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MONETARY POLICY AND AGRICULTURE: INTERRELATIONSHIPS DISCUSSED IN THE LITERATURE DURING THE PAST TWO DECADES

INTRODUCTION

Farm organization leaders, agricultural economists, farm state politicians and other actors in agricultural policy have recently been quoted as saying macroeconomic policy will have a larger effect on the future structure of agriculture than the 1985 Farm Bill or other agricultural legislation. The federal deficit and resulting high real rates of interest are often at the core of these discussions about recent economic events in agriculture, sometimes collectively referred to as the "farm or rural crisis."

The purpose of this article is to review present and past discussions about the relationship between monetary and deficit spending policies and the economic well-being of the agricultural sector. An historical review of the relationship is found in the classic works of Black[1] and Schultz.[2] Literature published during the last two decades has primarily focused on two changes in monetary policy and resulting effects on the economic well-being of agriculture. These monetary policy changes were: (1) the movement to floating exchange rates by industrialized countries in August 1971 and February 1973, and (2) the effort to reduce inflation by empnasizing control over bank reserves beginning in October 1979.

The effects on agriculture of these two changes in monetary policy have subsequently been classified into the following three general topic areas: (1) the effects on demand for agricultural exports resulting from currency exchange rate fluctuations, (2) increased instability in U.S. agricultural prices resulting from internationalization of agricultural trade, and (3) the effects of interest rate changes on a capital-intensive agriculture. A fourth area of macroeconomic policy has gained recent popularity among agricultural

economists, namely the effects of tax policy on capital investment and the overall rural socio-economic structure. The effects of fiscal tax policy are discussed as a peripheral topic in this article but are not reviewed in depth.

Trading strategies of importer nations and competing exporter nations affect U.S. agricultural product exports in addition to relative currency exchange rates. These macroeconomic trading policies at times have foreign affairs overtones or reflect basic trade or political philosophies of trading nations. Those topics are not reviewed in detail in this article but remain exogenous to the central discussion.

World supply and demand, more traditional microeconomic topics, are also not discussed in detail. It may well be that impact of currency exchange rates and interest rate effects on highly-leveraged producers are only adding to and not the primary causes of greater problems caused by a surplus supply/weak demand world agricultural situation. The Green Revolution initiated in the late 1950's has apparently worked its intended magic. Countries that once regularly imported food from the U.S. have become net surplus producers. One could predict that short of catastrophic weather conditions they will remain self-sufficient in the future.

This is not to say that hunger does not exist in the world. However, in many cases the local infrastructure does not exist for distribution of food supplies to needy citizens. Political ideologies of leaders often prevent food from being accepted or distributed to those facing imminent starvation. These and other political barriers to food distribution coupled with slowed world economic growth will limit the ability of food deficit countries to import and pay for agricultural products. Effective demand by paying customers is likely to remain sluggish for U.S. agricultural products in the forseeable future irregardless of currency exchange and interest rate impacts. Nonetheless, these

macroeconomic factors have significant impacts on the demand for agricultural goods and the ability of leveraged agriculturalists to survive. In many individual cases, and possibly for a majority of the agricultural sector, monetary and fiscal policy impacts may ultimately be the final straw that breaks the camel's back. Understanding those effects is important for future financial survival of agricultural producers and businesses that supply production inputs or market agricultural products beyond the farmgate.

The remainder of this article, therefore, will be devoted to discussion of monetary events in 1971-1973 and 1979 and resulting effects on U.S. agricultural exports and on relatively highly-leveraged farmers in an industry increasingly dependent on capital-intensive production technology. Fiscal policy as it relates to the federal deficit will also be discussed.

Schuh and Orden[3] recently compiled perhaps the most comprehensive, extensive publication to date on the subject of macroeconomics, agriculture and rural America. The authors discussed the importance of trade to agriculture and the rest of the economy and the need for a general equilibrium perspective on agriculture. Internationalization of agriculture, development of a well-integrated international capital market, the shift to flexible exchange rates and increased monetary instability were reviewed.

Schuh and Orden also discussed theoretical issues in macroeconomics including the modern classical view of macroeconomics, the crucial role of expectations and the Keynesian fixed-flex price model. The authors related macroeconomic policy effects on agriculture in an integrated world economy. They provided empirical evidence of the relationship between money supply and agricultural prices received and the interrelationships among interest rates, exchange rates and U.S. agricultural exports.

In closing, Schuh and Orden discussed the significance of international capital markets relative to trade accounts and emphasized limitations capital markets place on policy choices for the U.S. and for agriculture. The importance of the LDC debt and the need for the LDC's to export was discussed by the authors. Schuh and Orden concluded by calling for reform of international monetary and trade institutions as well as domestic agricultural policies. Areas requiring further understanding according to the authors include the magnitude and volatility of international capital flows and their implications for U.S. policy.

Mayer,[4] in a recent article, proposed that given the importance of economic policies to American farmers, there should be a farm representative on the Federal Reserve Board. Mayer also called for "far more attention to issues like an international monetary system." Mayer's statement, like many others that follow, relates impacts of macroeconomic policies to the well being of agricultural producers or farmers. It is axiomatic that as goes production agriculture, so goes agribusiness. The recent debacle in the farm credit system has shown that businesses highly integrated with production agriculture are not easily divorced from negative shocks to grassroots producers. Ultimately the approximately 20 to 25 percent of U.S. Gross National Product loosely defined as agribusiness will suffer shock waves of varying severity from the recent shakeout in production agriculture.

THE CHANGE TO FLOATING EXCHANGE RATES--1971 AND 1973

The rules governing international trade following World War II until the early 1970's were established at the Bretton-Woods Conference in 1944. Participating countries agreed to fix their exchange rates and therefore gave up

an important policy tool in managing their individual economic affairs. The memory of the Great Depression of the 1930's was an incentive for countries to participate in the fixed exchange rate agreement. Many people believed that a series of competitive devaluations by trading countries was a major cause of the huge economic contraction of the 1930's.

The U.S. benefitted from the Bretton-Woods agreement through rapidly growing world trade and political stability provided by economic expansion. Inflation began to increase in the U.S. during the late 1960's and early 1970's primarily because of unwillingness to curtail domestic programs while financing the Vietnam war. As a result, the dollar declined relative to the currencies of major U.S. trading partners. The U.S. balance of payments deficit grew steadily larger.

In August 1971, the U.S. devalued the dollar in relation to gold by eight percent, and then devalued it another ten percent in February 1973. In the process the U.S. gold window was closed, effectively placing the industrialized countries on a system of floating exchange rates.[5] Throughout the remainder of the 1970's the dollar was allowed to float against other currencies. Monetary policy continued to be relatively accomodative of growing fiscal spending deficits. By 1979 the combination resulted in presistant, growing U.S. inflation.

CONTROLLING BANK RESERVES - 1979

The Federal Reserve announced a new program in October 1979 to reduce inflation. The plan was to achieve objectives for the growth of money and credit by controlling the supply of bank reserves. Control of inflation was desired for several reasons, according to Hakkio and Higgins[6] of the Kansas City

Federal Reserve Bank: (1) inflation increased social tensions by shifting the distribution of wealth and income. Savers were hurt and borrowers benefitted when inflation unexpectedly reduced the real burden of debt. Persons on fixed incomes suffered when inflation decreased their purchasing power; (2) because inflation eroded the purchasing power of money, asset holders had incentives to keep their holdings of non-interest bearing cash to a minimum. This resulted in otherwise productive resources being devoted to reducing cash balances; distortions were also caused by an interaction between inflation and the tax system. When taxes were not indexed for inflation, the real tax burden increased with inflation.

The economic benefit of lowering inflation will be realized long after the associated costs, according to Hakkio and Higgins. They further stated, "economic benefit from recent monetary restraint will be realized mostly in the 1990's. Meanwhile, real income will remain lower much of the time than it would be with a more accomodative monetary policy."

There is some debate as to whether targeting monetary growth since 1979 is monetarist policy in the true sense of the word. There are also conflicting analyses of the effectiveness of that policy.

Professor Benjamin Friedman,[7] Harvard University, describes the action in the following manner: "The latest monetary policy experiment in the U.S. began on October 6, 1979, when the Federal Reserve System announced a new policy orientation." Included in that policy was renewed emphasis on growth targets for the major monetary aggregates. The main reason for those changes, according to B. Friedman, was increasing price inflation (already at near-record post-war levels) and deteriorating value of the dollar in international markets.

On October 9, 1982 the Federal Reserve Chairman announced abandonment of the stated growth target for M1 money stock. According to B. Friedman, "The

economic situation that called for abandoning this policy was a deepening business recession with unemployment at record levels."

Milton Friedman,[8] Hoover Institution, Stanford, California, provided rebuttal to the article by Benjamin Friedman. He stated that Federal Reserve Board procedures were designed "to support the objective of containing growth in the monetary aggregates." That was indeed a monetarist objective. "However," M. Friedman continued, "a monetarist policy involves not only targeting monetary aggregates, but also achieving a steady and predictable rate of growth in the monetary aggregate being targeted." M. Friedman concluded that monetary volatility had been three times greater during the experiment than prior to that time. Therefore, the experiment was "antimonetarist."

Milton Friedman closed by saying, "The evidence generated by the misinterpreted monetary policy experiment of 1979-82 was entirely consistent with the empirical conclusions about the relation between money, income and prices that monetarists have drawn from earlier evidence."

EXCHANGE RATES AND INCREASING AGRICULTURAL EXPORTS - 1970's

Prior to work by Schuh in 1974, analysis of trade and development problems of U.S. agriculture generally omitted the role of exchange rate policy. Schuh,[9] currently with the World Bank, claimed the dollar was undervalued immediately after World War II, but by the Korean War the dollar had become over-valued. He presented data on the gold stock and on the balance of payments to suggest a persistent, increasing over-valuation of the dollar after 1952. The huge trade deficit in 1971 probably led to the first devaluation and the suspension of convertibility to gold, according to Schuh. He presented additional data to show declining exports were not due to rising prices because of domestic farm

programs, a position often claimed by some analysts. In fact, Schuh claimed domestic U.S. price support programs were a partial attempt to counterbalance declining trade caused by the over-valued dollar.

Schuh concluded by saying that if his conclusions were correct, "the rise in agricultural prices in mid-1973 were a result of monetary factors which produced an export boom in an economy already responding to expansive monetary policies."

In 1976 Schuh[10] expanded on the topic of agricultural exports. By then U.S. agriculture had become even more strongly linked to the world economy through the importance of agriculture in the trade balance. By 1971-74 the rapidly growing trade deficit of non-agricultural products was more than offset by agricultural exports. In 1975 there was a $12.4 billion surplus in agricultural trade accounts which more than offset the non-agricultural trade deficit.

Schuh pointed out change in the structure of U.S. trade had significance to the U.S. economy. Not only were economic policies regarding agriculture constrained but both the agricultural sector and general economy were subject to shocks from agricultural sectors of other countries via the new structural relationships. This fact increased instability of incomes in the agricultural sector and made the management of agricultural programs and general economic policy a great deal more complex.

Johnson,[11] University of Chicago, agreed about integration of U.S. agriculture into the world economy and the effects of floating exchange rates, interest rate differentials among countries, international capital movements, and policies of international trading partners.

However, Johnson did not give credit for the export boom of the 1970's solely to monetary policy and a weakened dollar. Johnson disagreed with Schuh

but closely resembled his colleague, Schultz, concerning the effects of U.S. agricultural price and income programs. Contrary to what Schuh reported in 1974, Johnson claimed that during the 1950's U.S. price supports for major grains were "established at levels significantly above market-clearing prices." He also claimed that adjustment of those prices had been completed by the time the dollar was devalued in 1973. The reduction of price supports contributed to the increased export demand of the 1970's. Johnson's call for lower U.S. price supports resembled Schultz's earlier statement that prices of individual commodities should not be managed by government.

Johnson also gave another reason for the increased competitive position of U.S. agriculture in world markets not mentioned by previous authors. After World War II there was a rapid reduction of labor input and increased use of capital per unit of farm output. Because of an outmigration of people from agriculture, net farm income in the 1950-70 period increased, even though real farm prices declined by 20 percent. At the same time, in constant 1978 dollars, the value of production assets per farm worker increased from $40,000 in 1950 to $150,000 in 1978, according to Johnson.

Johnson acknowledged that changes in monetary policies during 1979 had some impact on U.S. export demand, but downplayed the effect of the deficit. He stated, "An important implication of the interrelatedness of interest reates is that the U.S. has far less control over real interest rates than one might infer from recent discussions of the actions of the Federal Reserve System or of the effect of the U.S. deficit on interest rates." This is not to say that there is no effect but Johnson claimed, "...it must be noted and emphasized that interest rates are determined in a market much larger than the U.S.."

INTERNATIONALIZATION AND INSTABILITY -- LATE 1970'S

Renewed interest in the topic of instability of agricultural incomes--first discussed by Schultz in the 1940's--became greater as participation in export markets increased price instability during the 1970's. Firch,[12] University of Arizona, wrote in 1977, "The volatility of farm income in the last ten years suggests the need to re-evaluate the extent and sources of this instability." Firch suggested that inflation may have been an important source of instability in the 1970's--in addition to business fluctuations as proposed in the 1940's by Schultz, and dependence on international trade and instabilities in foreign exchange rates as shown later by Schuh. Firch concluded that exchange rates were the most reported source of variance in market receipts for 1966-75, followed in importance by the business cycle.

Gardner,[13] University of Maryland, cited the works of Schultz and Firsch among others as the Keynesian approach of emphasizing macroeconomic policy when linking agricultural instability to business cycles. Gardner proceeded to document aggregate effects on agriculture during recessionary and inflationary periods. He concluded that, "on the average the farm sector fared poorly during episodes of recession. Thus it appeared that agriculture had an even greater stake in avoiding recessions, although differential effects were less pronounced since 1950."

Gardner also found that "real farm product prices and real farm income grew faster in inflationary years, particularly in years of unanticipated inflation," and developed conflicting points with Tweeten[14] who found that inflation increased real prices paid by farmers. Gardner concluded that macroeconomic instability had real sectorial effects on agriculture but there was "no

predictable direction in which real farm prices are affected by general inflation."

In summarizing, Gardner listed research in three main channels of influence from the rest of the economy to agriculture. Those were 1) "Walrasian" influences - forces associated with neo-classical equilibrium between agriculture and other sectors; namely equilization of rates of return in factor markets, 2) "Marshallian" influences - the effects of standard shifting of supply and demand curves, namely population and consumers' incomes, and 3) "Keynesian" influences, into which Gardner listed the works of Schultz, Firsch, and Schuh.

Tweeten,[15] Oklahoma State University, agreed with earlier authors about instability being a "major long-term problem of commercial farms." Tweeten found the two major causes of variation in nominal farm receipts were variation in the general price level and increased reliance on exports. The overall conclusion presented by Tweeten was that agricultural special interest groups needed to broaden their focus to include rural development, monetary, fiscal and trade policies. Those policy areas were listed as potential factors affecting the stability of farm income.

Krueger[16] with the World Bank agreed that instability of farm income had increased. However, she felt this instability was more a reflection of increased volatility in the world economy as a whole, and that flexible exchange rates were only part of the adjustment process.

Krueger also acknowledged the "sensitivity of agricultural production and exports to the real exchange rate." Real depreciation of the dollar in the 1970's had large impact on agricultural trade. According to Krueger, American agricultural exports rose from $4.8 billion in 1960 to $7.3 billion in 1970. Following devaluation in 1973 they jumped to $17.7 billion and rose to $41.2 billion by 1980. Krueger concluded that dollar over-valuation had "masked much

of the comparative advantage of American agriculture," prior to devaluation in 1973.

EXCHANGE RATES AND DECREASING AGRICULTURAL EXPORTS--1980'S

Sorenson, Michigan State University, and Rossmiller,[17] economist at the U.S. Department of Agriculture, also stressed international linkages to the economic health of U.S. agriculture. They pointed out that U.S. agricultural exports had reached a peak of about $44 billion in 1981 before falling to $39 billion in 1982 and were forecast at 34.5 billion for 1983.

Sorenson and Rossmiller reviewed changes in the 1970's that made the "unprecedented growth in the international economy" possible. Those changes were primarily the 1971 U.S. repudiation of the obligation to redeem dollars in gold and the dramatic increase in relative shares of the petroleum trade. The authors also felt that trade imbalances caused by rising oil prices had "resulted in a massive transfer of incomes among countries. This transfer of income seriously destabilized the international trading system and international capital markets." According to Sorenson and Rossmiller, petroleum trade and floating currency rates set the stage for "the expansion and inflationary period of the 1970's followed by an apparent long deflationary cycle for the 1980's." They also felt the recessionary cycle had been increased by a change in U.S. policy that placed emphasis on reducing the rate of inflation.

Like several other articles published after the implementation of increased bank reserves in 1979, the authors pointed to monetary policy and the federal deficit as major factors in U.S. agricultural trade. They claimed that two components of U.S. agriculture's competitive problem lie outside the agricultural sector. Sorenson and Rossmiller stated, "The present situation

with large government deficits and nearly complete reliance on monetary policy to guide the economy presents a dilemma." A tight money policy that controls inflation creates high interest rates, international capital flows and a strong dollar. Those, in turn, paralyze U.S. farm products in international markets. Sorenson and Rossmiller concluded, "Probably no single policy change is more important to maintaining the long-run competitive position of American agriculture in world markets than reducing U.S. federal government budget deficits."

Schuh[18] wrote in 1984 that total value of exports declined by 21 percent from 1981 to 1983. The decline in foreign markets was related to a sharp reduction in net farm incomes. In constant (1967) dollars net income declined from a peak of $25.1 billion in 1973 to $7.6 billion in 1982 and resulted in a serious agricultural financial crisis. "Farmers expanded debt commitments during the 1970's based on export expectations and continued prosperity for agriculture," according to Schuh. When those expectations were not realized, the cost of federal farm programs increased dramatically after 1979 as commodity stocks ballooned and farm incomes fell. Schuh also stated "increased monetary instability in the 1970's and early 1980's led to unstable commodity markets."

Schuh closed the article by agreeing with Sorenson and Rossmiller on the federal deficit impacts when he said, "An important reason the dollar is so strong is the large deficit the country is running on its federal budget. With the Federal Reserve now refusing to monetize the debt resulting from these deficits, real interest rates have risen to attract the required amount of savings." Schuh stated that high interest rates encouraged international capital to shift into dollar assets causing strengthening of the dollar. "A more nearly balanced federal budget probably would do as much as anything to improve our agricultural export performance," he concluded.

Drabenstott,[19] economist with the Federal Reserve Board of Kansas City, agreed at least in part with Schuh. Drabenstott pointed out that the dollar appreciated more than 40 percent from a ten-year low in the third quarter of 1980 to a 12-year high in the fourth quarter of 1982. This wide swing in the value of the dollar weakened foreign demand for U.S. agricultural products, especially in low and middle-income countries that already had foreign debt problems. According to Drabenstott, the rise in the value of the dollar weakened demand for U.S. products, even though U.S. farm prices also fell during that time.

Drabenstott stopped short of blaming U.S. federal deficits for the strength of the dollar. Rather, he focused on the weak world economy, world debt problems, export competition and trade barriers. He concluded by calling for "prudent export policies and competitive U.S. farm prices."

Batten and Belongia,[20] Federal Reserve Bank of St. Louis, reviewed the works of Schuh and others and concluded, "that such simple analyses generally are inadequate in establishing a cause-and-effect relationship between exchange rates and agricultural exports." They pointed to the need for distinguishing between real and nominal exchange rates and for isolation of the marginal impact of exchange rates on trade, holding other forces affecting export flow constant.

Batten and Belongia summarized that real exchange rates were negatively related to exports, but the impact was dominated by the level of real GNP in importing nations. "Overall," they said, "the analysis suggests a weak link between U.S. money growth and real exchange rates and indicates that foreign income--not exchange rates--has been the primary determinant of agricultural exports."

Longmire and Morey[21] did not evaluate the effect of the federal deficit, but strongly stated the effect of monetary policy on agriculture. They

declared, "The U.S. dollar's appreciation against foreign currencies in the early 1980's has had the same effect as an export tax, it has reduced the market for U.S. exports. As the dollar dropped in value in the 1970's, U.S. farm exports soared; in the 1980's as the dollar rose in value, U.S. farm exports dropped." The authors further said that the price competitiveness of the U.S. agricultural export sector in the 1970's was brought on by relatively loose monetary policy. "The boom was cut off by much tighter monetary policy in the 1980's," they claimed.

Longmire and Morey developed a model using "inflation adjusted" or real exchange rates that suggests a 20 percent rise in the value of the dollar results in a 16 percent decline in farm exports. Accordingly, the rise in the value of the dollar cost U.S. farmers approximately $3 billion in export sales in 1981-82. On the other hand, a 30 percent decline in the value of the dollar in the 1970's largely fueled the export boom of that era, according to the authors.

Longmire and Morey closed by saying, "Our judgement is that the direction of macroeconomic policy has had, and will have, much more significance for the U.S. farm export sector than will more direct (trade and farm) policy interventions."

Other authors developed more rigorous theoretical models of the interrelationship betwen exchange rates and agricultural exports. Among those were the works of Velliantitis-Fidas,[22] Kost,[23] and Johnson, Grennes and Thursby[24, 25], Reed,[26] Chambers and Just,[27, 28, 29, 30] Chambers[31] and Bredahl.[32] Varying degrees of relationship and modes of impact between exchange rates and the agricultural sector were reported and discussed in those works.

McCalla and Learn,[33] the University of California at Davis, provided a fitting summary of macroeconomic effects on currency exchange rates and export

demand for agricultural products. They reviewed the last 25 years in a series of time-frame accounts of conditions in 1960, 1965, 1970, 1973, 1977, 1981, and 1984. The authors made an effort to identify elements of policy that changed and those that remained constant. As McCalla and Learn summarized, "We came a long way since the 1960's when key elements of the policy environment--export demand, world food balances and global macroenvironment--could be assumed constant, stable and predictable."

FUTURE IMPLICATIONS OF EXCHANGE RATE IMPACTS

The effects of changes in exchange rates on demand for U.S. agricultural commodities and the incorporation of the U.S. into world agricultural markets have been thoroughly discussed and documented. The authors have shown that macro-policies effect the competitiveness and demand of U.S. products in world trade. However, little attention was paid to the supply side of the equation in terms of agricultural goods from other countries competing with U.S. products in world trade.

Oil prices increased during the 1970's and rising interest costs began to accumulate on accrued debts by 1980 in many developing countries. Most of these countries also initiated industrial development programs in the 1970's and the cost of technology required to maintain those programs also began to climb by 1980. The net effect of these changing conditions was a cash flow deficit and a credit crisis for many developing countries.

Under pressure from U.S. banks, the IMF and other creditors, many developing countries expanded production in basic industries including agriculture and sold resulting output into world markets irregardless of the short-term domestic cost of production, impacts on domestic currencies, or

damage to their resource bases. The immediate need was for hard currency to service debt, develop industry and maintain domestic employment. As a result, many former U.S. customers became, and are expected to continue as, competitors with the U.S. for world agricultural markets. Brazil, Argentina, India, and to some extent the People's Republic of China and the European Economic Community come to mind. The nature and competitiveness of changing world agricultural supplies and the competitive position of the U.S. in this new environment requires critical future research, and examination of U.S. agricultural and trade policies.

The effects of the October, 1979 monetary policy change requires an evaluation in an international sense. Many international customers for U.S. agricultural goods prospered in an inflationary environment. Inflation increased the value of minerals and other raw materials produced for sale in international trade so ultimately the purchasing power of developing countries increased. Therefore, demand for U.S. agricultural products also increased.

Agriculture as a sector also benefitted relative to the rest of the economy from an inflationary environment. In this sense the change of monetary policies enacted in October, 1979 placed agriculture in double jeopardy. First, the countries providing the primary market for U.S. agricultural goods were among the hardest hit by the change in monetary policy; many even became exporters of agricultural products to generate hard currency. Second, agriculture was among the hardest hit sectors within the U.S. economy. The fact that U.S. agriculture has not participated in the nearly three-year economic recovery experienced by the rest of the U.S. economy since 1982 may have long run implications.

McCalla[34] discussed the "inherent inflation bias" and "the net debtor" position of most LDC's. In 1982 he concluded, "in summary, this impact seems to suggest that international instability and inflation move developing countries

to shorter-term perspectives and increased dependence on unstable international commodity markets. Events since McCalla published that article would seem to magnify his position. Further research in light of the 1982-85 experience in agriculture would seem in order.

In addition to effects of macroeconomic policies on exchange rates, further research is needed about effects of the international capital markets. The international capital market by 1984 had evolved into a highly mobile, highly liquid market on the order of $40 trillion. The extent and role of expectations and overshooting in a market of that magnitude have implications not only for agriculture as a sector but for the entire U.S. economy as a whole. If prices in the international capital market are highly flexible--and the age of rapid electronic communications would suggest they are-- then expectations in the international market may outrun or overpower more fixed monetary policies of individual countries. Production agriculture and related businesses stand to benefit from future understanding and adaptation to these international macroeconomic phenomena.

MONETARY POLICY EFFECTS ON INTEREST RATES AND A CAPITAL-INTENSIVE AGRICULTURE--1980'S

Tweeten,[35] in his 1980 presidential address to the American Agricultural Economics Association, examined two directions macroeconomic policy could take to begin restoration of health to the economy. Exphasis was placed on likely implications for agriculture under each of those scenarios. Tweeten stated, "Unless new financial strategies, sound monetary-fiscal policies and other measures are found to deal with the cash flow squeeze, the trend is likely to accelerate toward farmland ownership and operation by part-time farmers,

corporate conglomerates, and wealthy commercial farmers." Tweeten further projected that mid-sized family farms "operated by full-time able-bodied persons would be comparatively few in numbers by the mid-1980's.

Belognia and Fisher[36] claimed in contrast to Tweeten, that the trend to fewer and larger farms is "the natural outcome of competitive behavior in uncontrained competitive markets, possibly subject to unexploited economies of scale or technological change that favors larger size operations." The authors concluded, "In sum the cashflow problem is not a problem if farmers behave as rational economic agents and base decisions to expand or acquire debt on a correct assessment of costs and benefits at the margin. Of course, these costs include an assessment of future inflation rates--and the involves macro-economics."

In retrospect, either many farmers became involved in irrational behavior during the 1970's or they and the economists who aided in their projections failed miserably in assessing future macroeconomic policies and resulting inflation rates.

Breimyer,[37] University of Missouri, was blunt in his statement and analysis of this problem. He stated, "Economists have rivalled the national media in misreporting the current financial situation in agriculture. Although many factors are involved, the situation is basically one of decapitalization, brought about primarily by higher interest rates."

Breimyer continued, "It's elementary that the value of a fixed asset generating an income flow is a reciprocal of the interest rate." He stated that if interest rates double, the asset value will decline by one-third." In the 1980's to date, the prime interest rate has averaged 75 percent higher than in the 1970's. "This elementary principle applied to agriculture overshadows all loose talk about weak export demand, damaging commodity programs, non-viability

of the family farm, or other favorite coinages" as the cause of the farm problem, according to Breimyer.

As Breimyer explained, the government has only three techniques available to control inflation: direct price and wage controls, tax and fiscal policy to reduce buying power, and monetary policy to reduce credit to producers and speculators. He said, "Except for a brief fling with price controls in the 1970's, the U.S. has been unwilling to utilize tne first two techniques. The Federal Reserve Board, left to arrest inflation, used the only device available to it, monetary control."

Breimyer also noted changes in lending practices which occurred in the 1970's. The main change was the movement from fixed to variable interest rates on loans. As he put it, "lenders were tired of negative real interest rates and wanted protection so they let interest rates float." Floating variable rates can be fair to both lender and borrower if they conform closely to the general price level. According to Breimyer, "Beginning in 1981 the price rate no longer hugged the inflation rate but was pushed far above it."

Action by the Federal Reserve Board caused variability in interest rates to be used as an instrument of control rather than as an indexing device. Variable interest rates caused the Federal Reserve Board's new discipline to apply to "old loans" as well as new. As a result, borrowers found themselves facing interest payments far above those anticipated. "In agriculture, interest payments were well above tne generating power of the principle of their loans," Breimyer summarized.

Breimyer estimated that the decapitalization in agriculture will total $300 billion. Farmland owners with no debt will absorb this loss on their balance sheets. Those with debt will do the same until their net worth is zero. "Thereafter, lenders will absorb tne decapitalization," he concluded.

Drabenstott and Duncan[38] of the Federal Reserve Bank of Kansas City agreed with Breimyer that there are severe financial problems in agriculture. They said, "American agriculture is under its greatest financial stress since the Great Depression, and heavily leveraged farmers are having great trouble servicing their debts."

Drabenstott and Duncan also conceded that loss of value of farm assets and farm financial problems resulted in "substantial loan losses to agricultural lenders." They claimed the roots of the problems lie in the rapidly growing export markets and escalating price inflation of the 1970's. Farmers' aggressive use of debt in response to those events further aggravated the problem. Debt separated farmers doing reasonably well from those having serious financial troubles. Farmers who used debt in the 1970's to finance expansions and to paper over short-term debt service problems are having problems servicing that debt in the 1980's.

Land values also declined as prospects for farm incomes fell and real interest rates remained high. The authors estimated that within the next two years farmland will lose 50 percent of its 1981 peak value. However, Drabenstott and Duncan participated in what Breimyer calls "loose talk" to explain the causes of agricultural financial problems. The authors listed slower world economic growth, increased international competition, and greater price instability as reasons for financial problems in agriculture.

Tweeten[39] agreed with previously quoted authors about impact of the shift from long-term fixed-rate loans to variable rate loans. Tweeten stated that, "like flexible exchange rates, flexible interest rates probably increase short-term instability in farming. Short-term instability of interest rates is further aggravated by the Federal Reserve Board policy, dating from October, 1979 of attempting to stabilize monetary supply rather than interest rates in

the face of fluctuating demand for money." Tweeten went on to conclude, "expansory fiscal policy and tight monetary policy in the early 1980's may have been the worst of all environments for the mid-sized family farm." As a result, there was a decline in entry-level full-time family farms. Since the number of beginning full-time family farms is currently declining, it is understood that the number of such operators in the future will also decline. Elsewhere in the article Tweeten listed federal income tax policy as further tilting farm structure in the same direction as the monetary-fiscal policies discussed above.

LaDue, Cornell University and Leatham,[40] Texas A & M University further examined the use of variable interest rates for agricultural loans. They stated that unexpected fluctuation in interest rates, especially the rapid rise in rates in 1980-81, inflicted losses on fixed-rate lenders. As a result, many creditors shifted to floating or variable interest rates.

The small rural banks providing 70 percent of the agricultural credit increased use of variable rate loans from one percent in 1978 to 30 percent in 1983. Large banks increased the practice to 80 percent of their loans, up from 60 percent five years earlier. Loans that those variable rates applied to had an average maturity of six to nine months, but the assets purchased often carried an expected life of three to ten years.

As LaDue and Leatham pointed out, the variable rate loan shifted interest rate risk from the lender to the borrower. Interest as a percent of total production expense in agriculture increased to 15 percent in 1982--over three times the rate of the early 1960's and the highest level since the 1930's.

The authors said variable interest rates reduced the level of farm investment. They quoted D. Gale Johnson's earlier works by saying, "Income uncertainty leads to capital rationing." The rationing results as the farmer

attempts to insure either sufficient cash flow to meet future payment requirements or enough credit reserve for him to be able to borrow through periods of high interest rates. Either way, the authors concluded, "farmer debt capacity has been reduced and agricultural credit market efficiency has declined as a result of variable interest rates."

While Breimyer, LaDue and Leatham focused on variable interest rates, Baker,[41] University of Illinois, looked to other reasons for interest rate stress in agriculture. He said, "Finance issues recently have seized the attention of economists and farmers, along with decision-makers who are commercially and politically related to farmers."

Baker stated that interest expense as a percent of total production expense in the farm sector increased from 3.1 percent in 1950 to 15.7 percent in 1983. Farm debt as a percent of assets more than doubled from 9.2 percent to 20.8 percent in the same time frame. By 1985 the debt to asset ratio in agriculture was reported at over 26 percent.

Baker credited inflation in farmland as being part of the cause of the debt problem. Between 1971 and 1981, the consumer price index increased 125 percent but farmland appreciated 292 percent. This encouraged the purchase of farmland in general. Leveraging strategies to accelerate growth in net worth also became popular with a small portion of farm operators during the 1970's.

Several reasons were presented by Baker for why "real interest rates were historically high in 1984--more than twice those existing in the stable 1960's." Reasons he gave for this upward bias were: (1) gradual assumption of business risk in private sectors by the public; (2) interest received by savers was taxable, but interest paid by borrowers was deductable for tax purposes; and (3) the prospects of future large federal deficits supported expectations that the inflation rate would creep up again. This supported an increase in nominal

interest rates. Baker closed with, "Traditionally farmers have been financed with debt capital and internal equity growth." Recent changes in financial markets "present issues fundamental to the future structure of agriculture."

FISCAL POLICY EFFECTS--BUDGET DEFICITS AND INTEREST RATES

Penn,[42] economist with Economic Perspectives, Like Baker, placed the roots of current economic stress in agriculture in the boom time of the 1970's, and the expectations they created. Penn stated, "Investments were made whose success depended on continued high commodity prices, relatively rapid inflation and low real interest rates."

According to Penn, those expectations were not realized. "The global recession beginning in 1980 reduced demand and commodity prices and farm income failed to advance," he said. Land prices began falling and financial stress in the farm sector became more widely discussed "than at anytime since the 1930's."

Penn concluded that fiscal policy could have the largest impact on agriculture in 1985. He noted, "There is a hign likelihood of a deficit reduction steamroller appearing in the next Congress and budget considerations could determine the agricultural policy outcome. Current conditions coupled with strong emphasis on reducing the budget deficit would appear to bode for considerable disarray in the 1985 Farm Bill debate."

Roley, University of Washington, and Walsh,[43] Princeton University examined the relationship between money and interest rates. They reviewed the Keynesian theory that--in the absence of a liquidity trap--emphasized the negative relationship between money and interest rates. The two also examined Friedman's accelerationist theory that predicted increases in money growth would lead to identical increases in long term interest rates. The authors then cited

research by Mishkin[44] and several others showing zero or positive correlation between surprises in announced money and both short- and long-term rates. Reasons given for the positive correlation are: (1) the Federal Reserve attempted to offset short-term changes in money growth due to shifts in money demand and (2) the positive correlation was due to associated changes in expected inflation.

Roley and Walsh examined empirical data and found "no significant correlation between interest rates and money in the pre-October 1979 period." However, in the post-October 1979 period "announced money surprises had a significant correlation with the three-month yield." The authors pointed out that "the nature of money market stocks since October 1979 period have led to positive correlation between money stocks and interest rates, as Friedman predicted."

Anderson and Enzler, Board of Governors of the Federal Reserve System and Ando,[45] University of Pennsylvania, examined interactions between fiscal and monetary policies and the real rate of interest. "One of the consequences of the economic policies pursued since 1981 is the prospect of a continued large federal deficit combined with a high level of interest for several years to come in the U.S.," the authors commenced. They added that federal debt as a percent of net national product declined steadily between 1945 and 1980, while the real rate of interest stayed quite low. However, that pattern has been reversed since 1980.

The model that Anderson, Ando and Enzler used is basically Keynesian in its design. Monetary policy actions affected prices by first affecting the real rate of interest, then aggregate demand, and eventually the rate of unemployment, in the model. When the domestic rate of interest varied, the exchange rate, capital account balances, and condition of the current account

were all affected. The authors stated, "In the extreme case it is possible that additional borrowing by the government is financed almost entirely by a large net inflow of foreign capital. After explaining several scenarios, the authors concluded, "the policies most closely resembling those currently in place generate a rate of interest clearly above the rate of growth, leading to serious instabilities for government finance and for international debt balances."

Guffey,[46] president of the Federal Reserve Bank of Kansas City, argued the major contribution monetary policy can make is to ensure reasonable price stability. He admitted, however, that others believed monetary policy can and should provide growth by keeping interest rates low. Guffey maintained that "easy money and credit temporarily depress interest rates. However, as soon as inflationary consequences are realized, the inflation premium pushed rates back to previous levels." He claimed that past experience showed that by increasing uncertainty, inflation led to higher interest rates and lower stock prices.

Guffey did state that fiscal policy--the government's taxing and spending decisions--affected incentives for saving, investment and ultimately promoted or slowed economic growth. The most pressing fiscal issue, according to Guffey, was the budget deficit. "With the federal government absorbing up to one-third of private sector savings, too little is left over for the productive investment necessary to sustain economic growth," he said. Moreover, he claimed that high interest rates and the strong dollar accompanying the deficit threatened to irreparably damage domestic industries. "In short," he summarized, "bringing down the budget deficit is the most important fiscal policy action that could be taken to improve prosperity for balanced and sustained economic growth."

Duncan and Borowski,[47] also from the Federal Reserve Bank of Kansas City echoed the same position. They said macroeconomic policies constrained or promoted domestic economic growth, which in turn affected demand for

agricultural products. These policies also affected price stability and the rate at which agricultural production and marketing costs changed. Monetary and fiscal policies interacted to determine the cost of carrying debt, and helped determine the value of the dollar in foreign exchange markets. The dollar value in turn affected terms of foreign trade and export demand. Duncan and Borowski stated, "The large current federal deficit and concern over future financing of that deficit have seemed to hold up interest rates and the trade-weighted value of the dollar." The cost of carrying the $215 billion farm debt has been increased by deficit- caused high interest rates.

The authors termed tax policies as important to agriculture, "which is both capital intensive and involves long-term investment." The tax laws have been important in guiding agricultural investment and management decisions. "However, favorable tax treatment for profit from agriculture has also encouraged capital investment in the sector and added to excess capacity," they said.

Because of the wide-ranging effects macroeconomic policies have on agriculture, Duncan and Borowski predicted "monetary and fiscal policies may be more important in determining U.S. agriculture's domestic performance and international competitiveness than narrowly defined farm policies."

Most of the economists quoted in this report who referred to the federal deficit mentioned the need for deficit reduction. Effects of increased real interest rates on leveraged borrowers and decreased exports because of the resulting strong dollar were the two reasons most frequently given for the need to reduce the deficit.

Eisner, Northwestern University and Peiper,[48] University of Illinois, stated a contrary opinion by saying, "If we are to avoid the cardinal economic

sin of money illusion, we must look at real market values of debt and the real deficit that corresponds to changes in the real value of debt."

The authors conceded the "sheer magnitude of the federal debt -- $1.3 trillion in 1983--suggests danger of national bankruptcy to some economists." To others, the fact that the deficits have reached six percent of Gross National Product calls for a future round of inflation. Eisner and Peiper also admitted that a number of recent papers have called for adjustment of the federal deficit.

However, the authors claimed, "when the market value of government assets is included, the market value of U.S. government debt in 1980 was $448 billion, far below the gross public debt figure of $930 billion reported for that year." The authors went on to say that if tangible assets owned by the government were included, then the U.S. had a positive net worth of $279 billion at the end of 1980. In summary, the authors claimed that if inflation, increased gold values, and higher interest rates which lowered the market value of debt are considered, the real market value of net debt has been cut in half since the end of World War II.

Eisner and Peiper presented two corrections to widespread views based on their assumptions: (1) "The 1981-82 recession cannot be interpreted as the triumph of all-powerful monetary constraints over relatively ineffective fiscal ease," and (2) "The absence of real fiscal stimulus--indeed the presence of some means of fiscal tightness--makes clear the extent of overkill of monetary restraint in 1980-81." This restraint contributed to the highest unemployment level in about two generations, according to the authors.

An article by Thompson,[49] Senior Staff Economist of the Council of Economic Advisors, provided a summary of critical points discussed in this section. Thompson believed that macroeconomic policy--monetary and fiscal policy--

probably has a greater effect on U.S. agriculture today than those policies traditionally viewed as farm policy. Macroeconomic policies affect agriculture both through the interest rate and the exchange rate.

Agriculture is very sensitive to interest rates for these five reasons listed by Thompson: (1) The capital-labor ratio in agriculture is twice that in the rest of the economy, and the capital-output ratio is three times that of the economy as a whole; (2) the interest rate is the opportunity cost of carrying inventories and maintaining livestock herds; (3) when interest rates rise, land values tend to fall; (4) farmers spend about half their gross receipts on purchased intermediate inputs, often purchased with borrowed credit; and (5) total farm debt today is about $215 billion. Each one percent increase in interest rates lowers net farm income by over ten percent.

Thompson also stated, "Agriculture generates 25 percent of its gross sales from exports." This makes agriculture extremely sensitive to macroeconomic policy in an environment of floating exchange rates. "Budget deficits in the face of tight monetary policy bid up interest rates. Given a freely functioning international capital market, this attracts foreign capital to the U.S." Thompson also related that, "Unstable macroeconomic policy imposes substantial adjustment shocks on traded goods sectors of the economy," including agriculture.

Thompson pointed to other shocks from macroeconomic policy. "Contrary to traditional assumptions, monetary shocks alter relative prices at least in the short run." That is, money was not neutral. Agricultural commodity prices tended to be more flexible in the short run than manufactured goods. This subjected agriculture to larger shocks than sectors with less flexible prices. Also, in periods when inflationary expectations grew, farmers had incentive to borrow heavily and to pay more for land than its agricultural earning power would justify.

Finally, Thompson listed inefficient investment decisions encouraged by tax laws. These laws facilitated creation of farm tax shelters and were an effect of fiscal policy on agriculture. He said, "This practice has reached the point that the farm sector, as a whole, currently shelters more non-farm income through tax losses than it generates in taxable profits." Tax policy clearly has distorted the investment incentives in agriculture.

Thompson ended by saying, "Througn a wide range of mechanisms, monetary and fiscal policy have substantial effects on the well-being of American agriculture." Unpredictable changes in tne policies, and sensitivity to interest and exchange rates, has increased instability in agriculture. "Agriculture would benefit from greater macroeconomic stability and, at most, small federal budget deficits."

OVERSHOOTING AND CREDIT

Much of the literature pertaining to tne effects of increased interest rates and the causes of high real rates of interest focused on the federal budget deficit, and monetary policy tnat provided control of monetary reserve growth. However, tne federal deficit may not deserve the sole blame for interest-rate-based problems in agriculture. Other authors mentioned deregulation, increased variability of interest rates--sometimes attributed to less accomodative monetary policy--and the need of lenders to charge a greater risk premium to compensate for increased risks in uncertain times. The increased use of variable rate loans was also shown to be a means of shifting a portion of the increased risk from the lender to the borrower.

These themes are consistant with finance theory, and are explained by the shift from relatively stable, gradually increasing land values and long-term

interest rates (bond values) during the pre-1970's era. Since the 1970's, land prices and long-term interest rates as represented by U.S. treasury bond prices have become more variable and less predictable in their direction of movement. Thus, the need for increased compensation--i.e., for a larger risk premium. There may be other factors required to explain why real rates of interest are at near-record high rates, and why the spread between the Federal Funds rate and the prime rate charged by commercial banks to their most credit-worthy agricultural customers has remainded wide. These phenomenon may be explained by the role of expectations and overshooting originally proposed by Dornbusch[50] to describe the market for foreign exchange.

One could hypothesize that in the 1960's and 70's, at the time fixed-rate, long-term credit commitments were made, expectations of lenders and borrowers were for continuation of similar conditions in the future. Obviously those expectations were not realized and borrowers benefitted at the expense of lenders. Current high real rates of interest may in part be reflecting attempts of lenders to regain or compensate for unrealized expectations and past losses. This hypothesis and the role of expectations in current high real rates of interest above rates normally expected for increased risk compensation may warrant further study.

Historically, expectations have played a major role in long-term investment and production decisions in agriculture. During the 1970's, expectations of farmers, lenders and the leaders of developing countries became exceedingly optimistic. Farmers and LDC's were willing borrowers of capital, creditors were equally willing lenders. In retrospect, many of the expectations of that era overshot realistic abilities of borrowers to service and repay debt, especially given subsequent macro-policy decisions. Currently, expectations of lenders and borrowers may be overshooting to the downside. Creditors, often motivated by

increased FDIC monitoring, have become cautious, if not unwilling lenders, especially where LDC's and agriculture are concerned (witness an 11% prime rate but a 13.5% or more rate for recent agricultural operating loans). To the extent that agricultural lenders overshoot and become overly restrictive in their lending policies, creditworthy producers will be forced out of business. As more production assets are forced upon an already depressed market, collateral values of remaining loans will be forced even lower. On the demand side, to the extent that LDC creditors overshoot, demand for agricultural products in international trade will be reduced.

The application of fixed-flex price models to measure overshooting was pioneered by Gordon Rauser and associates of the University of California, Berkeley. Stamoulis, Chalfant and Rauser[51] developed models which showed that "easy money favors flex-price markets while tight money does not; primarily due to overshooting." As a result, the comparative advantage shifted from the traded goods sectors (including agriculture) to non-traded goods (service) sectors in times of relatively tight money policies.

Frankel,[52] also from Berkeley, drew on the works of Dornbush to apply an overshooting model to storable agricultural commodities. Frankel related concepts from international finance to agriculture. Those concepts were: 1) neutrality of money, 2) interest rate parity, 3) rational expectations, 4) the magnification effect, 5) overshooting, 6) reactions to news, and 7) the risk premium. Frankel defined each concept in an international sense and related it to events occuring since 1982 in the U.S. economy. He downplayed the importance of an increased risk premium in explaining current real interest rates. Frankel concluded, "only a high real interest rate can equilibrate the demand for funds to the supply currently available. Only action to reduce the budget deficit is likely to bring real interest rates back down."

Orden,[52] Virginia Polytechnic Institute and State University, expanded on the works of Simms[54] as well as Litterman and Weiss[55] to develop a six variable model to show financial market variables had "substantial impact on agricultural exports and prices, but little evidence directly of impacts on agriculture by the aggregate monetary variable." Orden summarized by saying the results gave some support to a fixed-flex price model of the economy in which agriculture experienced relative gains in inflationary periods, and relative losses in deflationary periods. However, he also concluded that, "inflationary price level shocks not subsequently accomodated by monetary authority may place agriculture in a cost-price squeeze" was also supported by the data.

Chambers[56] also concluded, as shown earlier by Tweeten and others that, "a contractive, open market operation depresses the agricultural sector in the short run leading to lower prices and incomes, as well as reduced returns to factors specific to agriculture." He also concluded that agricultural prices fell relative to nonagricultural prices during periods of contraction.

MACRO LINKAGES TO THE REST OF THE ECONOMY

Starleaf,[57] Iowa State University, contrasted performances of the farm and non-farm sectors of the U.S. economy and found that the contribution of the farm sector to total GNP was only about three percent in the late 1970's. Effects of macroeconomic policy actions were measured by Starleaf via both the domestic and international (currency exchange rates) channels.

In later work, Starleaf with Devadoss and Meyers[58] developed a general equilibrium macroeconomic model that incorporated a macroeconomic block and a farm block. The macro block consisted of three markets--a goods, money and foreign exchange market--while the farm block consisted of two sectors--a crop

and a livestock sector. The model was used to link the macroeconomy and agriculture via four channels--exchange rates, interest rates, inflation and income. The authors claimed that because of forward and backward linkages among the endogenous variables it was possible to analyze the effect of farm policies and other changes in the agricultural sector on the overall economy." However, all results presented in the paper were one-way, being effects of changes of macroeconomic policies on agriculture. Litle recent work has been published showing the contribution of production agriculture and agribusiness to the overall economy.

CREDIT LINKAGES TO PRODUCTION

Le Blanc of the Economic Research Service, Associate Professor Yanagida, University of Nebraska, and Conway,[59] with the U.S. Department of Commerce asserted that "money increases the efficiency of obtaining physical inputs necessary for production and marketing." It was hypothesized that "real cash balances played an important role in agricultural production. Therefore, money balances had implications for specifying the "true" production function and empirically estimating the derived demand for agricultural inputs. The results "indicated demand for real cash balances was relatively inelastic to changes in the user cost of money and real cash balances substituted for machinery and capital." These findings have implications for future directions of agricultural policy and for agribusiness supplying production inputs if agricultural producers increase their preference for holding real cash balances rather than purchasing production inputs.

Pagoulatos and Azzou,[60] University of Nebraska tested the hypothesis that only unanticipated changes in monetary policy would have real effects on output

in the pork and beef industries. The model is similar to that of LeBlanc, Yanagida and Conway as it relates macroeconomic variables to the microeconomic production side of the agriculture. However, Le Blanc and co-authors measured the effect of real money balances while Pagoulatos and Azzou took the neo-classical approach that only unanticipated money matters. In developing the theoretical basis for their paper, the authors cited previous works by Barro,[61,62] Barro and Rush,[63] Enders and Falk,[64] Mishkin[44] and Muth.[65]

The authors concluded that "unanticipated money policy rather than anticipated monetary policy had real output effects on the U.S. hog sector." However, "the data revealed little support for the role of unanticipated monetary policy in affecting beef supply decisions.

FUTURE IMPLICATIONS OF MONETARY POLICY CHANGES

During the 1970's, the general psychology and expectations were inflationary. A wage-price spiral was in place and over 70 percent of the U.S. cost of production was in the form of wages. If the buy now-pay later inflationary psychology of the 1970's has truly been broken by a change in policy then the wage-price spiral may have become reversed. Recent labor negotiations in the steel and auto industries indicate this may be true. If so, then long-term implications are in place for reduced future demand for U.S. products in international markets and continued depressed financial climate for U.S. agriculture. Determination of future expectations about monetary and fiscal policy is critical to forecasting conditions and recommending courses of action for agricultural producers. If the current attitude of increased federal deficits financed by international capital borrowing rather than accomodative monetary policies is indeed a long-term change of philosophy then one could

predict continuing decline in export demand for U.S. agricultural products, increased competition for the remaining markets, and chronic excess U.S. production capacity. If, however, this philosophy is but a short-term phenomenon subject to change with the next presidential election or resignation of the current Federal Reserve Chairman, then an altogether different scenario would be painted as inflationary policies are re-instated and the upward wage-price spiral is reignited.

There is at least general concensus in the literature that agriculture is affected by macroeconomic policy. As has been shown, there was less agreement on the avenues or even the direction of specific effects of different variables. There has also been very little recent research about the effects of agriculture on the macroeconomy or agriculture as a segment of the total integrated macroeconomic system. Agricultural economists have stated that agriculture and related businesses contribute from 20 to 25 percent of the GNP. At one time income to production agriculture was thought to have a multiplier effect of approximately seven throughout the rest of the economy. Little or no recent research or literature has been published on these topics.

SUMMARY AND CONCLUSIONS

A survey of the literature showed major emphasis on two changes in monetary policy and resulting effects on the economic well-being of agriculture. Devaluation of the dollar in 1971 and subsequent movement to floating exchange rates by industrialized countries in 1973 had vast implications for international demand for U.S. agricultural products. Integration of the U.S. into the world economy and development of a highly liquid international capital market were closely related to movement of floating exchange rates and increased export demand.

The effort to reduce inflation rates by emphasizing control over bank reserves began in October 1979. This second change in monetary policy also had wide ranging impacts on agriculture. Effects of this policy decision were made more complex by the following other factors:

1) Fiscal policy (federal deficit) remained relatively loose while growth in monetary targets was slowed. This resulted in increased interest rates to attract necessary capital to finance the deficit.
2) Agriculture evolved into a capital-intensive business. The capital-labor ratio in agriculture is now more than twice that of the rest of the economy and the capital-output ratio is more than three times that of the economy as a whole.
3) Movement from fixed to variable rate loans shifted interest rate risk from creditors to borrowers.
4) Declining asset values in agriculture magnified impacts of increased interest expenses on the debt to asset ratio.
5) High real rates of interest in the U.S. relative to the rest of the world and capital inflows resulted in a strong dollar and reduced demand for agricultural exports.

As a result of these factors, current total farm debt is now approximately $215 billion and interest as a percent of total agricultural production expense is at record highs. Deterioration of the financial health of agriculture is perhaps best exemplified by recent publicized problems in the Farm Credit System. Given current conditions and projections, one would expect continued hard times and more liquidation of agricultural assets throughout the rest of this decade.

As predicted by Breimyer, "Farmland owners with no debt will absorb the loss on their balance sheet. Those with debt will do the same until their net

worth is zero. Thereafter, lenders will absorb the decapitalization." Given recent developments in the farm credit system, one could further predict that after the lenders have absorbed a portion of the decapitalization, the federal treasury will pick up the remains.

Money growth observers currently point to fourteen percent growth of money supplies throughout the past year and project another round of inflation beginning within the next six to twelve months. However, agricultural producers who survive the current shake-out in agriculture will have investment philosophies shaped by financial failures of friends and neighbors. They could be projected to become more cautious and judicious users of credit in the forseeable future. A near-term return to the speculative attitudes of the 1970's would not be readily projected, even if monetary growth continues to overshoot publicly stated goals of the Federal Reserve. A surplus of used production assets and a backlog of assets in the hands of creditors may reduce demand for some production inputs throughout the next decade or more.

Bredahl,[66] University of Missouri, in a very recent article, perhaps summarized future implications for U.S. agriculture the best. He listed three prominent misconceptions present in current agricultural trade rhetoric. The following claims were made by Bredahl:

1) World and U.S. prices do not reflect the comparative advantage of U.S. costs of production. Rather, returns from alternative uses for labor and capital determine production levels in other countries.
2) When the dollar is devalued, agricultural exports still may not receive an impressive boost.
3) American farmers may not be the most efficient food and fiber producers in the world because, "the labor and resources in developing nations have few alternatives, and thus low opportunity costs."

The bottom line as projected by Bredahl is that over-capitalization and overcapacity in agriculture are global problems. As he concluded, "There is no quick and easy fix." Given these projections, one would project that the return to profitability for U.S. agricultural producers and related businesses will be a slow and tedious process.

Still, there are farm owners with little or no debt who will survive the current washout of production assets. As production capacity in agriculture and other basic industries is liquidated, future potential output will also be reduced. These factors could lead to predictions that the next round of inflation will be more severe because of reduced ability to respond to increased demand signals.

Whenever inflationary expectations return, and it may well be the final decade of the century before they do, those with farmland and other production assets who remain in business will be in the position to capitalize on increased demand as well as inflationary returns on assets. Agribusinesses that can best service these operators will prosper as well. The others, as they say, will be history.

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