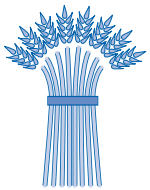
The Federal Agriculture Improvement and Reform Act of 1996 Increases Risks and Opportunities

- **The Federal Agriculture Improvement and Reform Act of 1996 (FAIR Act) has had immediate effects on farmers in the Region, giving them choices in planting and ensuring fixed transition payments, but increasing their financial risks.**

- **The FAIR Act will have long-term effects on the Region as well; wheat-growing states such as the Dakotas and Kansas that have few planting choices and high dependence on government assistance have the most to lose.**

- **The direction for farm policy in 2003 will depend on how the FAIR Act has performed and the economic and political conditions prevailing at the time.**

The Federal Agriculture Improvement and Reform Act of 1996 (FAIR Act) will have significant ramifications for many farmers in the Region and the bankers who lend to them. The FAIR Act took a major step toward greater market orientation in agricultural policy by removing most restrictions on farmers' planting decisions for major crops and eliminating the system of deficiency payments that protected farmers from low crop prices. In the seven states of the Kansas City Region, 1,381 of the 2,447 financial institutions are farm banks.[1] These institutions face greater risk under the FAIR Act because of increased volatility of farmers' incomes and potential negative effects on farmland values.



The farms of the Kansas City Region had the most profitable year of the decade in 1996, as short supplies led to unusually high prices for grains, soybeans, and hogs. Export demand in each of these sectors helped support producers' incomes. Production flexibility payments of $1.9 billion, as provided for in the FAIR Act, brought them additional income that would not have been paid under the previous system of deficiency payments because of the high grain prices prevailing in 1996. Grain prices moderated in 1997, and net farm income declined in all of the states but remained above the average for the 1990s. **North Dakota** experienced the poorest performance in 1997, mainly because of low yields in the disease-ravaged wheat crop. The United States Department of Agriculture (USDA) currently forecasts a 7 percent decline in national net farm income for 1998. The historical experience of the 1990s indicates that the Region may experience a slightly greater decline for 1998, but it still would be above the average for the 1990s. Prices for wheat, corn, and soybeans will likely average below 1997 prices because of high levels of crops in storage, large planted acreage, competition from other exporters, and weakened demand from the Asian countries. In recent years, Asian countries have accounted for 40 percent of U.S. agricultural exports.

While highly variable weather conditions in 1998 have introduced a large element of uncertainty into forecasts of the harvests of corn and soybeans for the Region, the USDA projects corn and soybean harvests larger than those in 1997. The Region seems to have been spared the severe drought conditions that have affected the Southeast and Southwest.

Background: FAIR Act Represents a New Direction for U.S. Farm Policy

Since the Agricultural Adjustment Act of 1933, the federal government has employed various strategies of price support and supply restriction to boost farm income. Prior to the 1996 reforms, the farm program included a system of deficiency payments for major crops. Commodities covered by the program were corn, sorghum, wheat, barley, oats, rice, and cotton. Under this system, the secretary of agriculture announced a target price at the beginning of the year, and farmers were paid the difference between it and the market price of the commodity at the end of the year. The deficiency

[1] Farm banks are defined as those with more than 25 percent of their loan portfolios in agriculture or agriculture real estate lending.

payments served as a risk-reducing mechanism, offsetting fluctuations in commodity prices.

In the 1980s, the system of deficiency payments came under increasing criticism. Federal agricultural programs were no longer perceived as an efficient and equitable means of providing income support for farmers. In addition, because deficiency payments were based on market prices, the largest producers received the largest benefits from the program, belying its justification as an income support program. Deficiency payments began to be seen as a drain on the U.S. Treasury. Farm program payments peaked at $11.7 billion in 1988, as an appreciating dollar choked off export demand for grains and depressed prices. By 1995, a consensus had grown in Congress in favor of a substantial reform of U.S. farm policy, resulting in the passage of the FAIR Act of 1996.

The FAIR Act introduced a number of changes in farm policy that will likely have important effects on the agricultural economy of the Region. The FAIR Act:

- Decoupled program payments from *most* production decisions. It ended the practice of paying farmers deficiency payments when prices of program commodities fell below target prices. During the first part of the 1990s, more than 90 percent of the crops grown in the Region, measured by value, qualified for the deficiency payment program. Following the passage of the FAIR Act, the farmers' effective price became equal to the market price.

- Eliminated federal authority to control the supply of program commodities by limiting planted acreage. Under previous farm bills, farmers were required to "set aside" a portion of their production acreage to qualify for deficiency payments. Set-aside requirements could be as high as 15 percent of base acreage.

- Established a schedule of fixed income support payments known as "production flexibility payments," based on farmers' historical pattern of production. Farmers receive these payments without regard to their present production decisions. These payments will decline over the life of the FAIR Act until its expiration in 2002.

- Included other provisions, such as phasing out dairy price supports and reauthorizing the Conservation Reserve Program, which pays farmers to withhold 36 million acres of environmentally fragile land from production.

Chart 1 shows the value of deficiency payments received by farmers in the Region in the 1990s and the schedule of production flexibility payments for the life of the FAIR Act.

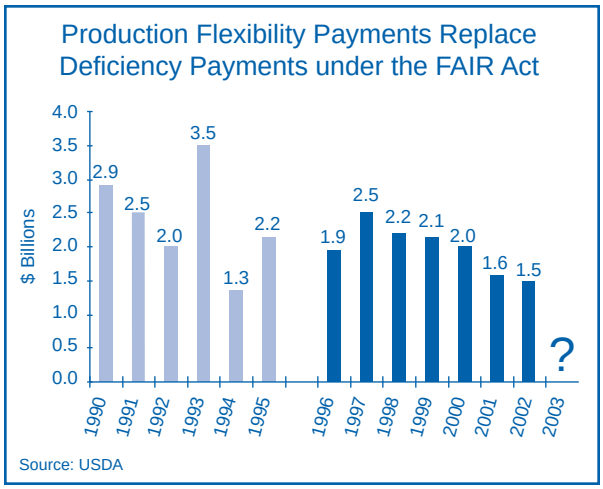
In the 1990s, deficiency payments to the farmers of the Region averaged $2.39 billion annually; the production flexibility payments will average $1.89 billion annually. In 1996, the first year of the FAIR Act, farmers in the Region and the nation attained record levels of farm income, thanks to high commodity prices and fixed government transition payments.

The FAIR Act Has Had Immediate Effects on Farmers' Economic Decisions

Early in 1997, the USDA funded a study[2] of the effects of the FAIR Act, based on discussion panels of farm operators and professional farm managers. More than half of the panelists identified the "elimination of planting restrictions" as a factor in their 1997 management decisions, and nearly half expected the policies to affect their decisions in 2000 to 2002. Panelists also identified the predictability of production flexibility payments as a factor supporting rising demand for and prices of farmland.

[2] Lyle P. Schertz and Warren E. Johnston, "FAIR Act 1996: Managing Farm Resources in a New Policy Environment," *Agricultural Outlook,* August 1997, pp. 18–21.

Chart 1



Farmers' uses of the flexibility payments suggest that they do not believe that government support will disappear in 2003. Most are not saving payments for use in times of lower commodity prices. While some panelists indicated that payments were being used for productivity-enhancing improvements such as land leveling or irrigation, others testified that the payments were being used to acquire more land.

Finally, the panelists recognized the increased price risks and resultant importance of greater sophistication in marketing crops. Eighty-five percent of the panelists identified "increasing risks" as one of the "major changes that have occurred in the economic and financial setting for farming" on the survey administered in the study. Most observers believe that the FAIR Act will result in greater volatility for crop prices, as the absence of planting restrictions will lead to greater variation in acreage planted each year. Greater income volatility will also result, as deficiency payments based on price will no longer counteract changes in market prices.

The FAIR Act Will Have Long-term Effects That Vary Across the Region

In another study[3] of the FAIR Act, USDA economists conclude that while the aggregate impact of the law will be relatively slight, it will affect the structure of the farm sector. The changes brought about by the law will not affect all farmers or all parts of the Region equally.

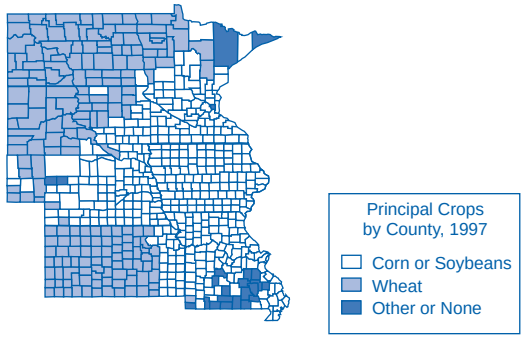
"Freedom to Farm" Means More to the Corn-Growing States than the Wheat-Growing States

The long-term effects of the FAIR Act will be influenced by the differences in the farm economies of different areas of the Region. Chart 2 indicates the geographic variation in crop agriculture among the seven states.

Regional production patterns reflect the agronomic characteristics of the land and other costs of production. The white areas in the map are counties in **Iowa, Missouri, Nebraska,** and southern **Minnesota** where corn or soybeans are the principal crop. The areas lightly shaded are wheat-growing counties whose limited rainfall prevents the successful cultivation of corn without irrigation. In **Kansas** the principal crop is winter wheat, which is planted in the autumn and harvested in the summer. The Dakotas and northern Minnesota are home to spring wheat, which is planted in the spring and harvested in the autumn.

CHART 2

The Dakotas and Kansas Are Primarily Wheat-Growing States; Others Have Choices



Source: State Agricultural Statistics Offices

The idea of "freedom to farm" has the most value to farmers in the corn- and soybean-growing portions of the Region, who can freely alternate between those two crops, depending on weather conditions and market prices. In the states of the Corn Belt, including Iowa, Nebraska, and southern Minnesota, where land is suitable for growing either crop, many farmers grow both at the same time, or in alternating years.

Before 1996, each farmer participating in the deficiency payment program had an established crop-specific base acreage for feedgrains or wheat. Government payments were based on a five-year average of acreage planted to program crops. Soybeans, a crop that was not planted in significant volume until the 1960s, was not among the crops for which farmers received payments. Farmers were often unwilling to risk future deficiency payments by taking advantage of temporarily high soybean prices. As a result, soybean prices did not always provide enough incentive for farmers to try to meet the demand for the product. Following implementation of the FAIR Act, soybean planting increased significantly. Farmers planted a record 70.9 million acres of soybeans in 1997, a 10 percent increase over 1996. Iowa farmers increased their planting by 10.5 percent and achieved a record harvest in 1997.

[3] C. Edwin Young and Paul C. Westcott, *The 1996 FAIR Act Increases Market Orientation*. Agriculture Information Bulletin No. 726, August 1996. Washington, D.C.: United States Department of Agriculture.

The corn-producing states enjoy another important advantage over the wheat-producing states. Because much of the corn crop is fed on-farm to hogs, beef cattle, and dairy cattle, total farm receipts are less sensitive to volatility in crop price. Livestock production is significant in Iowa, Minnesota, and Nebraska. In many cases, the corn grown in these states is not a direct source of income to farmers but a factor of production in the livestock enterprise. One analyst estimates that 30 to 40 percent of Iowa's corn crop is fed on-farm. Wheat, by contrast, has value only as a cash crop, sold for human consumption.

Farmers in the wheat-growing states face fewer alternatives under the new freedom of the FAIR Act than the corn and soybean farmers of the Region. Fewer crops can thrive in the dryer climate of the Great Plains. North Dakota appears to be especially vulnerable to reductions in government payments mandated by the FAIR Act, as its wheat sector has deteriorated over the past five years. After a record harvest of 473 million bushels in 1992, its wheat harvest declined to 268 million bushels in 1997. Persistent disease, especially wheat scab, has hurt yields and crop quality in the state. Scab disease has persisted despite the efforts of the USDA and state agricultural officials to eradicate it. According to USDA surveys, planted wheat acreage in North Dakota declined to 9.67 million acres in 1998, 16 percent less than in 1997.

Farmers are planting crops such as soybeans and canola, but these crops are not as well suited to North Dakota as wheat. Limited rainfall works against soybeans in most parts of the state, and canola, a newly developed oilseed, requires a combination of near-perfect weather and intensive management to achieve a profitable yield. Further evidence of the state's strong reliance on wheat is that more than 9 million acres were planted for 1998 harvests, despite forecasts by North Dakota State University that farmers' cost per bushel may exceed the price by more than $.50.

Dependence on Deficiency Payments Varies Across States

Table 1 shows the relative importance of deficiency payments in the net farm income of each of the Region's seven states, and the proportion of farm banks in the state. The first column was calculated by dividing total deficiency payments in 1995 by net farm income for that year for each state. North Dakota appears to present the greatest risk to banks because of the policy change.

USDA economists simulated the effects of the FAIR Act in the Great Plains, including the Dakotas, Nebraska, and Kansas.[4] For the long-run, normal-price scenario with average demand growth and average production flexibility payments through 2002, short-run net cash incomes to farm operators declined 29 percent, while long-run residual returns to the sector declined 18 percent. The projected decline in returns results from the relatively high dependence on wheat farming in the Plains and the lack of profitable alternative crops in Kansas and the Dakotas.

In a 1997 study[5] of the effect of government programs on farmland value, a team of USDA economists estimated that cropland prices in North Dakota would decline as much as 69 percent if the programs were entirely abolished. This estimate is an upper bound, which could be tempered if relaxed planting restrictions let farmers find ways to gain productivity. As argued above, however, North Dakota is not well positioned to benefit from the new flexibility.

[4] David H. Harrington and Robert Dubman, "Agriculture and New Agricultural Policies in the Great Plains," *Rural Development Perspectives,* Vol. 13, No. 1, Spring 1998.
[5] Charles H. Barnard et al., "Evidence of Capitalization of Direct Government Payments into U.S. Cropland Values," *American Journal of Agricultural Economics,* Vol. 79, No. 5, 1997.

Table 1

North Dakota Depended Most on Deficiency Payments and Also Has the Highest Proportion of Farm Banks

State	Deficiency Payments to Net Farm Income 1995 (%)	Farm Banks to Total Institutions (%)
North Dakota	40	83
Missouri	40	26
Minnesota	28	45
Iowa	27	71
Kansas	24	59
Nebraska	22	79
South Dakota	20	69

Note: Refers to institutions headquartered in each state.
Sources: USDA, Bank and Thrift Call Reports

An analysis[6] of the effect of the FAIR Act on Minnesota concludes, "Most farmers will receive less in transition payments than they have under the combination of target price, deficiency payment program, and disaster relief program…. Even if the periodic disaster payments are removed from the 1993–1995 payment calculations, production flexibility contract payments will fall short…even counties receiving the most under FAIR's provisions will receive substantially less than in the recent past." The estimates of the value of cropland in the absence of any government programs show a 20 percent decline in the northern part of the state and a 30 percent decline in the southern part. Less concentration of crop types, the presence of soybeans, and the importance of livestock in the state result in a less serious impact than seen in North Dakota.

Reduced government payments will have an important impact in Iowa, which received more than 23 percent of the Region's total deficiency payments in the 1990s. The study of land value estimated that Iowa's cropland prices would decline by 30 percent without government payments. The true effect may be less significant, however, given Iowa's ability to alternate between corn and soybean production.

The path of farm policy after the Year 2002 is uncertain, and predictions reflect the divergent views of those who supported passage of the FAIR Act. Authors of the legislation saw the flexibility payments as compensation to farmers in exchange for giving up their dependence on deficiency payments. Darryl Ray of the University of Tennessee argues, "But many farmers and farm groups view the lucrative payments of FAIR as a windfall and *not* as transition payments. Those with that view believe FAIR was the best deal available at the time, and there will be opportunities to revisit the legislation and perhaps move it back more to their liking." The direction for farm policy in 2003 will depend on how the FAIR Act has performed and on the economic and political conditions prevailing at the time.

Jeffrey W. Walser, Regional Economist

[6] Thomas Stinson and Barry Ryan, "The New Farm Payments: What's in Store for Minnesota?" *Minnesota Agricultural Economist,* No. 687, Winter 1997.

Regional Banking Conditions

- **Financial results from the first quarter of 1998 show that, in aggregate, farm banks in the Kansas City Region continue to perform well.**
- **However, in the intermediate term, the 1996 Federal Agriculture Improvement and Reform Act of 1996 will increase farmers' income volatility and, in turn, could affect the Region's farm banks.**
- **In this environment, risk-management practices, both traditional and contemporary, have become much more important for farmers and the banks that lend to them.**

Farm Banks Continue to Perform Well Except in North Dakota

In the Kansas City Region, 1,381 of the 2,447 FDIC-insured financial institutions are farm banks.[1] In aggregate, these institutions continue to perform well, although well-known trouble spots exist in **North Dakota.** As of March 31, 1998, farm banks in the Region reported strong first-quarter earnings, healthy capital positions, and stable levels of past-due loans. Table 1 shows selected aggregate financial results for farm banks in the Region for the last three calendar first quarters.

While North Dakota's farm banks continue to earn less (return on assets of 1.12 percent) and have less capital (10.09 percent) than those of other states in the Region, their performance remains relatively strong. However, as illustrated in Chart 1, farmers' continued troubles in North Dakota are reflected in farm banks' elevated levels of loan delinquencies in the first quarter of 1998.

[1] Farm banks are defined as those with more than 25 percent of their loan portfolios in agriculture or agriculture real estate lending.

Table 1

First-Quarter Operating Results Have Been Consistently Strong for the Region's Farm Banks

	Farm Banks, Quarter-End		
	3/96	3/97	3/98
Return on Assets (%)	1.24	1.25	1.28
Leverage Ratio (%)	10.63	10.72	10.73
Delinquency Ratio (%)	3.19	3.12	3.11

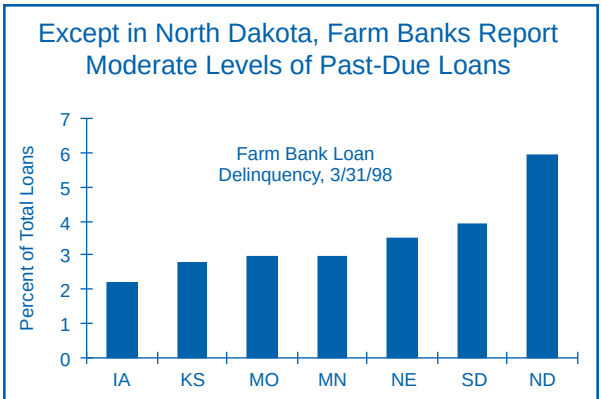
Note: Delinquency ratio is all loans past due 30 or more days and loans on nonaccrual status divided by total loans.
Source: Bank and Thrift Call Reports

Although farm banks in aggregate continue to perform well, in the intermediate term the Federal Agriculture Improvement and Reform Act of 1996 (FAIR Act) will have significant ramifications for many farmers in the Region and the bankers who lend to them. As discussed in ***The Federal Agriculture Improvement and Reform Act of 1996 Increases Risks and Opportunities,*** the FAIR Act eliminated the system of deficiency payments that historically has protected farmers from low crop prices. As a result, farmers' incomes are likely to become more volatile, which could in turn affect their ability to repay their loans. Risk-management instruments are becoming very important tools for farmers to use to manage their income volatility.

Under the FAIR Act, Risk-Management Tools Will Be More Important than Ever

Increased income volatility caused by reduced government support and the elimination of planting restrictions makes effective risk management essential to

Chart 1



Note: Delinquency ratio is all loans past due 30 or more days or on nonaccrual status divided by total loans.
Source: Bank and Thrift Call Reports.

farmers and the banks that lend to them. Fortunately, farmers can employ many tools to help manage the increased risk.

Traditional Risk-Management Tools

Traditionally, farmers have relied on fairly simple tools to manage risk. For example, diversification through planting more than one crop has allowed farmers to manage or reduce both price and production risks. Farmers have stored crops during periods of low prices in expectation of higher prices in the future, which reduced revenue variability. Farmers also have relied on federal crop insurance, a simple risk-management tool that has been in widespread use since at least 1980. Crop insurance can help ensure a stable revenue stream; if farmers insure part of their expected production, they can forward price it with greater certainty. The FAIR Act created considerable demand for crop insurance. In 1994, the Federal Crop Insurance Corporation (FCIC) serviced 800,263 policies nationwide; in 1996, the first year of the FAIR Act, the number rose to 2,254,599.[2]

Other tools include forward and futures contracts. Farmers have been able to lock in prices for their products prior to harvest by forward contracting with their local elevators. Futures contracts allow farmers to offset their position in the cash market and lock in a guaranteed return for their products.

Contemporary Risk-Reduction Tools

In response to the increased risks farmers incur because of the FAIR Act, two new risk-reduction tools are available: crop revenue insurance and off-exchange ("trade") options contracts. These tools have the potential to reduce risks to farmers dramatically.

In 1996, a pilot program called Crop Revenue Coverage (CRC) was created by a private insurance company and reinsured by the FCIC to expand crop insurance to cover price declines in addition to yield shocks. CRC offers a revenue guarantee based on expectations of prices and farmers' yields. In addition, CRC offers "replacement coverage," whereby coverage increases if prices increase. For example, if the farmer has a short crop and prices at harvest are higher than projected, the farmer's crop yield loss is indemnified at the higher price. This coverage allows the farmer to purchase replacement bushels in the marketplace at harvest time, enabling performance on forward contracts. CRC is currently offered for corn, soybeans, grain sorghum, cotton, and wheat, but it is not available in all areas of the Region.[3]

Because CRC is relatively inexpensive and allows farmers to benefit from rising crop prices, it has been a success in the Region. In its first year, approximately 90,000 CRC policies were sold in **Iowa** and **Nebraska,** the two states covered by the pilot program at that time. The policies covered about one-third of the corn and soybean acreage planted in those two states.[4]

Another innovation is a pilot program in which trade options may be written on agricultural products. Until recently, farmers could use only standard options offered by an exchange. Trade options, on the other hand, are privately negotiated, customized contracts that have been used for decades by producers and processors of metals, energy, and financial products, but have been banned for agricultural products since 1936. In April 1998, the Commodity Futures Trading Commission (CFTC) adopted a pilot program to permit agricultural trade options. This program allows grain elevators that register with the CFTC to offer options contracts to local farmers. During the pilot program, the CFTC intends to study the arrangement to ensure that the fraud and abuse that caused these contracts to be banned does not recur.

Trade options allow farmers to set a minimum price for their crops by giving them the right, but not the obligation, to deliver a certain quantity of crops within a particular time frame for a set price known as the "strike price." Farmers will pay the elevator a premium for this right. If, throughout the duration of the option contract, the local cash price is higher than the strike price, the farmer will abandon the option and sell to the highest bidder. However, if the cash price is below the strike price, the farmer will deliver the crop to the elevator at the strike price. Therefore, farmers can use trade options to set a minimum price for their crops while retaining the ability to benefit from price increases. Unlike

[2] Ken Ackerman, "New Agricultural Risk Management Insurance Tools," *USDA Agricultural Outlook Forum,* 1997.

[3] According to the U.S. Department of Agriculture's (USDA's) Risk Management Agency, in the 1998 crop year the CRC pilot program is available for wheat, corn, and soybeans in all of the Region's states except North Dakota. Wheat coverage is available in selected North Dakota counties. Coverage for corn and soybeans is not available in North Dakota.

[4] Joy Harwood, Dick Heifner, Keith Coble, and Janet Perry, "Alternatives for Producer Risk Management," *USDA Agricultural Outlook Forum,* 1997.

futures contracts, put options do not force buyers to raise cash should prices move down before the harvest.

In May 1998, legislation was introduced in the Senate to end the CFTC's ban on agricultural trade options, effectively making its pilot program permanent. The legislation also would allow financial institutions to offer such products. While the legislation appears unlikely to pass this year, the prospect is that banks could end up offering hedging products to their farm borrowers. On the upside, banks could ensure that their customers are appropriately hedging their farm commodities. Banks could then offset their resulting trade option positions by purchasing offsetting options on exchanges. On the downside, the ability to sell agricultural options could expose banks to lender liability problems.

Contract Production

Another possible risk-reduction strategy for farmers is contract production, a form of vertical integration in which an agribusiness company coordinates all segments of production, from planting to the consumer's shopping cart. In a contact production setting, farmers are given inputs for production by the agribusiness and then guaranteed a price for their product. While such an arrangement limits farmers' planting flexibility and income potential, it stabilizes their revenue streams, making them more attractive borrowers to financial institutions. Contract production is widespread in livestock and poultry farming, and it is increasingly being offered on a wide range of crops.

Risk-Management Techniques Can Benefit Both Borrowers and Lenders

Because income volatility may adversely affect borrowers, banks may find it necessary to ensure that farmers are employing risk-management tools effectively. It is especially important for the Region's small banks to do so, since their typical borrowers—smaller farm operators—are less likely to employ such tools than larger operators.[5] Small operators tend to rely on intuitive methods (such as keeping cash on hand and staying out of debt) rather than hedging techniques to reduce risk, even though more complex techniques result in higher incomes.[6] In some instances, banks may be the primary impetus for farmers to use risk-management tools. For example, in a recent panel discussion with farmers conducted by the USDA, many farmers stated that they would purchase unsubsidized crop insurance only if their lenders required them to do so.[7]

Risk management is especially important for farmers who carry significant amounts of debt. Operating with less equity, they are more likely to face financial ruin during years of low prices or yields. For financial institutions, this description would apply to most of their agricultural borrowers.

Many banks are requiring farmers to have business plans, which include risk-management strategies, before making loans to them. To help farmers understand the myriad of tools available in the marketplace, some rural bankers are offering risk-management seminars. In some cases, banks are allowing farmers to use part of their operating loans to cover risk-management expenses, such as option premiums or margin calls. In such situations, banks should ensure that the risk-management tools are used appropriately and do not increase overall risk.

Implications: Prudent lenders will consider the immediate and long-term implications of the FAIR Act for their farm borrowers. Cash flow projections for operating loans must consider the absence of price supports for major commodities and the possibility that federal disaster relief may not be available should there be a crop failure. Highly leveraged borrowers especially should be encouraged to used risk-management tools. Repayment projections for intermediate and long-term loans must take into account the elimination of production flexibility payments in 2003. Additionally, consideration should be given to a potential drop in farmland values, and therefore collateral margins, when the FAIR Act expires. Political and economic conditions may cause Congress to alter the FAIR Act, but prudent bankers will be prepared to operate in a new environment in which government support for their farm clients may be greatly reduced.

John M. Anderlik
Financial Analyst

[5] The USDA Economic Research Service, using preliminary data from its 1996 Agriculture and Resource Management Study, found that small farm operators (under $50,000 in sales) use all strategies at a lower rate than larger farm operators.

[6] USDA Economic Research Service, using preliminary data from its 1996 Agriculture and Resource Management Study.

[7] Lyle P. Schertz and Warren E. Johnston, "FAIR Act 1996: Managing Farm Resources in a New Policy Environment," *Agricultural Outlook,* August 1997, pp. 18–21.

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