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Why Has US Agriculture Not Fully
Shared in US Economic Prosperity?
(Revised)

By

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Why Has Agriculture Not Fully Shared in US Economic Prosperity?

David L. Debertin*

The US economy during the 1990s was characterized by rapid annual rates of economic growth, modest and often diminishing rates of inflation, a rapid rise in worker productivity resulting in real increases in inflation-adjusted wages and incomes, and very low unemployment rates leading to worker shortages in some sectors. In contrast, US farmers were mired in an economic environment characterized by weak foreign and domestic demand for most basic agricultural commodities, low commodity price levels, low rates of return to both capital and labor, an increasing reliance on off-farm income for farm families who continue to farm, and declining real aggregate net farm income. US production agriculture is one of only a few sectors of the US economy that did not fully participate in the prosperity commonplace in other sectors of the American economy during the 1990s.

Why did US farmers fare poorly even as most other segments of the US economy prospered during the 1990s? I develop three arguments to explain why US agriculture was prospered in the 1970s but has underperformed relative to the rest of the US economy in most of the 1980s and 1990s. Measures of the performance of US agriculture are based on 50 years of historical data starting with 1949 (USDA).

The three arguments are: (1) Agriculture does well in early stages of a period of time when there is rising inflation. However, the 1990s were dominated by periods of low and declining inflation; (2) Agriculture prospers when export markets are strong. Export markets have been weak because of factors such as the strong US dollar, weakness in economies of major importers, and increasing ability of foreign countries to produce basic agricultural

commodities for their own use, and (3) Changes have occurred in consumer tastes and preferences for agricultural commodities and products, both here and abroad, and farm-level production systems have been unable to fully accommodate these changes. There have also been changes in US families that have resulted in more two-career households, less time spent in the kitchen, and more pre-prepared and restaurant meals consumed.¹

Background

When measured relative to the real size of the entire US economy, US production agriculture has been responsible for an ever smaller share of real US Gross Domestic Product (GDP). Despite large physical productivity increases, real farm-level prices for most agricultural commodities have fallen over time. The value of farm output represented approximately 12 percent of US GDP in 1950, gradually fell to 5-6 percent of GDP in the late 60s, then rose to a recent high of 7.37 percent of US GDP in 1973 (Figure 1). Since then it has fallen in most years to a low of 2.63 percent of US GDP for 1998 (USDA). Despite the technical productivity gains in the production of crops and livestock, the real aggregate value of output produced by US farmers is little changed from the real value in the late 1940s and early 1950s (Figure 2). Gains in revenue accruing from technology-induced output increases are just offset by deteriorating crop and livestock prices.

Furthermore, as technological progress proceeds, profit margins in farming have not widened, as is widely believed, but narrowed. Nationally, net farm income was over 40 percent of the value of farm output sold in 1949, but only around 20 percent in recent years (Figure 3). Currently, it takes about twice as much value of sales to achieve the same net farm income as it did in 1949.

Aggregate real net farm income, too, has fallen over time, from about 55 billion dollars in 1949 to less than 30 billion dollars by the end of 1999 (Figure 4). This reduced aggregate income is being shared by fewer and fewer farmers. As a result, real net income per farm has risen only slightly, from just under \$9,400 in 1949 to an average per farm of just over \$12,000 in 1999—an average well below the poverty level for a family with no income from off-farm employment or other sources.

This is despite large productivity gains in agriculture attributable to new agricultural technologies developed in the public and private sectors. During the same time, the aggregate income of the non-farm US economy has experienced significant real gains, with real GDP growth in some recent years running between 2 and 4 percent. The only exception to this was a brief period in the early and mid 1970s, when the real growth in the value of output for US agriculture was more rapid than for the rest of the economy.

Inflation and US Agriculture

In many respects, the decade of the 1970s, particularly the early- to mid-1970s, was perhaps the decade of the century for US agriculture. Farmers fondly recall the combination of rapidly increasing commodity prices, soaring land values, and a widespread view articulated by agricultural leaders that the US was increasingly going to play the leading role as food supplier to the world. The good times peaked in 1973 when real (inflation-adjusted) aggregate net farm income reached an all-time high of 77.4 billion dollars, almost three times the estimated 26.4 billion dollar figure for 1999 (Figure 4). According to USDA farm real estate data, at the close of 1973, US farm real estate was valued over 23 percent above what it was valued only one year earlier. As Secretary of Agriculture in the Nixon and Ford administrations during this period, Earl

Butz encouraged farmers to plant "fence row to fence row" in an effort to satisfy burgeoning world-wide demands for US-produced commodities, and rising real estate prices reflected the strong commodity prices of the period.

In contrast, much of the rest of the US economy was faring poorly in the early and mid 1970s. Seeing inflation (as measured by changes in the Consumer Price Index) rise to above 5 percent in both 1969 and 1970, President Nixon in 1971 implemented wage and price controls in an attempt to stem the rising prices (Nixon, Encyclopedia.com).² For much of the decade of the 1970s, the US stock market was very weak, as people coped with rising inflation by moving money into tangible rather than paper assets, including farmland, residential real estate, and commodities ranging from grain to gold. Both 1973 and 1974 were terrible years for the US stock market and for financial assets of most other types. In 1973, the returns to the S&P 500 (counting reinvested dividends) dropped 14.5 percent, followed by an even greater loss of 26 percent in 1974.(Table 1). In contrast, the value of farm assets (land and other real estate) never declined in any year during the 1970s. US farmers greatly benefitted from a combination of strong commodity prices and a flight of capital from financial assets into assets such as farmland.

Thus, US agriculture, with most of the capital assets in farmland, and with rising commodity prices, was one of a handful of commodity- and real asset-based sectors that benefitted greatly from the adverse general economic conditions affecting much of the rest of the economy. That production agriculture was experiencing its best years ever while the rest of the US economy floundered was no coincidence. Rather, the prosperity of US agriculture during this time was largely the consequence of the same set of macroeconomic conditions that led to a weak overall US economy.

To illustrate the connection between inflation and the farm economy, Figure 5 plots the annual percentage changes in the Consumer Price Index along side US Real Net Farm Income. Keep in mind that the net farm income series has already been adjusted by the CPI. Prior to the 1970s, the pattern appears to be fairly similar, with increases in the percentage change CPI coinciding with increases in real net farm income, and farmers faring the best in years of higher percentage changes in the CPI. This is carried though as well into the mid 1970s. Only by 1980-81, with inflation again rising above 10 percent annually, did this relationship shift, as farm input prices rose and export demand weakened. Since the 1990s, the old, pre-1970s pattern has reappeared, with the years with the greatest increase (or sometimes, the smallest decline) in real net farm income corresponding with the years with the highest inflation rates.

The economic conditions that led to the weak performance of the US farm economy in the 1980s are well known. As inflation rose, farm input prices increased, even as world-wide demand for US-produced agricultural commodities deteriorated and grain prices collapsed. Then Fed-chair Paul Volcker, appointed by President Jimmy Carter in the waning months of his administration, (Volcker, Encyclopedia.com) was the first Fed chair (at least in recent history) to attempt to make a serious attempt at controlling inflation through the use of restrictive monetary policy rather than to continue to monetize an increasing national debt brought about by persistent budget deficits. He recognized that a tight-money policy was going to slow the economy greatly and result in a worsening situation for debtors—in agriculture particularly those leveraged farmers who had purchased land in the 1970s primarily by using borrowed funds. Weak export markets and farm prices did not help, as farmers were forced into bankruptcy in proportions not seen since the depression. Those supplying credit to farmers also suffered greatly.

But arguably, it was the strict monetary policies begun under Volcker (the same policies that in part led to the agricultural financial crisis in the early 80s) that have been the primary underlying economic force making possible the prosperity in the general US economy that begun in 1982 and has only recently shown signs of faltering. The stability of prices is a necessary precondition for strong economic performance of most sectors outside the farm economy. Although it is now also becoming apparent from recent recession evidence that while price stability is a necessary condition for prosperity, price stability alone will not ensure that the economy will continue to expand indefinitely without hesitation.

Throughout most the 1970s, the US stock market performed poorly, as the public fled paper assets such as equities in search of tangible stores of wealth (i.e. farmland and commodities). But since 1982, with a few exceptions (most notably the "crash" of 1987 and the decline in 2000 and 2001), the average returns to investments in the stock market have been large. This is the same period of time when in most years returns to tangible assets including appreciation in farmland and the values for most commodities including crops and livestock have been weak.³

Having charted a series of monetary policy moves that has led to a historically unprecedented length of time with strong economic growth for the general US economy, the Federal Reserve is not about to return to the kinds of economic policies in the 1970s under which farmers prospered at the expense of other economic sectors. Specifically, the most widely accepted economic theory now is the "Chicago" view that Fed policy must be singularly focused on maintaining a stable prices as measured by the CPI, regardless of the short-term consequences for other economic objectives. The beliefs embodied in the Humphrey-Hawkins legislation

suggesting that the Fed could simultaneously pursue multiple goals (including price stability along with low unemployment and strong GDP growth) no longer are taken seriously by most economists. Rather, it is now obvious that price stability must be the single-minded focus of Fed policy, and if price stability is achieved, this, in turn, *makes it possible* for the economy to achieve both high rates of general economic growth and low rates of unemployment over long periods of time.

International Markets

Today, commercial farming has "...mature industrial characteristics and operates on an increasingly competitive, global market where the future growth of domestic US farm production depends on export markets (Bonnen and Schweikhardt, p. 5). Farmers often long for a return to the conditions that led to strong export markets for US-produced agricultural commodities in the 1970s. What were these conditions, and why have they not reappeared? During the 1970s, many agricultural policymakers strongly believed that US farmers would increasingly become the key suppliers of agricultural commodities to the rest of the world, and for a time during the 1970s, it looked like that was exactly what was happening. As the US rate of inflation rose in the 1970s, the value of the US dollar relative to many other key foreign currencies weakened. This made US-produced agricultural commodities appear to be cheaper, and thus, good buys, in world markets. The US was even able to secure sales of grain to the Soviet Union, whose own agriculture was struggling with production problems and natural disasters.

But by the late 1970s, it was clear that export markets for US-produced agricultural commodities was weakening. By tightening the money supply, the Fed made it more attractive for foreigners to hold dollars. Not surprisingly, the value of the dollar rose as currency investors

worldwide increasingly sought to hold dollars to take advantage of higher interest rates, even as US export markets weakened. To the extent that Federal Reserve policy was successful in bringing down inflation through increases in interest rates, the value of the dollar strengthened in world markets. Meanwhile, relations with the Soviet Union soured, and with the deteriorating relations, grain sales suffered. There was hope that as the economies of many developing countries improved, that these countries would represent expanding markets for US agricultural commodities. But this never happened, at least not nearly to the extent US farmers hoped it would.

US agriculture is sometimes promoted as among the most efficient and productive in the world. When measured on the basis of output per unit of labor employed, it probably is. Labor in the US, however, earns higher rates of return on average in the non-farm sector than in farming. As labor leaves agriculture for non-farm employment, capital replaces labor. In the process of coping with historically low rates of return to labor by employing increasingly capital-intensive technologies, farmers drove down the rates of return on capital, for most of the last 30 years, to a rate of return below that of a long term Treasury bond (Figure 6).

What does this argument have to do with foreign trade? As foreign economies develop, there is a similar out-movement of labor from agriculture, but the amount of labor that remains in production agriculture generally stays far higher than in developed countries such as the US. In a developing country, often capital not labor is the scarcest resource. The imputed relative price of capital to labor means that in a developing country, technologies can and will be employed that appear from the US perspective to be labor-using and technologically unsophisticated, whereas US labor-saving technologies employing large amounts of capital to labor appear to be

comparatively more “advanced.”

Increasingly, however, the agricultural production technologies employed in developing countries are sophisticated enough not only to supply enough for domestic consumption, but to produce a surplus that can be sold in world markets for scarce foreign currency. Blank (2000) suggests that technological advances world-wide lead to more efficient agricultural production and the globalization of markets further fueling international economic development, and pushing countries up what he calls the “economic food chain.” Leaders of developing countries quickly realize that production agriculture can be a key way of acquiring foreign currency. Further, some of this foreign currency can be used to purchase technologies and make other improvements that further improve the productivity of agriculture within a developing country. This is frequently done rather than to purchase commodities from the US with the currency. Antle argues that the declining share of nationwide GDP attributable to farmers is a trend occurring in all developed countries.

Up until the 1980s, US agriculture held some important advantages over the agricultures of most other foreign countries. Output-enhancing technological advances largely based on the ready availability of inexpensive capital (during the late 1970s, at least in real terms) led to efficiencies that resulted in rapid gains in output per unit of labor, even as labor forced out of production agriculture found employment elsewhere. By the early 1980s, this had begun to change, and as real interest rates rose then as a result of Fed policy to control inflation, capital for investment in agriculture in the US became relatively more expensive, and new agricultural technologies that required more capital investment to implement no longer were as efficient nor economic in many instances. These trends continue to the present, gradually globally shifting the

comparative advantage in agricultural production away from the US and toward countries employing less capital-intensive production methods—even methods that appear to be inefficient from the US perspective in terms of output per unit of labor employed.⁴ As one example, Rozelle and Huang point out that China is expected to become an exporter of wheat, a commodity US farmers thought they held a significant edge in production technologies.

US farmers have long believed that as economies developed world-wide, diets would improve, and the US would increasingly supply demands for food for these improved diets. While economies are developing and diets are improving, it does not necessarily follow that developing countries will look to the US for an increasing share of their food supply. In fact, the opposite may be occurring. The current concern in Europe over US agricultural commodities that have been produced from genetically modified plants and animals presents another challenge to the expansion of export markets, a challenge US farmers and agribusinesses have yet been fully able to comprehend, let alone accommodate.

The Changing US Consumer

US agriculture has not fully assimilated the implications for production agriculture of the changes that have taken place in the changing tastes and preferences of American consumers over the past fifty years (Debertin). Fifty years ago the dominant household was one consisting of a husband, a wife, and usually 2 or more children. The husband was employed while the wife stayed home, tended the house and garden and cared for the children. Wives often spent many hours preparing meals for the family.

Today, the US Bureau of the Census reports that the number of households headed by single people exceeds the number of households headed by a married couple. The number of

children per household has declined as well. Households in which both husband and wife works are far more common than households where the wife stays home and cares for the children. Even in single-parent households, the parent generally works. Recent welfare reform efforts that are putting more former welfare recipients to work is another factor reinforcing this trend.

When both adults work, there is far less time to prepare meals from scratch. Consumers either purchase foods at the grocery store that are nearly ready-to-eat, with low farm-level value, or eat out. To the extent that consumers purchase food items with high marketing margins and low values at the farm level, any efficiencies in the farm-level production system from new technologies in crop and livestock production will hardly be felt by consumers, if at all. Consumers are unlikely to respond to lower farm-level prices by purchasing more, because these efficiency gains will be barely noticeable at the final consumer level. This is a drastic change from 50 or 75 years ago, when farm-level efficiency gains commonly benefitted consumers who were purchasing food items with a comparatively high farm-level value.

There is evidence in the data to support the claim that increased efficiencies in the farm-level production system no longer are resulting in ever lower food prices for consumers. What is happening can be better observed by forming a ratio of a specially constructed USDA price index for food eaten at home relative to the overall CPI (Figure 7). Throughout the 50s and 60s, this ratio steadily declined, but then rose sharply in the early 1970s. By the late 1970s, this ratio was again declining rapidly, reaching a low in 1984. But since then, this ratio has remained almost constant, indicating that prices for food eaten at home to consumers over the past 15 years have been rising at about the same rate as the overall CPI, and suggesting that gains in farm-level production efficiencies in the aggregate are no longer being passed along to the consumer.

Moreover, the value of food eaten away from home is now nearly equal to the value of food eaten at home (USDA)—in the 1950s food eaten away from home represented less than half of the value of all food consumed. Since food eaten away from home tends to have a very low farm-level value, production efficiencies are even less likely to be transmitted to consumers when food is eaten away from home. The trend toward the purchase of nearly ready-to-eat items from grocery stores with low farm-level value has meant that even if gains from production efficiencies were passed along to consumers, they might hardly be noticeable.

Furthermore, the years since 1985 have been a period of rapid consolidation in the food manufacturing and retailing industries. Vertically integrated food processors exert considerable and increasing monopsony power over producers of agricultural commodities. Sexton has recently argued that the market power of food processors, manufacturers and retailers is increasingly permitting them to retain the efficiency gains in farm-level agricultural production for themselves, rather than passing these gains forward to consumers or backward to farmers.

Perhaps the Current Situation Facing US Agriculture is Not as Bad as it First Appears

Despite these problems, some agricultural producers are faring well even under current conditions. The USDA has a consistent series on the value of farm real estate that extends from 1960 through 1998. For this 39 year period, the compound annual growth rate in the value of farm real estate was approximately 4.7 percent per year. Although most of the increase in the value of farm real estate is appreciation in farmland, there is some new construction that is also included—such as buildings for contract chicken and hog production, so the appreciation rate is a

little less than these figures would suggest. Over the same time period, the US Consumer Price index increased at a compound rate of 4.4 percent, so appreciation in farm real estate has barely although approximately kept pace with the overall rate of inflation in the US economy.

As the average age of farmers increases, more and more aging farmers are seeking to wind down farming activities that require large amounts of owner labor. Meanwhile, since the financial crisis of the 1980s, fewer and fewer active farmers are purchasing farmland but instead renting—often on a cash rent basis. Cash rental data net of property taxes suggest that rents usually fall in the 6 to 8 percent range of the land's fair market value. So increasingly, owners of farmland are renting out land to younger, active farmers rather than selling them land, and earning a return from the cash rent of perhaps 6 to 8 percent of the land value plus the average 4+ percent compound average rate of return in farmland appreciation. These aging landowners are doing quite well, since they generally have little or no debt on the land. For them, the 10 to 12 percent rate of return is not equal to the rate of return in the S&P 500 in recent years, but it is an excellent return compared with an alternative investment in a bank certificate of deposit.

Active farmer-renters, those who otherwise would have had to borrow money to purchase land, are more than happy to let their landlords bear the risk associated with a possible short-run decrease in farmland values. Aging landlords are happy to assume the risk because any short term deterioration in farmland prices are merely paper losses for the landholder, not a collateral crisis at the bank or farm credit agency. Therefore, despite the weakness in the overall farm economy, many landlords living in rural areas are faring quite well. Meanwhile the younger, active farmers—those who are renting land in—are in better financial shape than they would have been had they tried to borrow money to purchase rather than rent the land. Many of these farmers perhaps

still have as a longer term goal the ownership of additional land, but the current situation is also acceptable. Some of these farmers are undoubtedly renting land from their retired parents and will inherit some of this land or rent their siblings shares on their parent's death.

Large outlays by the federal government to support commodity prices in the wake of the 1996 Farm Bill have kept active farmers in business and maintained cash rental rates for landholders. The combination of government payments and the stronger equity position of farmers today relative to the early 80s has meant that farmland values have not deteriorated in response to lower commodity prices as in the early 80s. Therefore, the government payments have been helpful to both active farmers and to retired landholders.

However, this is a delicate balancing act! In the face of weak worldwide demand for agricultural commodities, farm incomes can be supported through federal outlays for government farm programs. This, in turn, tends to stabilize farmland values. The bet landowners are placing is that in the absence of a recovery in commodity prices, the federal government will be willing to continue to pay out tens of billions of dollars in payments to farmers. Were this not to continue, rental rates would likely drop, quickly followed by a sharp decline in average farmland values. With both rental rates and land values dropping, aging landholders might then decide to try to liquidate rather than continue to hold farmland. An increased supply of farmland on the market could result in a further downward spiral in land prices.

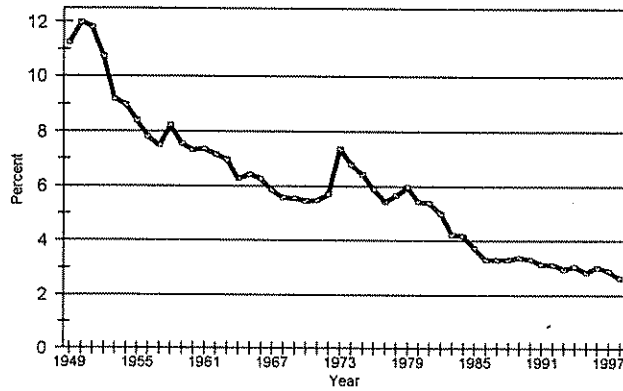
However, even a sharp decline in farmland values would not lead to the crisis that occurred in the early 1980s, where leveraged farmers quickly found themselves without enough collateral to cover loan balances. USDA data suggest that in 1985, the debt to equity ratio for US agriculture reached an all-time high of 29.8 percent, up from approximately 20 percent in 1980.

By the end of 1998, the debt/equity ratio had again dropped below 20 percent, a level similar to the ratio that held between 1965 and 1980.

Further, a decline in farmland values, however traumatic for landowners, would raise the returns to capital in agriculture, which in recent years has been in the 3.5 to 4.2 percent range. In addition, if farmland were cheaper, new opportunities would occur for young, beginning farmers to purchase land. Paul Volcker put a tight money policy into effect that, while painful, arguably set up the economic conditions that laid the foundation for the prosperity that has continued since 1982 in the general economy. So also, a major revaluation of farmland may be a necessary first step in restoring US agriculture to prosperity while ultimately reducing reliance on government farm program payments.

In his recent AAEA presidential address, Gardner highlighted the increasing reliance on off-farm employment as an income source for agricultural producers. Many agricultural economists have long been concerned about the low value of farm-level output for many small and limited-resource agricultural producers. However, Garner noted that because of the heavy reliance on income from employment and other non farm-related activities, the average US small farm has a total family income nearly equal to that of large-scale commercial farms. If Gardner's analysis is correct, farmers in many parts of the US who have been unable to make a sufficient family income from the sale of crops and livestock have adapted to the situation, and generally found ways to increase their incomes through off-farm employment. This diversification of family income sources through off-farm employment have also made these farmers less susceptible to the frequent gyrations in farm commodity prices, with the income from off-farm employment acting as a safety net.

Figure 1. US Value of Farm Output
as a Percent of US GDP, 1949-98



Source: Calculations by the author based on USDA and Department of Commerce historical data series

Source: Calculations by the author based on USDA and Department of Commerce historical data on the value of farm-level crop and livestock production and the US Consumer Price Index.

Figure 2. Real Value of Farm Output
Deflated by the US CPI, 1949-98

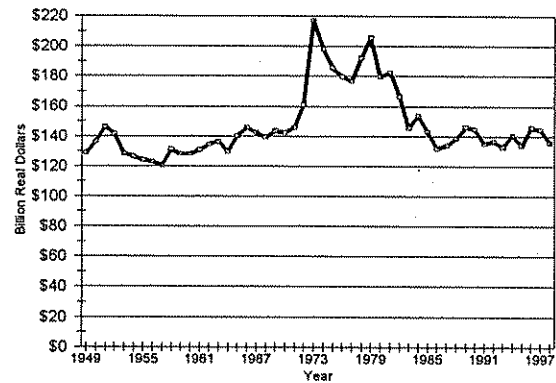
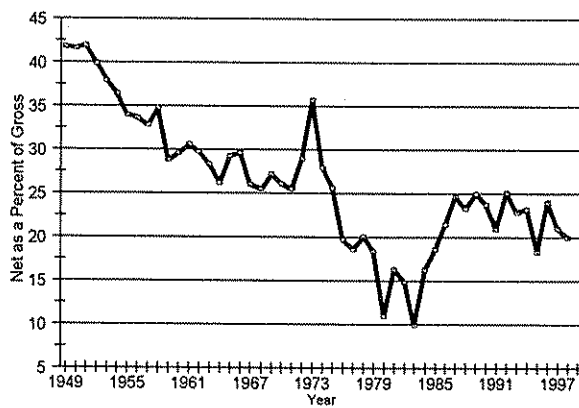


Figure 3. Ratio of Net Farm Income
to Gross Farm Output, US, 1949-98



Source: Calculations by the author based on historical USDA data series.

Source: Calculations by the author based on USDA and Department of Commerce historical data series

Figure 4. Real Net Farm Income, US, 1949-98

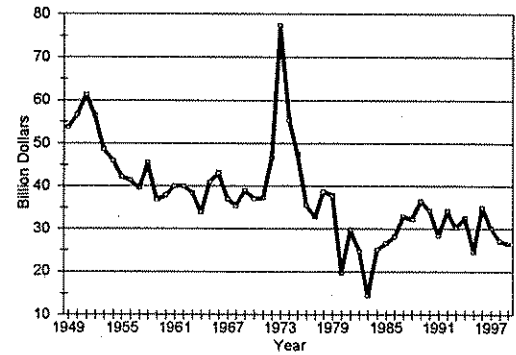
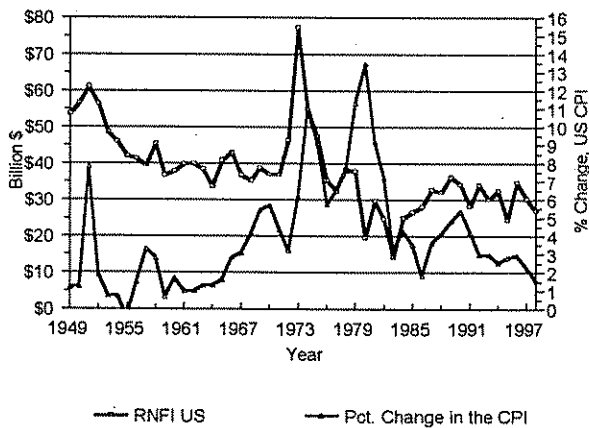


Figure 5. Real Net Farm Income and Pct. Change in the US CPI, 1949-98



Source: USDA and Department of Commerce historical data series

Source: Calculations based on Historical USDA data series. Long bond yield series compiled by Global Financial Data (<http://www.globalfindata.com>)

Figure 6. US Bond Yields Versus Return on Assets, 1961-98

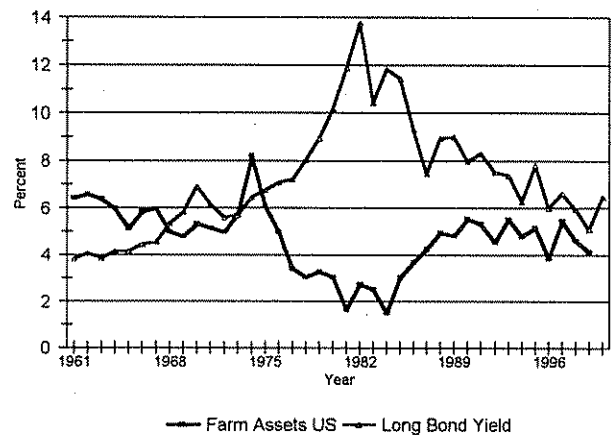
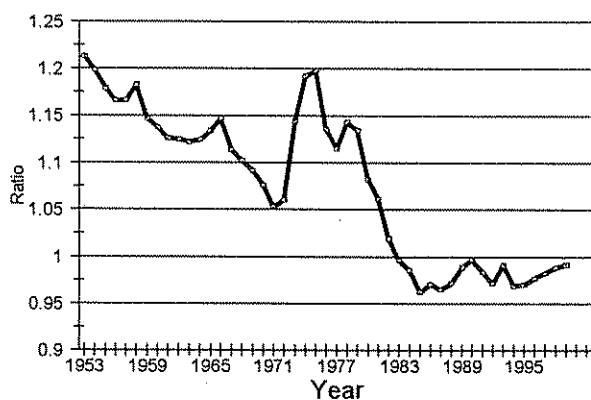


Figure 7. USDA Food Price Index
Divided by US CPI, 1953-99



Source: US CPI data from the US Department of Commerce, Bureau of Labor Statistics

(<http://www.bls.gov>) Food price index data for the years 1953-96 are the specially constructed series for food eaten at home contained in the USDA, Economics and Statistics System, "US Food Expenditures, Table 14," available at <http://usda.mannlib.cornell.edu/datasets/food/91003>. Food price index data for the years 1997-99 are based on the US CPI for food and beverages for those years. The ratio was constructed by the author.

Table 1. Financial returns to the S&P 500, and
Changes in Farm Real Estate Values, 1970-79.

Year	Percent Change in Financial Returns to the S&P 500	Percent Change in Farm Real Estate Value over Previous Year
1970	3.5	4.1
1971	14.1	8.2
1972	18.7	12.7
1973	-14.5	23.1
1974	-26.0	7.3
1975	36.9	13.7
1976	23.6	15.7
1977	-7.2	10.3
1978	6.4	17.8
1979	18.4	17.0

Source: Financial Returns to the S&P 500 based on historical tables compiled by Reshaw, for his Internet Text: *The Fed (Or Economy) Watcher's Handbook* (<http://www.albany.edu/~renshaw>) Year over year percentage changes in farm real estate data are the author's calculations based on USDA data as reported in their farm assets spreadsheet database.

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Endnotes

1. Time series data used in support of the arguments proposed here and used as the basis for the figures and tables in the paper obtained from a variety of sources, but primarily rely on standard USDA data series. The author has compiled a spreadsheet containing the data series cited in this paper, and a copy is available by contacting the author. The data and graphs constructed by the author are also available as an Excel spreadsheet.
2. The inflation rate for all of 1971 was 4.38 percent, high but not alarming compared with the inflation rates that would prevail only a few years later, 6.22 percent in 1973 and 11.04 percent in 1974. The US annual rate of inflation peaked at 13.5 percent in 1980.
3. Not all writers are as complimentary as I am with respect to Paul Volcker's actions at the Fed to restrict the money supply and contain inflation which set up the precondition necessary for the strong subsequent performance of the general US economy. A counter-argument proposes that the tight money policies of the early 80s that raised interest rates also caused manufacturers in the US to under-invest in new capital-intensive technologies. High-wage manufacturing jobs went elsewhere, and the US was left with a low-wage service-based economy. Also see Habegger's arguments on why restrictive Fed monetary policy has harmed US farmers. Economic scholars in the early 1980s were sharply critical of the Fed for what they believe are erratic and inappropriate changes in the money supply, which, in turn caused prices to fluctuate by a greater amount than they should have (see White for an illustration of the logic as written in 1982).
4. For an extensive discussion of issues surrounding the changes in the comparative position of the US as a producer of agricultural commodities for world markets, see Blank (1998 and 2000).