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FARM INCOME AND FINANCE: THE IMPORTANCE OF GOVERNMENT PAYMENTS

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Government payments attained a new high of \$22.1 billion in 2000, boosted by \$8.9 billion in emergency assistance and \$6.4 billion in loan deficiency payments. In each of the last three years, the U.S. government has reacted to low commodity prices and potential economic adversity with legislation to increase financial assistance to farmers. Payments forthcoming as part of emergency legislation coupled with the first extensive use of the Loan Deficiency Payment Program has helped to maintain farm income and temper financial hardship for many producers. Since 1996, direct government payments have totaled nearly \$70 billion. Emergency assistance originating from special legislation comprised \$20 billion of total government payments during 1996-2000 and is forecast to be \$3.6 billion in 2001. Higher crop prices in 2001 will result in nearly \$2 billion less in Loan Deficiency Payments, which were a significant component of total payments in 1999 and 2000. Production flexibility contract payments, established in the 1996 Farm Act, were mandated to trend downward according to a declining fixed allocation budgeted for each successive year of the program. In 2001, production flexibility contract payments are forecast to be \$800 million lower than in 2000 (figure1).

Farm Income Forecast to Decline with Moderate Government Payments

Net farm income is forecast at \$41.3 billion in 2001. This would be \$4.1 billion less than 2000's \$45.4 billion and \$4 billion below the 1990-2000 average of \$45.3 billion (figure2). An anticipated decrease in government payments is the main reason for a decline in the farm income forecast, as the value of commodity production is actually on an upward trend. Projected at \$14.1 billion, government payments will be approximately \$8 billion less in 2001 than in the previous year.

The total value of crop production (final crop output) for 2001 is forecast at \$101 billion. The value of crop production rose by \$3.2 billion in 2000 and is projected to follow that with a larger gain of \$4.7 billion in 2001. This is noteworthy because by 1999, the value of crop production had fallen by \$22.4 billion from its record \$116 billion in 1996, primarily as a consequence of falling market prices for many farm commodities. Receipts are expected to be up about \$3.3 billion for feed grains, cotton, oil crops, and tobacco.

With increases in demand maintaining farm prices and red meat and poultry production anticipated to reach a record high in 2001, livestock receipts are expected to increase slightly from 2000's record level of \$99.5 billion. Prices for milk and dairy products should begin to recover in 2001 as the market adjusts to the large production levels of the last two years. Poor forage conditions over the last several years have held down beef cattle inventories despite improving prices. Receipts for cattle and calves are forecast to decline slightly in 2001 on the heels of a \$3.7-billion increase from 1999 to 2000. Gains for cattle and calves in 2000 helped to increase the value of livestock production (final animal output) by \$4.1 billion even though the value of dairy production declined by \$2.5 billion. After an almost 7 percent production growth in 1999, growth in broiler production slowed by half in 2000, dropping well below the 20 year

average growth rate of 5 percent. Broiler production growth in 2001 is expected to be only slightly larger than 2000.

Farming Will Cost More in 2001

Total production expenses incurred in the production of agricultural commodities are forecast to rise \$1 billion in 2001, topping \$200 billion for the first time. Energy costs are projected to rise slightly in 2001. Fuel expenses are expected to be similar to 2000 as recent price increases are expected to fall off towards the end of the calendar year. In 2000, expenditures for fuels increased by \$2.3 billion, which was the highest year-to-year jump since 1980, when they rose by almost the exact same dollar amount. (The highest percentage year-to-year jump, however, occurred in 1974, when fuel costs soared 43 percent.)

In 2001, slightly higher feed grain prices and a combination of the continuing contraction of the cattle inventory and a modest expansion in the poultry sector will leave feed expenses at the same level as the last 2 years. Livestock expenses are forecast to fall nearly 6 percent due to reductions in cattle herd sizes. Seed expenses are down slightly as prices remain stable or fall and forecast acres planted declines. Even though planted acreage is expected to fall, fertilizer expenses should increase by 4 percent due to the impact of significantly higher natural gas prices on production costs for nitrogen fertilizer. Although petroleum is one of the main inputs in pesticide products, pesticide expenses are forecast up less than 2 percent because other production factors account for a larger share of pesticide costs. Repair and maintenance of capital items is expected to rise slightly as farmers choose to extend the life of capital inputs rather than invest in new machinery and equipment. Marketing, storage, and transportation expenses will be up more than 5 percent due to fuel costs. Machine hire and custom work expenses will rise only a little because of lower planted acreage offsetting higher fuel costs.

Total farm production expenses equaled 89 percent of final agricultural sector output in both 1999 and 2000. In addition to the value of crop and animal output, final agricultural sector output includes income from forest products, machine hire and custom work, other farm related income, and the imputed rental value of farm dwellings. Direct government payments are not included in final agricultural sector output. This ratio, which reflects the proportion of final sector output that is absorbed by production expenses is expected to fall to 88 percent in 2001 based on the modest increases in expenses being offset by gains in marketing receipts (figure 3). During most of the 1990's the ratio of total farm production expenses to final agricultural sector output ranged from 80 to 85 percent. The relatively high values of this ratio since 1998 reflects the impact of historically low crop prices on the value of sector output and recent increases in some expense items.

Using this framework demonstrates how government payments help to maintain operating margins. Since 1980, government payments largest percentage contribution to margins occurred in 1987 at 8.75 percent followed closely by 2000's estimate of 8.05 percent. However, the ratio of total farm production expenses to total agricultural sector output plus direct government payments did not reach its lowest value during these two years. This occurred in 1989, 1992, and in 1996 when the ratio was 76 percent. With the exception of 1995 the ratio value calculated to include government payments ranged from 75 percent to 80 percent during 1986 to 1997. Since 1998 the ratio value including government payments has been about 81 percent and is expected to rise to 83 percent in 2001.

Not All Farms Receive Government Payments

According to USDA's 1999 Agricultural Resource Management Study (ARMS), 41.6 percent of all farms received government payments. This was up from 1998 when 36 percent of farms reported receiving

payments. Government payment farms received on average \$16,751 in payments which contributed 13 percent of gross cash income. This was up from 1998 when farms reported receiving \$11,864 in payments. The most significant change was the increase in the number of farms receiving loan deficiency payments and the increase in the size of these payments. Farms receiving no government payments in 1999 averaged \$44,210 in gross cash income, less than half that of farms receiving payments.

The composition of government payments received by farms in 1999 varies across the farm typology (figure 4). Average loan deficiency payments at \$5,496 were slightly larger than average production flexibility contract payments at \$5,303; and combined they comprised about 64 percent of total government payments. Across the typology, the level of flexibility contract payments was about the same as the level of loan deficiency payments. Disaster program payments contributed 22 percent while Conservation Reserve Program (CRP) payments contributed 8 percent of the total. Larger farms received more of their government payments from production flexibility contract payments and loan deficiency programs, while smaller farms received more of their payments from the CRP. For retirement small family farms, more than half of total government payments resulted from the CRP.

About 80 percent of farms categorized as occupation farming/high sales and large family farms received government payments (figure 5). These two groups combined received 46.1 percent of total government payments to farm operators in 1999. Very large family farms received the highest average government payments at \$85,208. However, this payment represented only 8 percent of gross cash income. Limited-resources family farms received the smallest average government payment (\$3,924), but payments were relatively important as a source of income (27 percent of gross cash income). Looking at the distribution of government payments by farm typology, very large family farms represented only 4 percent of farms receiving government payments, but received 23 percent of total government payments. A similar percentage of farms receiving payments were categorized as limited-resource (4 percent), but they accounted for less than one percent of total government payments. The 56 percent of farms receiving government payments that were residential/lifestyle and farming occupation/lower sales small family farms received only 23 percent of total government payments.

Since crop program provisions and market conditions determine the size and the distribution of a large proportion of government payments, it follows that the regional distribution should be consistent with cropping patterns of program crops. The share of farms receiving government payments was significantly higher in both the Heartland and Northern Great Plains regions (figure 6). Payment farms in the Fruitful Rim and Mississippi Portal regions received the highest average government payments. For Mississippi Portal and Northern Great Plains government payment farms, payments contributed about 20 percent of average gross cash income. A third of the farms receiving government payments are in the Heartland region. A little more than a third of total government payments went to farms in that region. Government payment farms in the Northern Crescent, Eastern Uplands, and Southern Seaboard received less than their proportionate share of payments. The 3.9 percent of farms receiving government payments that were Mississippi Portal farms received 6.7 percent of total payments. This result is consistent with high production of cotton and rice in the Mississippi Portal region.

Government Payments Improve Financial Outcomes, but Do Not Guarantee Success

Because the distribution of payments is heavily influenced by historical production patterns for the major program commodities it is not evident that there is a direct link between the receipt of payments and financial outcome. It is not the case that financial problems are eliminated for all farms that receive payments nor is it true that farms that do not receive payments are immune to financial difficulties. Again, the ARMS data can shed further light on these questions. For illustration, we use information on the rate of return on assets (ROA) and off-farm earnings to define an unfavorable financial outcome. If a

farm has a ROA of less than -5 percent or if a farm family earns less than \$20,000 in off-farm income and the farm business has a ROA between -5 and 5 percent we assume this would constitute an unfavorable financial outcome. Under this definition, 44 percent of all farms were classified as having an unfavorable financial outcome in 1999. Although payments may have prevented even greater financial hardship, 42 percent of farms that received payments ended 1999 with an unfavorable financial outcome. Of the more than 1.2 million farms that did not receive government payments, 45 percent had an unfavorable financial outcome.

The relationship between government payments and financial outcome varied across the different resource regions. In the Northern Great Plains and Mississippi Portal regions half of the farms that received payments in 1999 ended the year with a favorable financial situation (figure 7). The Fruitful Rim and Basin and Range regions had the highest percentage of farms with an unfavorable outcome that did not receive payments, at 41 percent and 37 percent, respectively. There were only two regions (Heartland and Northern Great Plains) where the number of financially sound farms receiving payments exceeded the number of financially sound farms that did not receive payments in 1999.

Government Payments Important to Stability of Agriculture's Balance Sheet

The value of farm real estate, the largest component of farm assets, is expected to increase about 1 percent nationwide in 2001. While the farm income analysis presented here does not assume future legislation, strength in recent farm real estate markets suggests that farmers do not believe that their incomes will decline precipitously in the future, largely as a result of emergency assistance that has been provided to assist the sector. Bankers in the Chicago Federal Reserve District reported that, despite a slowdown in the rate of increase in the last two quarters, land values in the district rose 7 percent in the year ended October 1, 2000. Such gains do not suggest that several years of relatively low commodity prices have made owners of farm assets pessimistic about the long-term profitability of farming.

Farm business debt is projected to rise 1.2 percent in 2001, following a 2.4-percent increase in 2000. Anecdotal evidence suggests that farmers are becoming more restrained in taking on new debt, while lenders are more conservative in extending credit. Farm debt has continued to rise, with additional increases projected in 2001, despite this financial conservatism. Farm business equity was unchanged in 2000, as farm assets and debt rose in roughly equal amounts. In 2001, equity is projected to rise about 1 percent, as asset values increase relatively more than debt. The debt-to-asset ratio is projected to be 16.1 percent in both 2000 and 2001.

Government payments and farm asset values

Government payments not only contribute to farm income, but also affect both asset and debt components of the farm balance sheet. The value of agricultural land depends largely on its expected future earnings, and a rise in available cash income can impact the overall amount and composition of debt. Payments are generally attached to the land, and accrue primarily to landowners. Since payments contribute to farm incomes, they support farmland real estate values to the extent that the additional income is capitalized into the value of the land. Payments also provide funds to facilitate the purchase of machinery, equipment, livestock, and other farm production assets, reducing the need for debt financing of the purchase of capital assets. Government payments further impact farm debt, since, depending on the timing of receipt of payments, farmers may require less credit to meet their seasonal production financing needs. More importantly, the generally counter-cyclical nature of government payments tend to stabilize income, minimizing the impact of catastrophic market losses, and reducing the risk faced by both farm

operators and the lenders providing them credit. In some instances the additional funds from government payments can be used to pay down or eliminate existing debt commitments.

Farm real estate accounts for more than 75 percent of the value of all farm business assets and its value is primarily based on the income it generates. Its current value reflects the discounted net present value of the expected future cash income flows that can be attributed to land, including those future cash flows that accrue to nonoperator landowners. Since net farm income and net cash income measure returns to farm operators and contractors, net rent to nonoperator landlords should be included as a part of the future stream of income when determining the appropriate income measure to use when considering returns to land. Nonoperator landlords own about 45 percent of all farmland and in some circumstances are eligible to receive farm program payments. In 2000, it is estimated that nonoperator landlords received about 12 percent of LDP's and about 15 percent of all other direct government payments.

Net farm income (NFI) includes all income and expenses, cash and noncash, associated with the farm business operators and contractors. Net cash income (NCI) includes only cash income and expense items of farm operators and contractors, and is a better measure of the annual cash flow for purposes of net present value analysis. In computation of NCI, net rent to nonoperator landlords (NOLL), which includes the landlords share of Government payments, is deducted as a farm operating expense. A more accurate measure of income against which to measure government payments would be obtained by adding net rent to nonoperator landlords to net cash income (figure 8). Government payments share of 2000 income was 39 percent of NCI and less than 31 percent of NCI + NOLL (figure 9).

The role of government payment in supporting farmland values can be estimated using a simple income capitalization approach. Assuming that all income (whether from market sales or government payments) is capitalized into land values, a capitalization rate can be determined that rate reflects the net present value of anticipated future cash flows to farming. In the approach presented here, it is further assumed that current market land values reflect that capitalization rate, and the same capitalization rate would apply in the absence of government payments. The capitalization rate is computed by dividing the current year's net income (NCI + NOLL) by the land value reported in that year (figure 10). This simple model is based on assumptions that should produce the largest "reasonable" contribution of government payments to land values, and, therefore, should produce the projected lower limit on land values in the absence of government payments.

Once the capitalization rate has been determined, it can be applied to the annual net income, excluding government payments, and a new farmland value can be computed that would exist if its value depended solely on its earnings from market sales (figure 11). Application of this procedure suggests that farmland values, in the absence of government payments, would have been about 4 percent lower during 1972-1981 and almost 19 percent lower during 1982-1989. This disparity decreased to about 13 percent during 1990-1997, and could be as much as 25 percent lower during 1999-2001.

Government payments also contribute to the cash farm operators have available to purchase machinery and meet annual production expenses. In the farm sector balance sheet, the value of machinery and motor vehicles is expected to rise modestly in 2000 and 2001, following a 1.3-percent decline in 1999. The Equipment Manufacturers Institute reported unit sales of all tractors increased by 9.1 percent in 2000, while unit combine sales rose 4.1 percent. This may seem to signify a resurgence of investment in farm machinery, but a closer look indicates that smaller tractors have accounted for the gains in tractor sales. Unit sales of large tractors (over 100 hp) declined slightly in 2000, and were almost 35 percent lower than their 1997 level (figure 12). Despite rising in 2000, 45 percent fewer combines were sold than in 1998. While new machinery purchases would have likely been lower in the absence of government payments, this suggests that farmers are being rather conservative in using these funds to purchase new equipment.

Farmers replacing machinery are choosing to do so with used equipment as evidenced by the lively market for well-maintained older tractors and combines at recent auctions throughout the Midwest.

Government payments help farmers meet debt repayment obligations

Debt management is crucial during periods of potentially decreasing farm incomes. Net cash income, which measures the amount of funds available to meet expenses as they come due during the year, is forecast at \$50.7 billion for 2001. This represents a \$5.7 billion decline from \$56.4 billion in 2000 and would be \$4.1 billion below the 1990-2000 average of \$54.8 billion. This reduction in farm operator income translates into a rise in difficulty in meeting debt service obligations in 2001. Debt repayment capacity utilization (DRCU), a measure comparing farmers' actual debt levels with the amount of debt they could repay from current annual income, suggests that farmers are placing greater reliance on available credit lines. DRCU is expected to rise from less than 60 percent in 2000 to almost 65 percent in 2001, its highest level since 1985 (figure 13). The rise in DRCU suggests that some farmers may have a more difficult time meeting interest and principal payments on their outstanding debt in 2001.

Government payments have provided many farmers with the resources to meet repayment obligations that could have otherwise presented severe cash flow problems. If net cash income had been reduced by farm operators' share of emergency assistance payments in 1998-2001, DRCU would have measured about 66 percent in both 1999 and 2000, and would rise further to almost 68 percent in 2001. If removal of all government payments reduced net cash income by a similar amount, DRCU would have reached about 80 percent in both 1999 and 2000, and would remain above 79 percent in 2001.

Longer Term Perspective

Government payments, which will be an important source of farm income in 2001, are projected to be considerably less in 2002 and beyond in USDA's current baseline. Total government payments, now forecast at \$14.1 billion for 2001, are projected fall to \$7 billion in 2002 and remain below \$7 billion throughout the baseline period. Under existing farm legislation, government payments should be expected to decline. Production flexibility payments, established in the 1996 Farm Act, were mandated to trend downward according to a declining fixed allocation budgeted for each successive year of the program. Production flexibility contract payments are assumed to continue at the 2002 level through the remainder of the baseline. Loan deficiency payments, which are intended to be counter-cyclical with commodity prices, also will have reduced importance as a component of government assistance. Because the CCC loan rates for many commodities are based upon a moving average of market prices, the lower prices experienced in recent years will reduce the applicable loan rate in 2002 and beyond. The combination of lower loan rates and increasing market prices results in a smaller amount of the crop that will be eligible for benefits and a smaller payment per each unit of the commodity produced. As a result of modestly higher prices for several commodities and the lower loan rates offered, loan deficiency payments are expected to fall by nearly \$3 billion from 2001 to 2002.

The impact of lower government payments on farm income and the ability to meet debt obligations is hardest felt during 2002-2003. Net cash income is expected to decline to \$46 billion, as market receipts do not compensate for the decline in government payments (figure 14). As cash receipts from farm commodities continue to expand on the strength of exports, government payments will become a less important component of farm income through the rest of the decade. By the end of the decade government payments represent only 8 percent of the projected \$65 billion net cash income compared with 2000's estimate of 32 percent.

Figure 1

Calendar Year Direct Government Payments, 1990-2001f

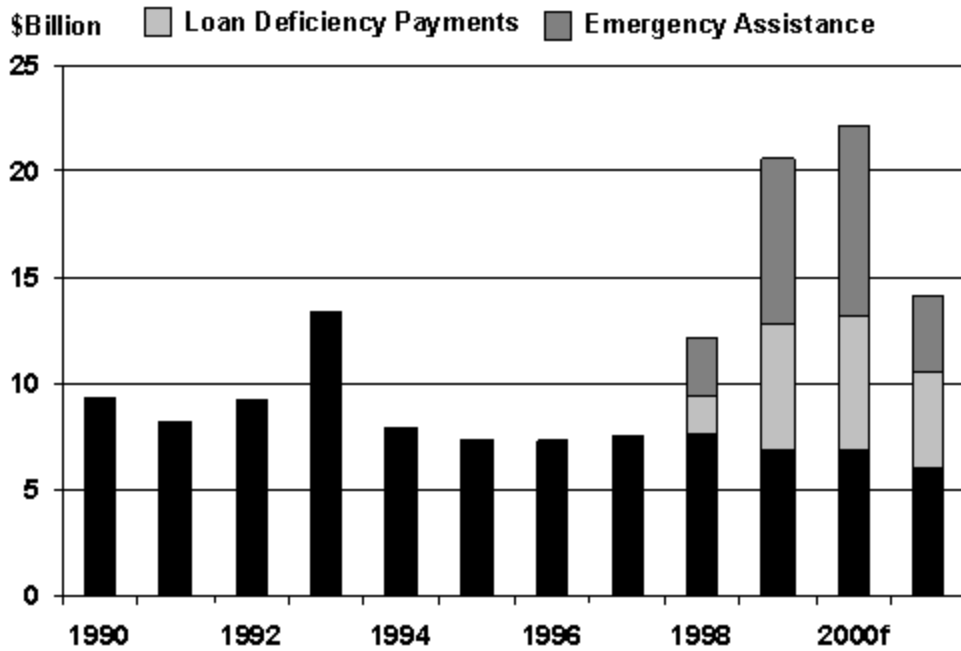


Figure 2

Farm Sector Net Farm Income, 1980-2001f

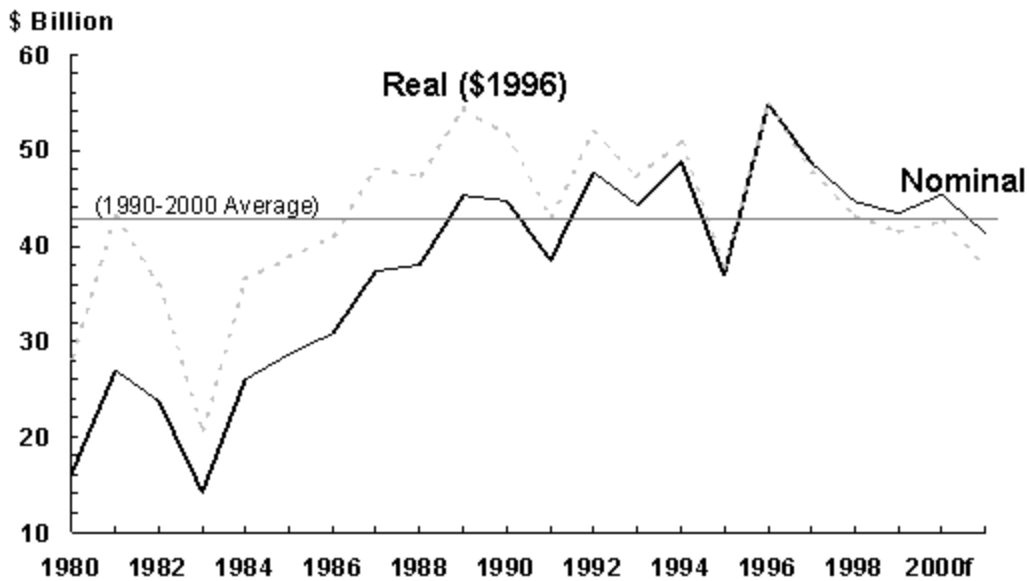


Figure 3
Total Production Expenses in Relation to Value of Agricultural Sector Output, 1980-2001f

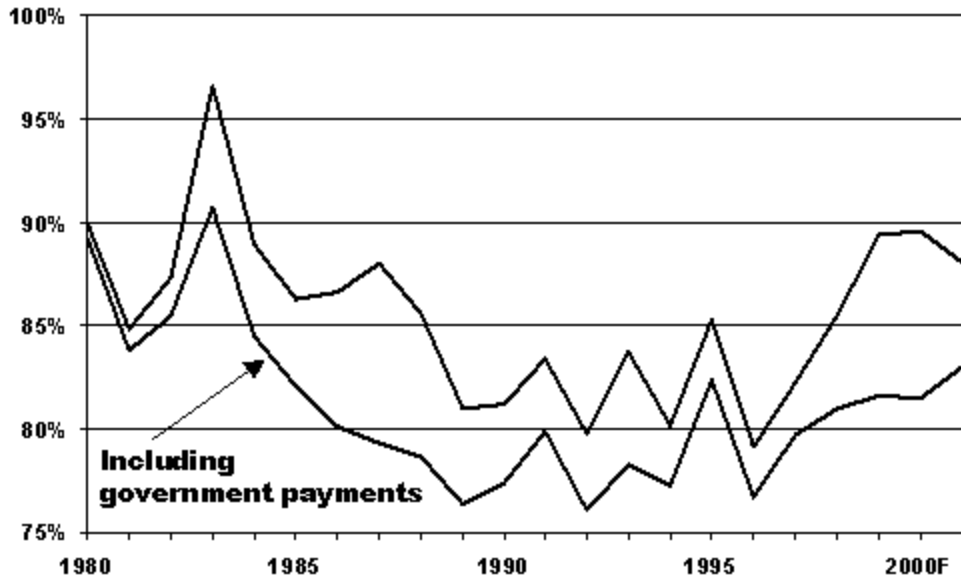


Figure 4
Composition of government payments and mean government payments for farms receiving payments, 1999

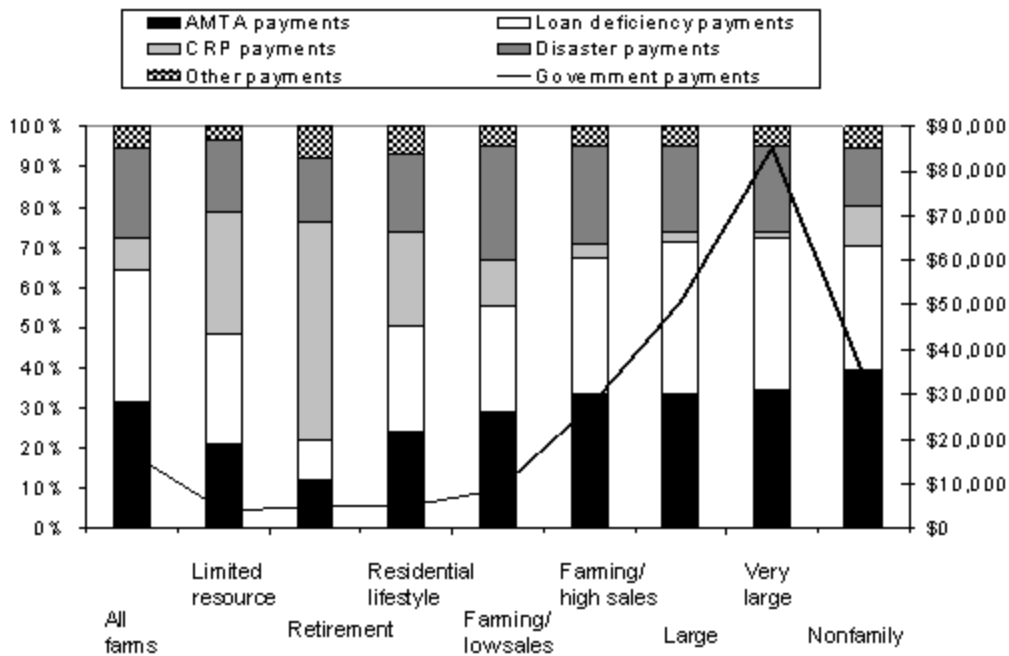


Figure 5

Percent of farms receiving payments and distribution of payment farms and payments by typology, 1999

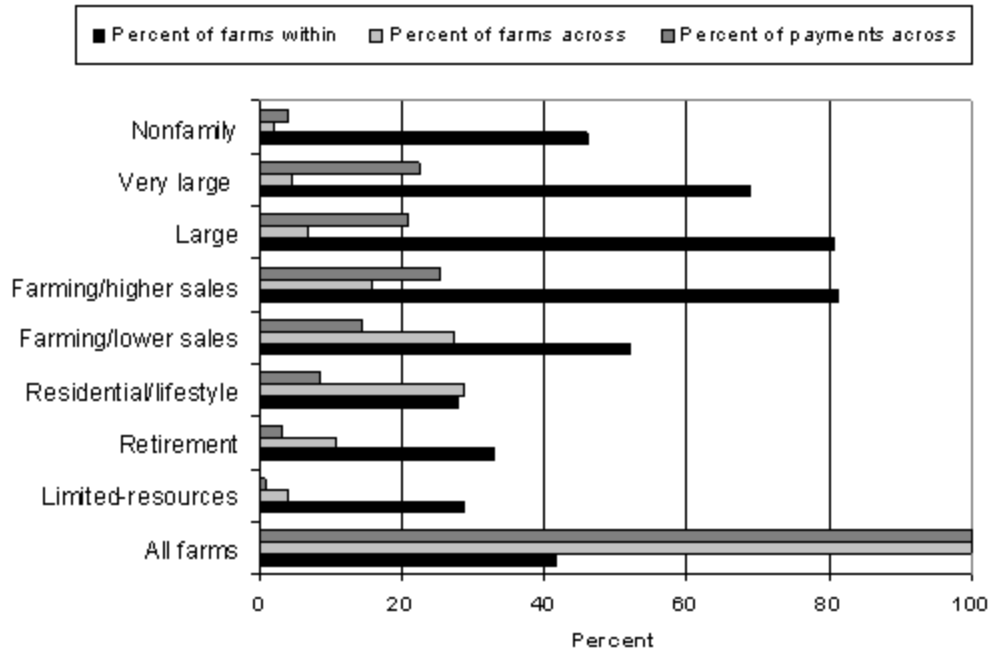


Figure 6

Percent of farms receiving payments and distribution of payment farms and payments by resource region, 1999

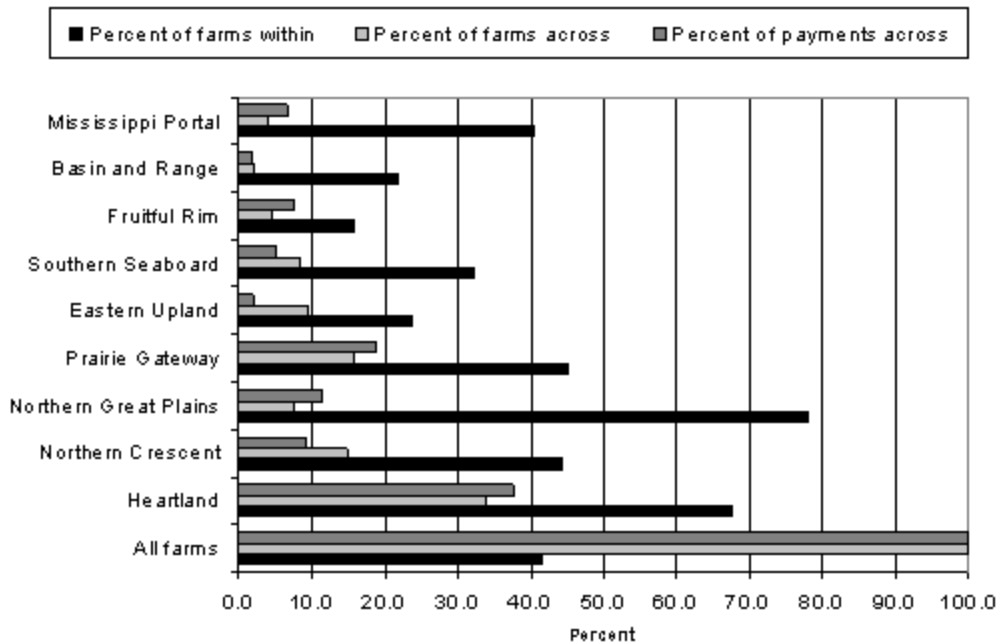


Figure 7
Distribution of farms receiving payments by financial outcome and resource region, 1999

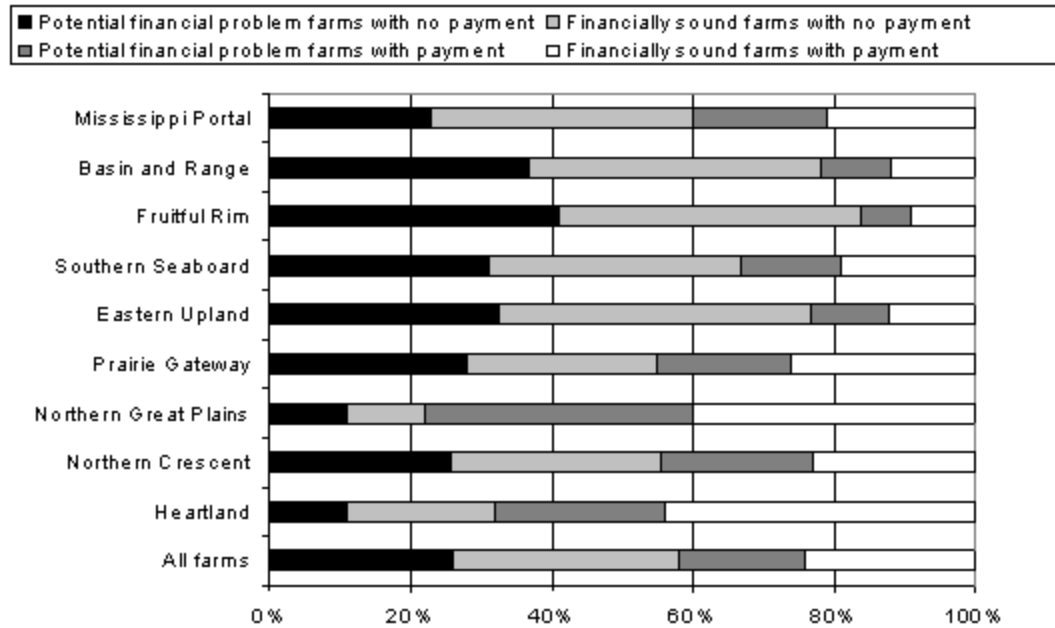


Figure 8
Net Cash Income and Net Rent to Nonoperator Landlords (NOLL) 1970-2001f

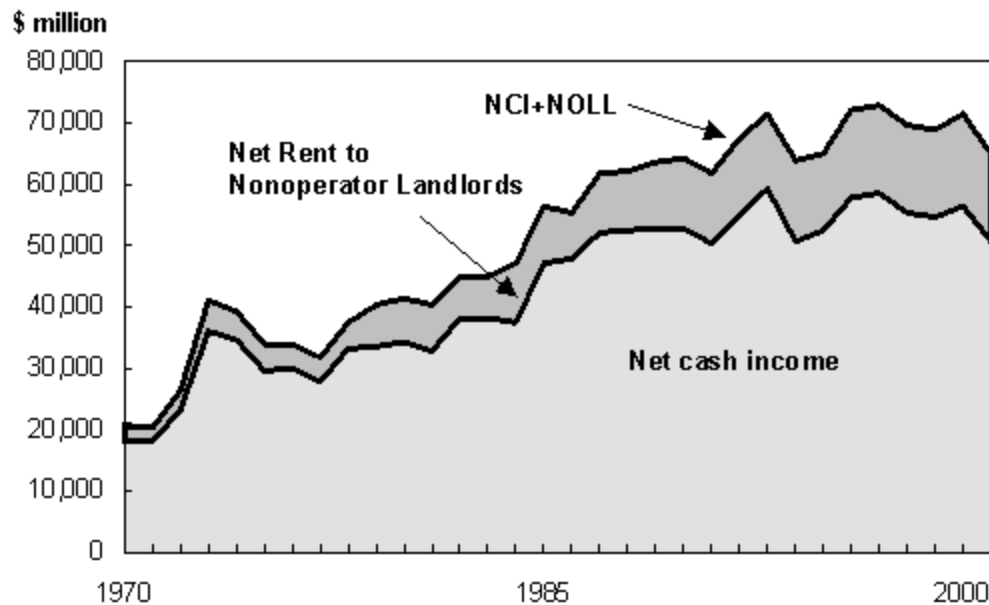


Figure 9

Government payments equaled almost 31 percent of 2000 cash income to operators, landlords, contractors

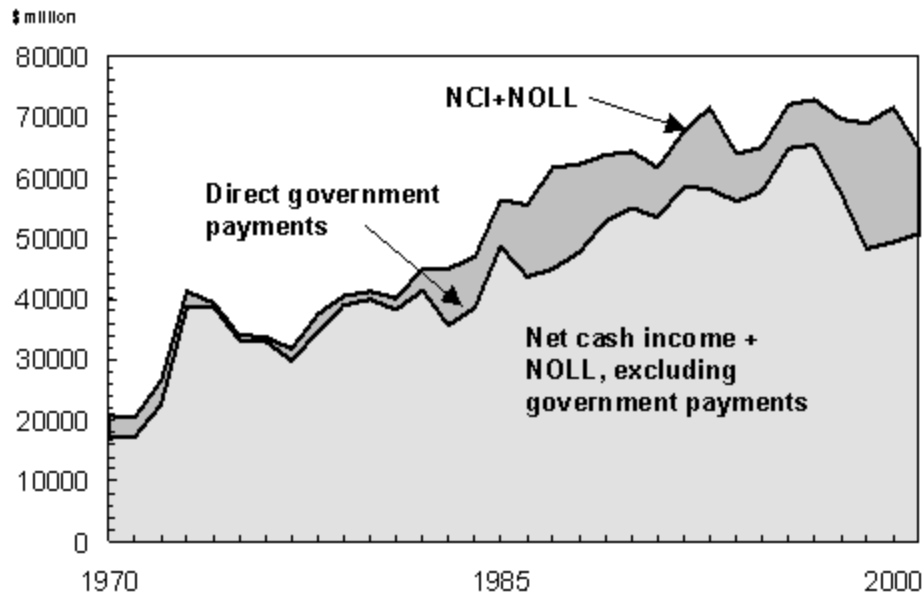


Figure 10

Implicit capitalization rate if NCI+NOLL capitalized into farm real estate values

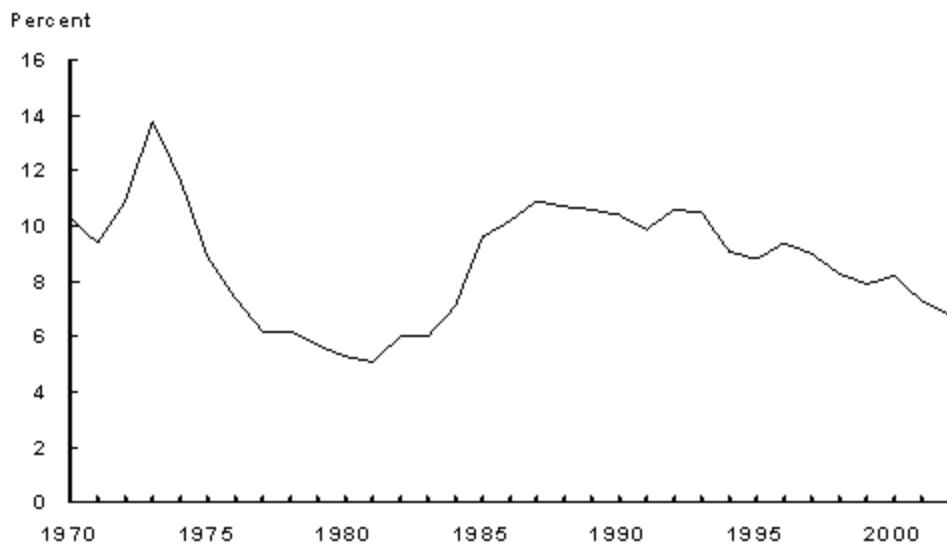


Figure 11

In the absence of government payments, farm real estate values could have adjusted much lower during 1982-99 and 1999-2001f

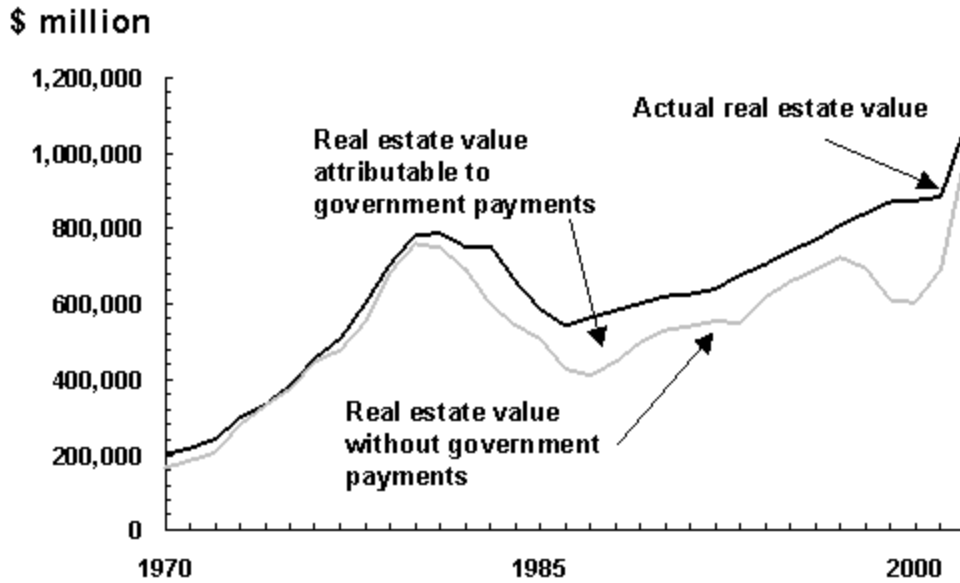


Figure 12

Total tractor unit sales were up 9.1 percent in 2000, but combined unit sales of 4-wheel drives and tractors > 100 hp were almost 29 percent below their 1997 level

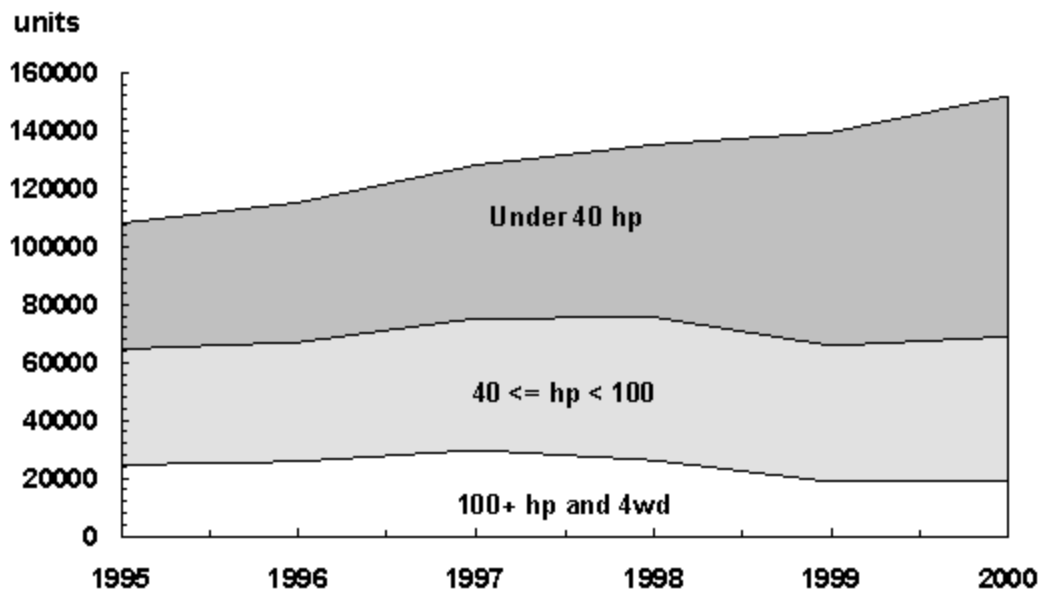


Figure 13

Government payments have helped farm operators meet debt repayment during periods of difficulty

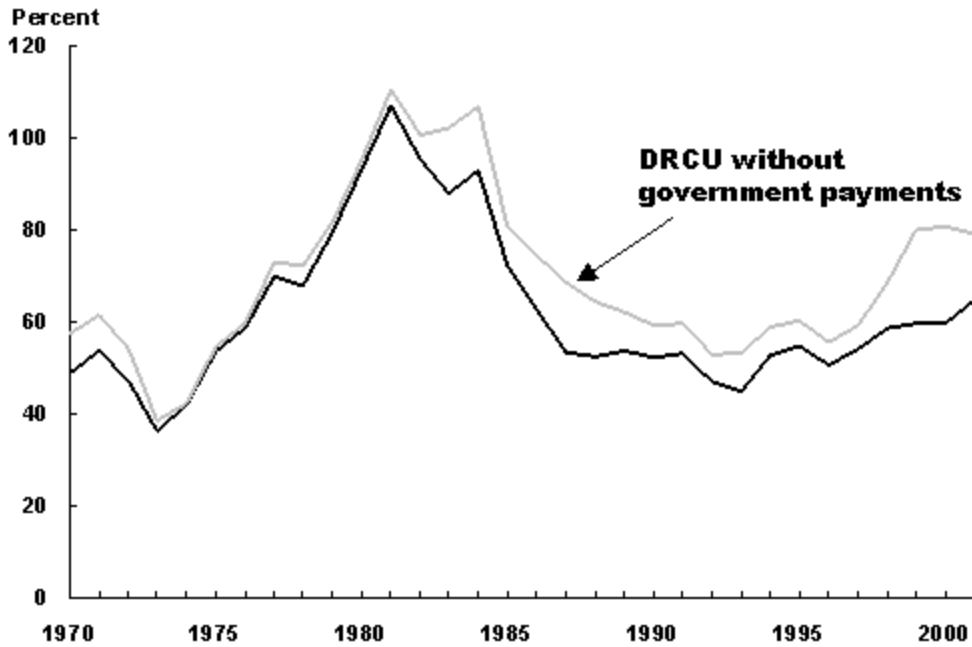


Figure 14

Net Cash Income rebounds, and government payments contribute less, over the Baseline period

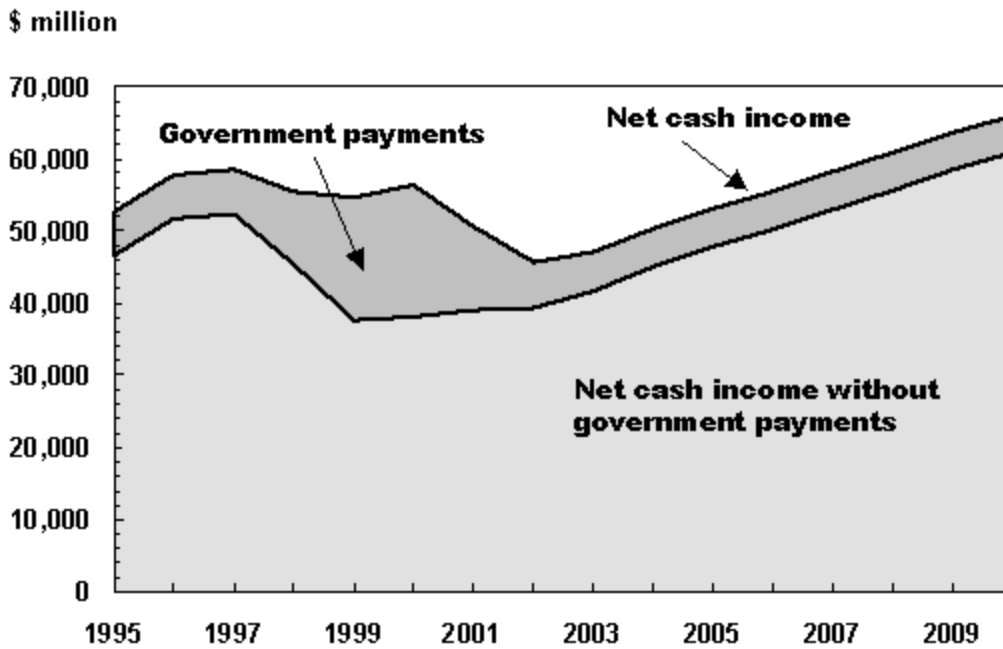


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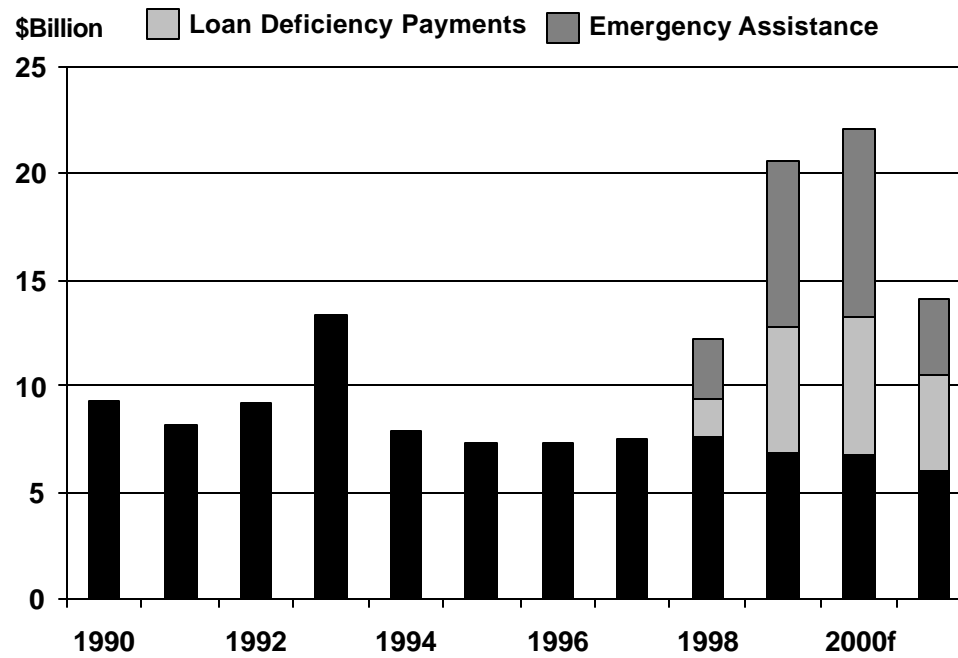


Figure 2
Farm Sector Net Farm Income, 1980-2001f

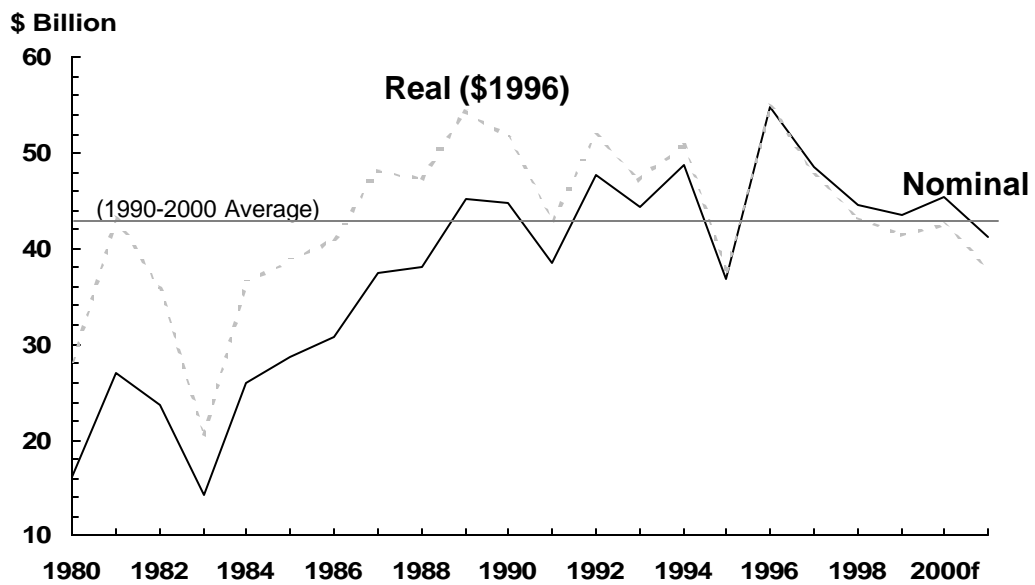


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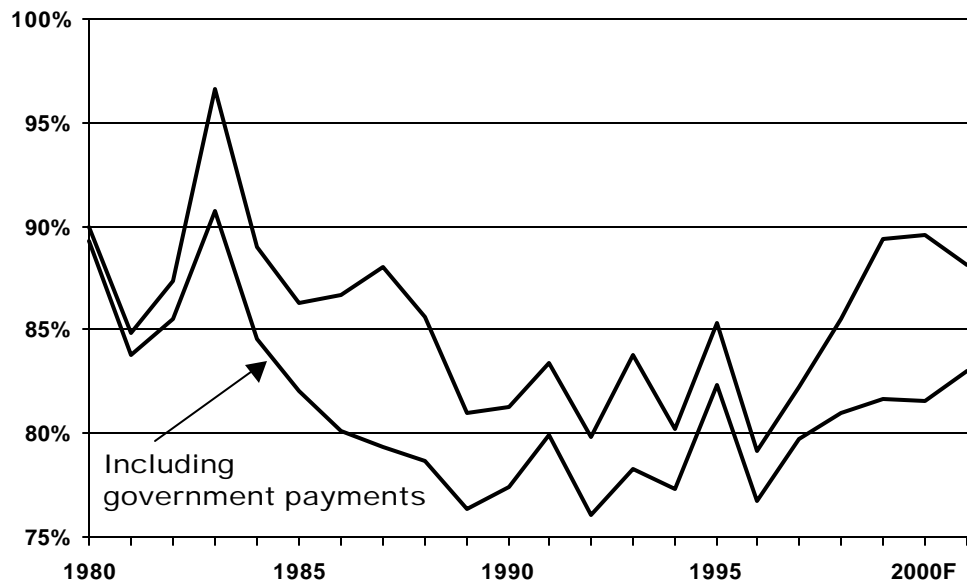


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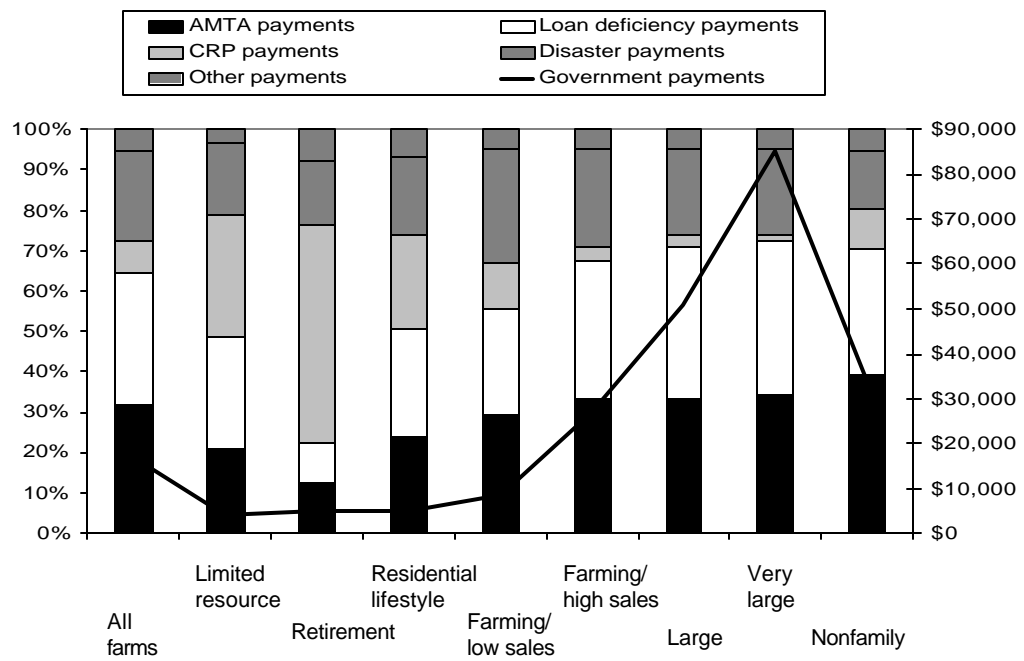


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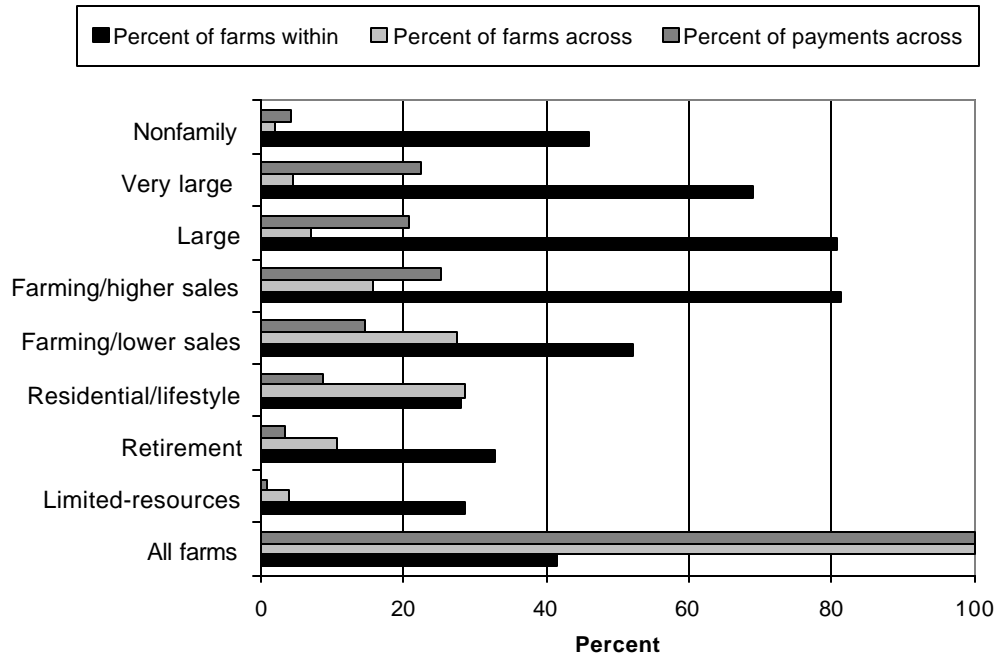


Figure 6

Percent of farms receiving payments and distribution of payment farms and payments by resource region, 1999

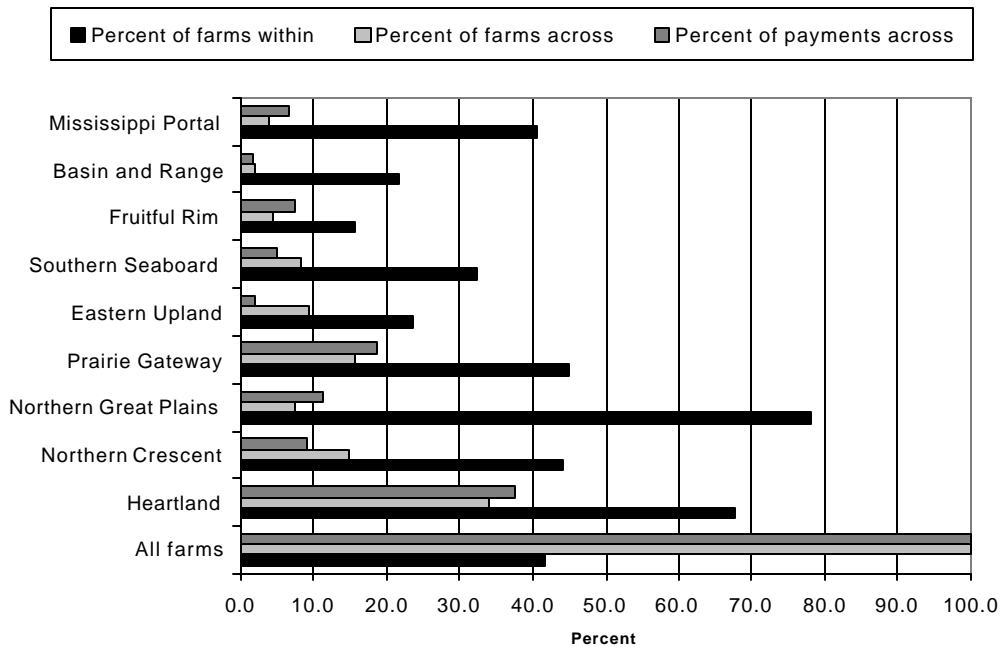


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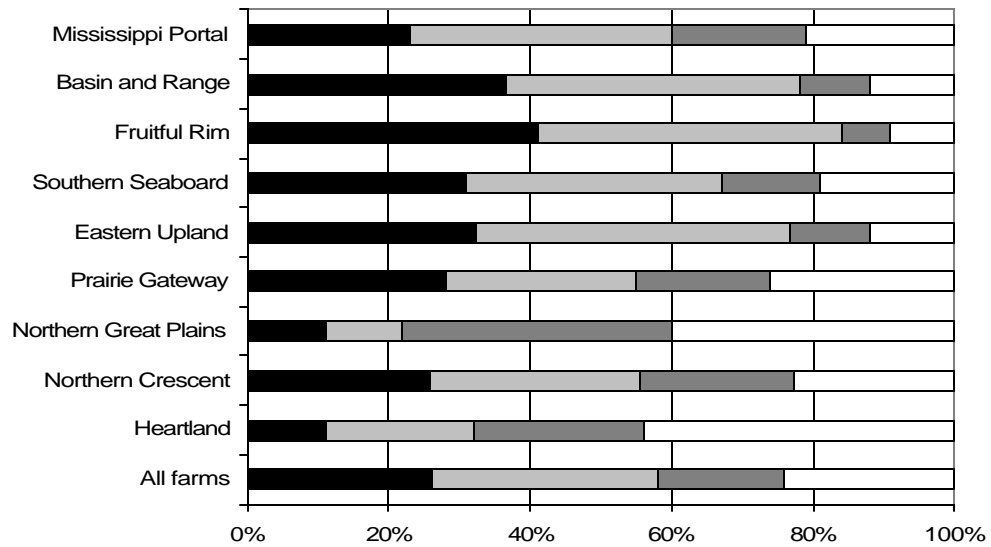
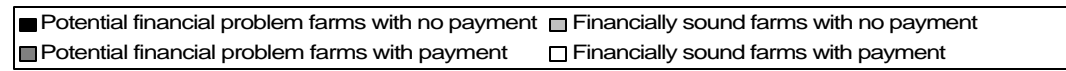


Figure 8

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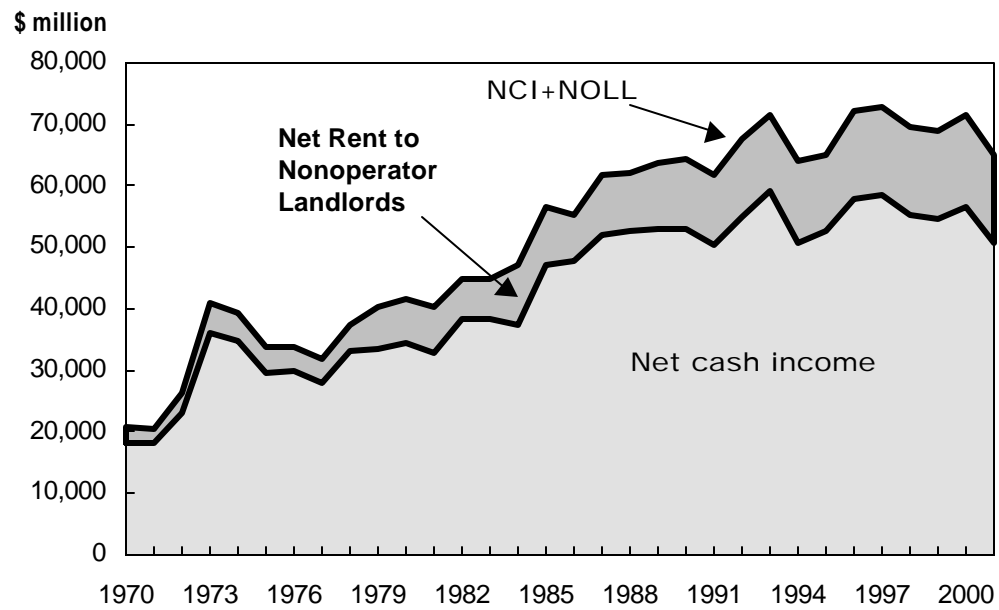


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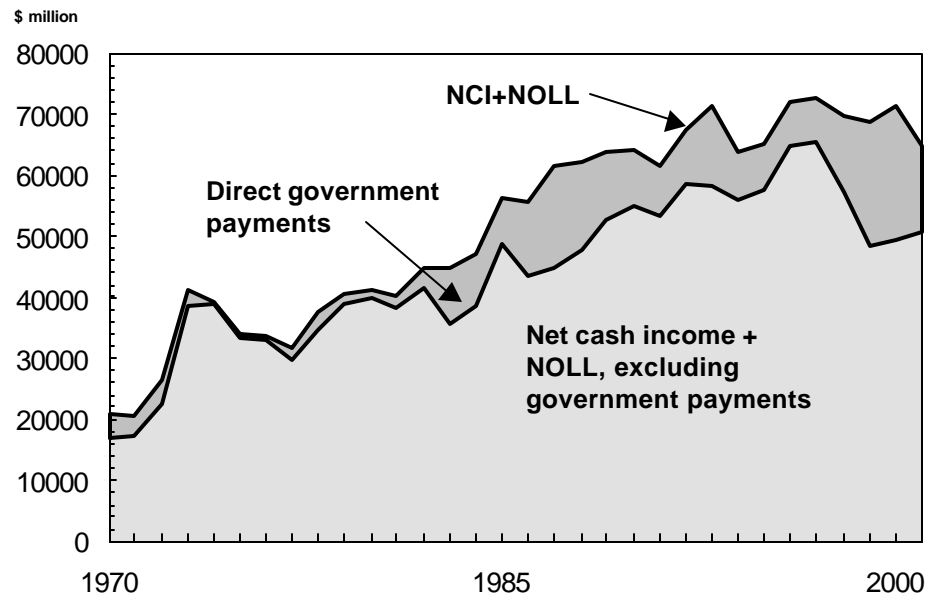


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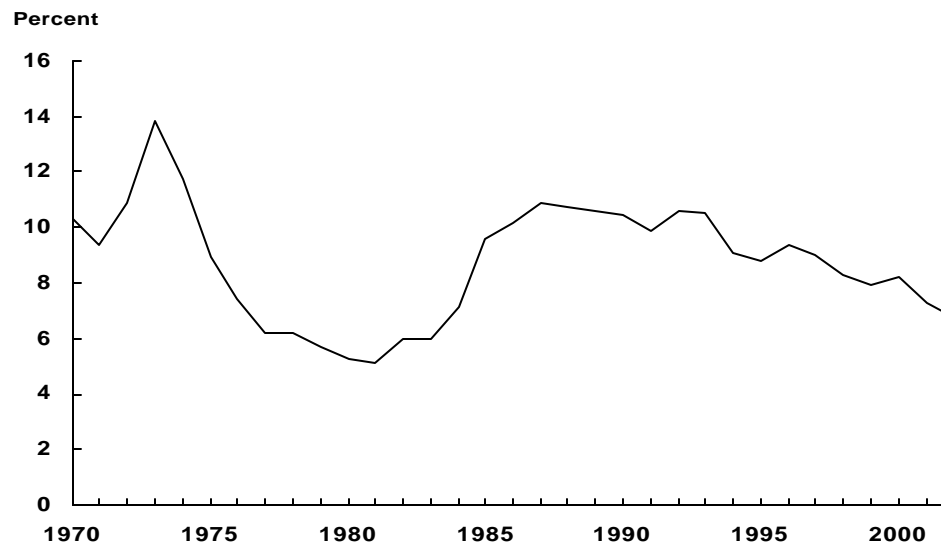


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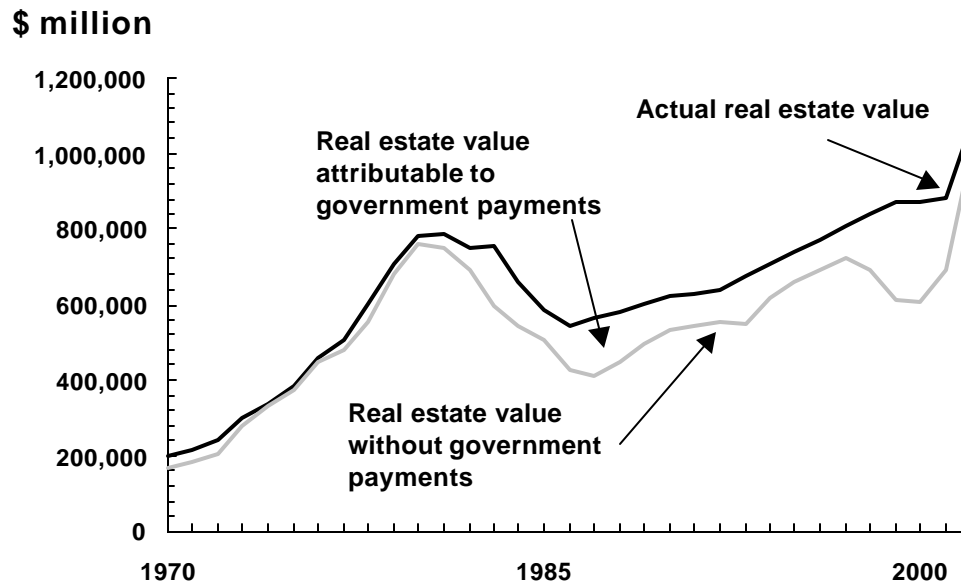


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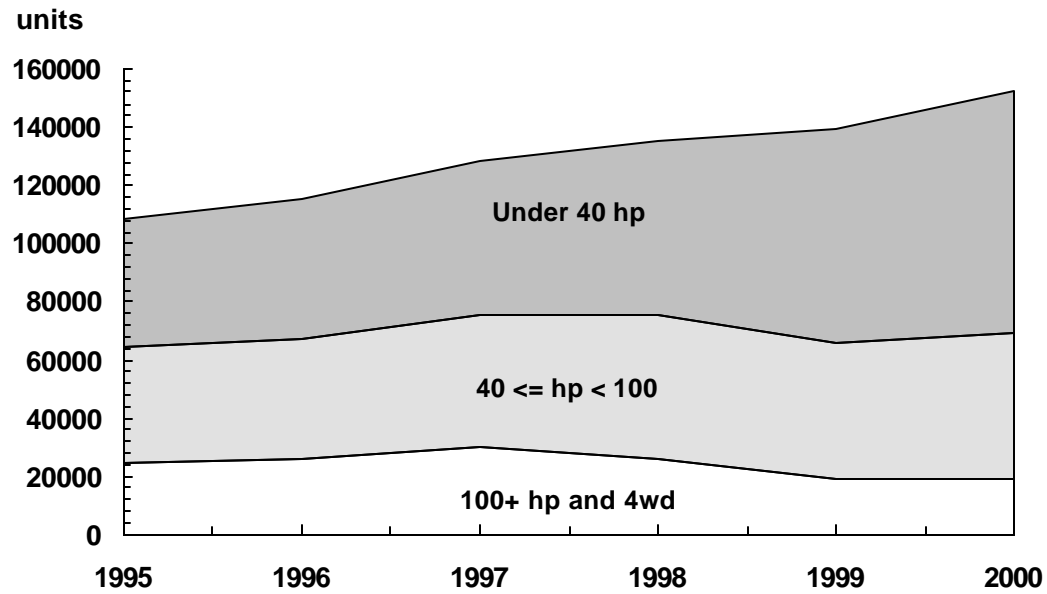


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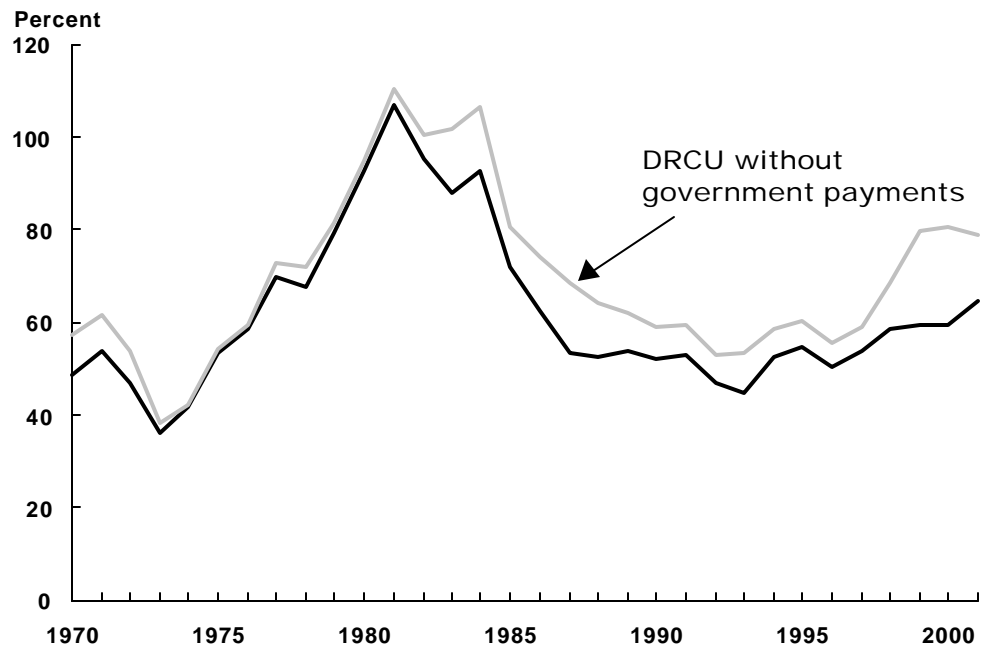


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