EFFECTS OF CHANGING FINANCIAL MARKETS ON POLICY OF U.S. AGRICULTURE

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I am pleased to be invited to the University of Arizona and to join the list of illustrious participants in this series of seminars. U.S. agricultural policies for 1985 and beyond will be greastly influenced by changes in financial markets that occurred in the past decade and that are in prospect. My objective is to summarize changes of the past and those likely in the future, along with implications they hold for agriculture's policy requirements.

Finance issues recently have caught the attention of many of us, economists and farmers, along with those commercially related to farmers. In 1950, farm debt was but 9.2 percent of farm assets and interest payments only 3.1 percent of production expenses paid by farmers. The ratio of debt to assets slightly more than doubled between 1950 and 1982, to 18.6 percent. The ratio of interest to production expenses increased five-fold, to 15.6 percent!

As interest payments increased both absolutely and as a percent of production expenses, borrowers faced a new source of risk through variable interest rates. Nor were farmers alone with this risk. Attempting to lessen lending risks with variable interest rates, lenders found themselves with more farmers unable to serve debt obligations when due. Though small compared with nonfarm sectors, delinquency rates have become a concern for lender and borrower alike in the farm sector. Refinancing has shifted short term debt to long term.

Such changes as these have ushered in a new kind of financial environment for farmers and farm-related firms. In the future, policy issues generated by financial markets will acquire an importance comparable with those generated by commodity markets. Moreover, the issues will involve international as well as domestic financial markets. Perhaps

more to the point, agriculture's policy problems will involve interactions of financial markets with commodity markets, linking both to monetary and fiscal policy. It is a complex kind of environment, and one in which considerable institutional adaptation remains to be accomplished.

Changes in Domestic Financial Markets

In his foreward to E.S. Sparks' Agricultural Credit, T.N. Carver noted in 1932 that "during the whole of our colonial period and the first century of our national life... financing the farmer was one of our major economic problems" (playing) "a larger part in politics than any other question except those of slavery and tariff." The sources of problems have changed, but the concern continues.

Legislation of the 1930s, during the Great Depression, left us with a reformed and expanded farm credit system, with such fail-safe measures in our banking system as the Federal Deposit Insurance Corporation (FDIC), and with the foundation in place for our present Farmers Home Administration (FmHA). The legislation responded to the desperate stresses of the Great Depression, stresses that were reflected nowhere more severely than among financial institutions.

The farm credit system has roots extending back to the federal land banks and the joint stock land banks established at the end of World War I, and the federal intermediate credit banks in the early 1920s. The banking system as we now know it was reformed before World War I, with the formation of the Federal Reserve System. The FmHA was preceded by intermittent emergency crop and seed loans through the 1920s and the resettlement administration in the 1930s.

In those and earlier policy initiatives, farmers were singled out for preferential treatment as regards the terms of lending, for example in interest rates and/or in maturity of debt instruments. Also, owing to the rural location of banks lending to farmers, interest rates on farm loans tended to be lower and less volatile than interest rates paid in other economic sectors. Many changes of the 1970s and 1980s have in effect been in the opposite direction. Farmers' financial markets have been de-insulated from national and indeed international market factors, and preferential treatment has been questioned and in some cases removed.

Changes in financial markets affected and were affected by structural changes in the farm sector. In the 1950s and 1960s, changes in the farm sector were reflected in record high rates of off-farm migration and of consequent increases in size of farms. In each decade, one farm of every three

disappeared, the remainder growing proportionately in land size and more than proportionately in total capital. A growing number developed loan requirements larger than could be met by their rural banks.

In the mid-1960s there began a period of inflation that was to be of historic duration--more than 18 consecutive years in which the Consumer Price Index increased at an annual rate of three percent or more. Indeed, the inflation rate was only reduced to a bit less than four percent (3.8) by 1983. Few are willing to bet the farm that it will be held this low in the future. Before the 1960s, an inflation rate of three percent would have looked high!

The rampant and persisting inflation rate had profound effects in the farm sector. Between 1973 and 1982, farm land prices in Arizona increased by 223 percent, nearly twice the rate at which the Consumer Price Index increased in this period. Capital gains from increasing land prices encouraged the purchase of farm land and, in general, the use of leveraging strategies to accelerate growth in net worth. Financial risks grew with increasing commitments of cash flow to debt service. By 1980, financial risks were, for the first time since World War II, more important than business risk for farmers.

The value of total assets in agriculture grew apace and the value of real estate grew faster than the total. In 1950, real estate comprised 58 percent of the value of total farm assets; in 1970, 69 percent; and in 1982, 75 percent. The percentages are significantly higher in cash crop areas.

Liquidity also has diminished in more direct terms. In 1950, deposits and currency plus U.S. Savings Bonds were 10.3 percent of total farm assets. By 1970, they had declined to five percent; by 1982, to 1.9 percent. It is ominous to recall Wickens' report in the 1928 Yearbook of Agriculture that at that time less than two percent of farm assets were available as reserves or as a source of income independent of farming. Then (as now?) agriculture was (is?) over capitalized and farmers' portfolios left them ill equipped to respond to risks.

By 1982, borrowing restraint became evident among farmers, as they sought liquidity in reserve credit to offset diminished liquidity in other forms, especially in the presence of perceptibly higher risks from commodity prices and interest rates. Increased stability in credit supplies also contributed to the use of credit reserves as a risk response, while higher and variable interest rates reduced the appeal of borrowing.

It was in these conditions that the provisions of the Depository Institutions Deregulation and Monetary Control Act were debated. Already funds had begun to flow from banks and thrifts to brokerage firms who had followed the lead of Merrill Lynch, Pierce, Fenner and Smith, with accounts that automatically "swept" idle cash into interest-bearing government notes. The act was passed in 1980, followed by the Depository Institutions Act of 1982, and a veritable flood of deregulating legislation. Among many items, the Depository Institutions Deregulation and Monetary Control Act provided for phasing out maxima in interest rates paid on deposits, and authorized interest payable on transactions accounts. The Act also established uniform reserve requirements for all depository institutions.

The Depository Institutions Act of 1982 was largely a response to the severe problems of thrift institutions. With portfolios of home mortgages written at interest rates both low and fixed, and with a mismatch in the term structure of assets and liabilities, increased market interest rates had, in effect, reduced the equity of many thrifts to less than zero. The Depository Institutions Act provided for acquisition of ailing depository institutions across state lines and between banks and thrifts. Such regulatory changes have blurred the distinctions between banks and thrifts, have increased the capacity of both to compete with unregulated financial intermediaries for savings, and have opened new opportunities for the acquisition and use of funds. Current proposals to reorganize the regulation of federal financial intermediaries along functional lines seem a bit strange when those lines are fading.

Some observers ascribe the regulatory changes to the unprecedented period of inflation that began in the 1960s. There seems little question that the stresses generated by inflation were influential. Liquidity losses in farm and nonfarm sectors, and equity losses of thrifts accelerated the search for ways to modify financial markets. However, most of the changes made were clearly anticipated in recommendations of the Hunt Commission of the early 1970s and, indeed, of the Commission on Money and Credit, of the late 1950s. Thus the constraining effects of regulations born of the stresses of the Great Depression were recognized well in advance of the stresses of the "Great Inflation." In the attempt to limit the effects of excessive regulation, have we lost sight of the sources of risk from competitive lending and funds acquisition that gave rise in the first place to the regulations now subject to change?

In contrast with changes that affect depository institutions, those modifying the farm credit system have been relatively modest. In general, they have reduced lending

restraints and expanded the scope allowed the farm credit system for lending and cooperation with other lenders. Debates preceding the deregulations reopened old issues and renewed complaints of depository institutions with respect to regulations that affect their capacity to compete with farm credit system lenders, especially in the acquisition of loanable funds.

An example of such complaints is found in the "agency" status ascribed to securities sold by farm credit system lenders. Sales of such securities generate funds at a cost only marginally higher than is paid by the federal government as it sells treasury instruments. The use of the term "federal" in identifying the securities is perceived by some as the source of such cost advantages. On the other hand, farm credit system lenders could point to advantages from depository authority that are unavailable to them. An important example consists of gains from "feedback" effects enjoyed by depository institutions that lend. The debate was begun more than sixty years ago and is not likely to end soon.

These then are the kinds of changes that have so altered the domestic financial environment in which farmers make their decisions. The effects of the changes are far from having been worked out. The difference between farm and non-farm borrowers has been greatly lessened, in level of interest rates paid and in volatility of those rates. Farmers are increasingly subject to the same financial market factors as are non-farm borrowers.

A constructive result is that the institutional source of fluctuations in credit supply has become more stable. Although financial risks have risen in terms of interest rates, they have been lessened in terms of credit supply. For farmers who learn to use liquidity in the form of credit reserves for risk management, there may well be a net gain in efficiency. Risk management has become increasingly costly in the past decade. Credit management can offer at least a partial offset.

The environment in which the domestic financial markets evolve is itself far from static. Changes in international financial markets over the past three decades have been even more dramatic than those in domestic markets, and their potential implications for farmers as well as for non-farmers may be even more far reaching. A small example is the growing importance of foreign investors in securities sold by the farm credit system in the past few years.

Changes in International Financial Markets

The financial markets of the U.S. function as relatively large components of the international financial markets. The latter have evolved to provide means of settlement for internationally traded goods and services, and for the exchange of financial assets. Both have burgeoned in the past three decades. The result is an explosive increase in the international flow of capital. For each country the flow comprises a net balance of payments (exports less imports) plus net balance of loans (loans-and-savings-in less loans-and-savings-out) plus net currency exchange (home-currency-sold less foreign-exchange-bought). The international financial markets are made up of financial intermediaries in the net balance of loans and net currency exchange.

Financial intermediaries in the international financial markets are depositories for savers with demands for financial assets that are low in risk and high in liquidity. Funds from members of the Organization of Petroleum Exporting Countries (OPEC) have swollen the volume of savings available to the international financial markets. In turn, intermediaries in international financial markets lend to foreign borrowers with demands for loans of varying maturities. Developing countries (LDC's) and certain centrally planned countries (CPC's) have swollen the volume of international lending.

Transactions of intermediaries in international financial markets contribute to equilibrium in commodity markets between countries with positive net balances of trade and those with negative net balances of trade. The equilibration is accomplished as the intermediaries sell foreign (domestic) bonds in domestic (foreign) capital markets, as they make loans in "Eurodollars" (U.S. dollars held outside the U.S.) and issue "Eurobonds" (bonds denominated in currencies other than that of the country where held).

State and parastatal institutions often are dominant in commodity markets (for example, wheat). In contrast, nearly all participants in the international financial markets are private sector institutions. They evolve and respond to market incentives as modified by public sector interventions, such as loan guarantees, insurance, currencies transactions, etc.

The international financial markets as we know them are largely phenomena of the post-World War II era (Gisselquist 1981). Much of the early demand arose from countries whose currencies were and still are non-convertible, predominantly

the CPC's. As the international financial markets developed, increasing participation occurred from LDC's, on the demand side, and the more developed countries, on the supply side, along with members of OPEC.

Given the key role of the CPC's in the early stages, it is somewhat ironic that the international financial markets are largely devoid of public sector regulation and control. In large part, the autonomy doubtless is owing to the fact that there is essentially no public sector in existence that can assert the sovereignty necessary to exercise such regulation and control. Some have argued that this characteristic of the international financial markets likely results in considerable market efficiency!

Since World War II, and especially in the past decade or so, international financial markets have been called upon for heroic efforts, what with changes in exchange rate regimes, recycling of "petrodollars" and huge increases in demand for development financing. They have exhibited significant volatility, reflecting a variety of crises, actual or speculative. Following the aborted Suez campaign in 1956, demand increased for the U.S. dollar and fell for the British pound and French franc. A couple of years later, demand shifted from the U.S. dollar to gold and the deutschemark. In 1967, devaluation of the British pound made the U.S. dollar a first line reserve currency, an event of major significance for macroeconomic adjustment alternatives open to the U.S.

In 1972-74, the U.S. dollar was decoupled from gold, devalued and floated, in concert with other currencies defined in terms of the U.S. dollar. At the same time, oil prices were substantially increased, reversing at least temporarily a century-old pattern of decline in real terms. And the world faced an unaccustomed crisis in food reserves, arising from unanticipated supply conditions in exporting countries and the wheat trade negotiated between the U.S. and the U.S.S.R.

In 1978-80, a second-round increase in oil prices was accompanied by accelerated lending to LCD's by banks in the international financial markets, many of whom were depositories for OPEC funds. In effect, these banks provided riskless havens for OPEC surpluses and assumed high risk of lending to LDC's and CPC's. Current arrears among borrowers in some of those countries now have called the attention of these lenders, their stockholders, and citizens who face prospective liabilities through tax-supported relief to multilateral lenders, especially the International Monetary Fund.

Before turning to the multilateral lenders, let us note the cyclical behavior of interest rates in the international financial markets. In the absence of significant regulation or control, and without obligations in monetary or fiscal policy, international financial markets have transmitted and originated cycles in interest rates. As measured by LIBOR, interest rates rose in the boom period 1971-73, fell in the recession of 1974-76, rose again in 1977-80 and fell in the recession of 1981-82. If and as the current recovery continues and spreads, interest rates are likely to again increase. High interest rates in the U.S. can and do support rates in other countries through arbitrage in the international financial markets. Needless to say, future interest rates in the U.S. could be supported by high interest rates elsewhere.

Arrears among borrowers in the international financial markets have drawn attention recently to multilateral lenders, especially the Bank for International Settlement and the International Monetary Fund. The Bank for International Settlement is a regional central bank for European central banks and is especially active in transactions that involve LDC's linked with European countries. The International Monetary Fund and the World Bank are institutions originated in the Bretton Woods agreement after World War II. The World Bank is designed to finance economic development through two organizations. One is the International Bank for Reconstruction and Development (IBRD), which acquires funds from capital markets of member countries to finance development projects at market rates of interest. The other is the International Development Authority, the World Bank's "soft window" which makes loans at concessionary rates from funds contributed by donor countries.

The World Bank competes through the IBRD for funds in national capital markets. Responses to demands to finance development projects in east and southeast Asia and elsewhere are reflected in interest rates paid in the U.S. and elsewhere. Responses to demands for concessionary loans produce less direct effects, the specifics of which depend on the means taken by donor countries to finance their contributions to the World Bank's "soft window."

The International Monetary Fund was established to finance short term adjustments created by balance of payments problems so as to avert the chaotic trading that preceded World War II. Its objectives were to monitor and advise on changes in exchange rates and exchange practices, to borrow from and lend to member countries, and to use its "special drawing rights" to buy and sell currencies in the interest of stabilizing currency markets. It is useful to review

these objectives in the presence of current demands being placed on the International Monetary Fund.

The events summarized above, especially arrears among LDC and CPC borrowers, have thrust the International Monetary Fund into the position of a lender-of-last-resort, a counselor for debtor countries that are delinquent in debt service, and a coordinator among international financial market lenders in the management and rescheduling of delinquent loans. Much of the current rule of the International Monetary Fund is a far cry from objectives assigned to it in the Bretton Woods agreement.

Interest Rates and Exchange Rates

For the past five decades, interest rates appear to have varied cyclically about a trend that is upward. Some explain the cycle with a rational expectations hypothesis associated with contra-cyclical fiscal policies of public sectors. Some explain the upward trend by citing a gradual assumption by public sectors of business risk in private sectors. If, as suggested by the risk-balancing hypothesis, the policies increase tolerances for financial risk in the private sector, the bottom line is an increase in interest rate risk premium. Others would suggest an increase, over this period, in the marginal value product of capital.

A question important in the Great Inflation was why real rates of interest were so low. Between 1952 and 1958, before the Great Inflation, they ranged between 1.3 percent and 2.6 percent when calculated as the difference between the rate paid by the U.S. Treasury on three to five year obligations and changes in the Consumer Price Index. From 1959-72, that is, into the early stages of the Great Inflation, real interest rates drifted up to 3.83 percent and down to 2.02 percent. In five of the ten years beginning with 1974, real rates of interest were negative; increases in the Consumer Price Index exceeded the nominal interest rate paid on treasury bills.

A question of current importance is why real rates are so high. Nominal interest rates reached record highs in 1981. While abating in the next two years, they did so by less than the decline in Consumer Price Index. Real rates now are at historically high levels, more than twice those that existed in the "stable" 1960s.

Wilcox (1983) has explained low real rates of interest as a relationship that includes changes in the supply price of factors affecting the productivity of capital assets. He found that increases in factor supply prices in this

period reduced the demand for capital and thus were reflected in the decline in real interest rates. By extension, his results could link declines in supply prices since the period of his study (1952-79) to increases in the demand for capital and thus increases in the real rates of interest.

Darby (1975) has suggested the relevance of tax effects, important in the U.S. inasmuch as most interest received by savers has been taxable but most interest paid by borrowers is deductible for tax purposes. Ayanian (1983) confirmed the Darby hypothesis with an analysis of time series, 1952/I-1979/IV.

The Wilcox, Darby and Ayanian results are of great significance in interpreting the effects of changes in the farmers' financial environment. Wilcox's results suggest that factor supply prices modify the effects of real rates of interest on nominal rates of interest. The Darby hypothesis identifies the tax-deductibility of interest payments as a source of upward bias in the nominal rate of interest, especially important as (tax) bracket creep from inflation increases the averages of marginal rates of taxation.

Speculations on future interest rates vary widely. Much current attention is focused on prospective federal deficits. Some argue that the prospect of such large deficits support expectations that the inflation rate will creep upward again, feeding an increase in nominal interest rates. Should this occur, the Wilcox and Darby effects will simply magnify the increase.

In an interesting departure, Rutledge (1983) has played down the "crowding out" theory, arguing that nominal interest rates are determined in markets for capital assets as well as financial assets. While markets in domestic financial assets consist of supplies and demands related to some $600 billion dollars, the amount depending on monetary policy and response, markets in domestic capital assets consist of some $20 trillion dollars and is much more tolerant of the deficits than is assumed in the context of financial assets alone.

Another suggestion, already mentioned, is that nominal interest rates have been increased and will continue to be increased by higher risk premiums. There is much appeal in this argument. It is made more plausible by the internationalization of financial markets which, as Hale (1984) has noted recently, increases the pool of funds available to finance the prospective federal deficits in the U.S. It might be added that the enlarged pool is available to finance fiscal deficits elsewhere as well. Finally, in addition to the effects of risk balancing, the risk premium hypothesis is supported by the apparent increase in sensitivity of savers

to nominal interest rates. The tolerance of savers for interest rates fixed at low levels appears to be joining the other behaviors that now are becoming quaint.

Let me sort from all of this a further hypothesis that nominal interest rates have risen and may continue to remain high in a historical context simply because real rates of interest have risen. Important to this hypothesis is the possiblity that the increase in real rates may have been masked earlier by ingenious policies that have from time to time repressed real rates of interest.

In international financial markets, more developed countries intervene with exchange practices that restrain capital outflows instead of allowing domestic interest rates to rise. Such policies are understandable in terms of a response to domestic demands for macroeconomic stability and to the lack of multilateral financial institutions that are deemed suitable.

Comparable actions occur in LDC's. Nominal interest rates frequently are suppressed to lower the cost of managing public sector debt, to restrain profits earned by a concentration of banks, and to encourage domestic investment. The costs of such actions are well known. Suppressed nominal rates of interest restrain savings (Adams 1983) and financial deepening (McKinnon 1972) and encourage borrowing as a hedge against the inflation that tends to be generated. The results are inimical to economic development: fragmented financial markets that produce comparative advantages for informal lenders in the microeconomy, and restricted access to the international financial markets in the macroeconomy.

Let me suggest, however, that we may be entering a period in which the feasibility of such domestic actions may be swept away by the growing effectiveness of the international financial markets. These are the markets that are telling us that real rates of interest have indeed risen. The time and space that remain here are inadequate to develop the argument in detail. Nor is all the evidence and logic in place. The appeal of the argument lies largely in the area of economic development, both domestic and international.

The domestic component is important because of the sheer size of the U.S. economy relative to the world economy. In the U.S., it is apparent that the private sector is adjusting to higher interest rates, though it is not clear how dependent the adjustment is upon tax treatment of interest payments. In addition, there is a considerable backlog of investment "required" to arrest capital erosion in our infrastructure. In a 1983 publication, the Congressional Budget Office estimated the need for $427 billion over eight years

for major infrastructure categories, mainly highways. This is a conservative estimate compared with $500 billion over three years, reported by Claudia Copeland from a Morgan Guaranty survey. To be sure, "needs" are not equivalent to demands, complete with institutional implementation. Yet it is likely that capital required to sustain our infrastructure, not to say improve it, represents a high demand area for the foreseeable future.

The international demand for capital too has increased. The changes summarized for the U.S. are illustrative of comparable changes elsewhere among more developed countries. Even more startling changes are evident in the less developed countries.

As we consider the "new macroeconomics" and associated international capital flows, it is easy to forget that during and following our U.S. colonial period, the economy of the U.S., including our agricultural economy, depended heavily on "international financial markets," and that in the 19th century, annual debt service on external debt exceeded net annual exports. In that period, the international financial markets relevant to the U.S. consisted largely of overseas investors making direct investments in the new country with its expanding frontier.

Modern economic development is a highly capital intensive activity. Today a significant share of the world's population is located in areas highly oriented to economic development. Most success has been won in the already more well-developed countries of North America, western Europe and Japan. Close behind are the Japan-related countries of South Korea and Taiwan, the ASEAN countries of southeast Asia, and certain Latin American countries. In these countries, increasing opportunity costs have lessened the supply of labor that can be exploited in the development process, a factor important in earlier economic development. Economic development now is as much a process of urbanization as it is of agricultural development, however dependent it may be on agriculture as a point of departure. This process adds still further to the capital requirements. The point is that economic development requires capital formation at high rates, and that is related fundamentally to interest rates, exchange rates, capital movements, and many other items that make our current headlines.

I have said little explicitly about exchange rates. There may be little to be said that Ed Schuh (1984) has not already said! Let me simply suggest, however, that exchange rates and interest rates must be considered together. With increasingly well-organized international financial markets,

they are mutually interdependent and cannot be analyzed satisfactorily as though they were independent. And, as Schuh has so forcefully reminded us, agricultural trade and welfare are closely linked with exchange rates.

Nowhere is this more dramatically illustrated than in the looming federal deficits. To finance the deficits requires nominal interest rates sustained at high levels. But at such high levels, capital is attracted through the international financial markets, supporting the exchange value of the U.S. dollar and thus restraining export demand for U.S. commodities while lowering the prices of imports to the U.S. when stated in terms of the U.S. dollar. The latter effect is critical to containment of the domestic inflation rate.

Pending reduction in the exchange value of the U.S. dollar, business exporters are responding to depressed export demand with price reductions, substitution of imports for domestic components in production, with joint ventures, and with counter-trading (a form of barter). Such responses are only partially available to agriculture where adjustments are particularly painful.

Policy Implications

Interest rates are linked with exchange rates to generate demand fluctuations that are negatively related to interest rate fluctuations. Increases (decreases) in interest rates are associated with increases (decreases) in the exchange value of the U.S. dollar and thus decreases (increases) in the demand for farm (and non-farm) exports.

Effects on cost and supply are more complex. Interest payments are a component of production expense. Hence increases (decreases) in interest rates increase (decrease) farm costs in the absence of offsetting decreases (increases) in demand for farm loans. But by decreasing (increasing) the demand for non-farm exports, increased (decreased) interest rates decrease (increase) prices for domestically supplied farm inputs. Through the exchange rate linkage, increased (decreased) interest rates also lower (increase) prices of imports and thus farm costs.

But decreases (increases) in farm costs can be expected to generate positive (negative) shifts in farm commodity supply functions. Hence it seems likely that interest rate fluctuations are negatively related to net cash flow through cost and supply as well as through demand, though the timing of the effects will differ.

High on the list of pain points are farmland values, which depend fundamentally on net cash flow and cost of capital. Changes in financial markets generated the explosive growth in farmland values during the 1970s by increasing net cash flows. The effects on cost of capital were ignored and perhaps masked. In any event, interest rates affect farmland values not only through net cash flows but also through cost of capital, reinforcing the inverse relationship between interest rates and net cash flow.

An important policy implication is the importance to agriculture of more stable interest rates in particular, and more stability in financial markets in general. Without reductions in prospective federal budget deficits and a widening of economic recovery, we are not likely to have both. And in the near future, the problem is exacerbated by debt service obligations of LDC's and CPC's, and associated balance sheet risks among U.S. financial intermediaries.

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