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## FINANCIAL PERFORMANCE ISSUES CONFRONTING U.S. AGRICULTURE

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### Introduction

USDA's baseline analysis presents a long-run scenario for the agricultural sector under current agricultural law, with no shocks and reflects specific assumptions regarding the macro economy, weather, and international developments. These baseline projections provide a means to examine the financial performance of the agricultural sector over the next five years and to identify emerging issues for farmers.

### Farm Sector Financial Forecasts for 1995

USDA's December forecasts for 1995 are the starting point for the baseline. The financial performance of agriculture in 1995 is characterized by relatively low net farm income, modest increases in assets, and debt that exceeds \$150 billion for the first time since 1986. Net value added by the farm sector to the national economy is expected to decline in 1995 reflecting lower net income of farm businesses. Selected financial measures for the the 1990-2000 period are presented in table 1.

### Commodity Receipts

Livestock cash receipts could fall to their lowest level since 1989. The decline in livestock receipts will be felt most by hog, cattle, and dairy producers. Record 1994

livestock production and a continued outlook for high 1995 production should lead to the second consecutive decline in the livestock prices received index, reaching its lowest levels since 1986.

Higher feed use, relatively low ending stocks, and higher than anticipated export demand should help crop cash receipts approach \$92 billion in 1995. Crop cash receipts are expected to exceed livestock receipts for the second consecutive year, reversing a trend which began in 1985.

### Government Payments

Government programs continue to play an important role in price stabilization, supply control, and support of farm incomes in 1995. Relatively low price expectations for corn and other major program commodities following 1994's record production could push direct government payments above \$10 billion. With the exception of 1991 and 1994 direct payments exceeded \$9 billion each year since 1986. Deficiency payments are expected to account for nearly 80 percent of total direct payments in 1995.

### Farm Expenses

Cash outlays for production inputs, wages and interest could reach \$144 billion in 1995. Expected low crop prices help livestock

producers by reducing prices for feed and feeder livestock. Farm origin inputs, which represent about 25 percent of total cash expenses, should fall to the lowest level since 1992. The \$12 billion interest expense forecast for 1995 would be the highest since 1990. Interest expense fell each year from 1983 through 1993. The outlook for increased interest payments is due to both rising debt levels and higher interest rates.

### Farm Income

Net cash income, which is gross cash income minus cash expenses, is forecast to be \$51 billion in 1995. With the exception of 1994 this would be the lowest level since 1986. Adjusted for inflation, net cash income approaches an all time low. Net farm income is a more comprehensive measure of farm profits that is calculated by adding noncash income, subtracting noncash expenses like depreciation, and adjusting for the value of the change in crop and livestock inventories. This inventory adjustment, which accounts for most of the year-to-year differences between net cash and net farm income, added \$5 billion to the 1994 net farm income forecast and subtracted \$2 billion from the 1995 forecast. The 1995 forecast of \$38 billion represents net farm income levels last experienced in 1988.

Net value added goes beyond net farm income by including not only the income production agriculture generates for farm operators, but also the income it provides to labor, landlords, and lenders. Overall, value added is expected to decline in 1995, largely reflecting lower net farm income. Income accruing to each of the other groups should increase.

The financial performance of the farm sector in 1995 directly affects the farm income of farm operator households connected to the nation's farms and ranches, and the forecast of the farm portion of average farm operator household income is based on the farm sector income

forecast, adjusted for the share of income received by operator households and the forecast number of farms. Many farm operator households, however, also depend on off-farm jobs and income, and the averages are heavily influenced by the vast number of small farms operated by households mainly dependent on off-farm income. In 1995, the average farm income to operator households is forecast at \$4,900, while the off-farm income portion is expected to average \$35,600, for a total farm operator household income of \$40,500.

### Farm Business Assets

The value of farm business assets is expected to reach \$930 billion in 1995. Real estate assets, about 75 percent of total farm assets, are expected to rise about 2 percent to \$697 billion. Gains in value per acre will be partially offset by a modest decline in land in farms. Livestock inventory values at the end of 1995 are anticipated to fall by more than \$1 billion to about \$73 billion. The value of crops stored is expected to be around \$24.5 billion, down \$1.5 billion as 1994's large inventories are marketed.

### Farm Business Debt

The expected debt increase of \$3-4 billion during 1995 will mark the third consecutive year of rising debt, a cause of concern but not alarm. Debt is a source of capital which can lead to improved productivity and higher profits. The farm debt repayment capacity ratio, which is actual debt as a percentage of maximum feasible debt, helps to gauge the implications of rising debt levels. Increasing

values of this ratio mean that debt is increasing compared with the income farmers have available to service debt. Lower net cash income, rising interest rates, and higher debt could push the farm debt repayment capacity ratio above 55 percent in 1995. This would

represent the highest level of credit utilization since 1986, but is well below the extreme conditions which occurred during the early and mid-1980's. Commercial banks gain in farm credit market share is expected to continue through 1995. Banks share of farm lending will exceed 40 percent, continuing sustained growth from a 22 percent market share in 1982. The Farm Credit System is expected to account for almost one-quarter of all farm lending.

### Farm Business Equity

Farm business equity is forecast to rise modestly in 1995, as the increase in value of farm assets exceeds the rise of farm debt. The rate of equity growth is expected to lag the general rate of inflation, so equity, measured in real terms, is expected to decline in 1995. Farm sector equity has recovered about \$210 billion of the nearly \$250 billion of equity eroded during the 1980-86 period. Even so, the 1995 projection for real farm equity of \$600 billion is well below the \$1,140 billion real value for 1979, and similar to real farm equity in 1962.

### **USDA Baseline Projections**

USDA's baseline projections for the financial performance of U.S. agriculture suggest a diminishing government role in agriculture accentuated by growth in export markets (see figures 1 and 2). Cash operating margins tighten over the period with cash expenses representing 76 percent of gross cash income by 2000. The farm sector's relative dependence on debt capital increases, suggesting greater financial risk.

### Commodity Receipts

Livestock cash receipts increase 16 percent from 1995-2000. The largest gains are for hogs and cattle. Pork production increases through 1997 followed by a cyclical downturn in

production during 1998. The downturn in production reflects the exit of small independent producers as the trend towards vertical integration continues. Beef production expands over the period, but at a lower rate than population growth. Export demand for high quality fed beef will help farm level cattle prices reach \$70 per hundredweight by 1999.

Cash receipts for crop commodities increase by 12 percent from 1995-2000, an expansion similar to the previous five year period beginning in 1990. Although increasing at a slower rate than for livestock commodities, crop receipts exceed livestock receipts throughout the baseline. In contrast to the general trend of increasing receipts, tobacco and cotton receipts decline from 1995-2000.

### Government Payments

The baseline results show a steady decline in direct government payments. By the turn of the century direct government payments account for 3 percent of gross cash income, the lowest level since 1982. With the baseline assumption of an extended Conservation Reserve Program (CRP), payments generally remain in the \$1.7-\$1.8 billion range through 2000 and make up an increasing proportion of total payments. Rising market prices driven by export demand reduce the deficiency payment rate and lead to lower deficiency payments.

### Farm Expenses

Total cash expenses grow to \$165 billion by the year 2000, a 15 percent increase over 1995. Some of the larger increases are for manufactured inputs such as fertilizer, fuel, and electricity, all of which increase about 23 percent. Price increases rather than changes in use account for most of that increase. Interest expense also increases 23 percent due to increases in interest rates and outstanding debt. The major farm origin inputs increase less. Cash expense for feed rises just 6 percent



while cash expense for livestock rises 7 percent.

Cash expense increases will not affect all parts of agriculture equally. Farm operators that specialize in beef, hogs, or dairy should have increases of around 13 percent compared with a 20 percent increase for farms that specialize in cotton, wheat, corn, or soybeans. That's because a larger proportion of cash expenses on crop farms is for fertilizer and fuel. In the year 2000 for example, fertilizer is 27 percent of cash expense for corn farmers compared with 7 percent for beef producers. Also, interest tends to make up a higher proportion of the cash expenses of crop farms. By 2000 interest will be between 11 and 12 percent of cash expense on wheat, corn, and soybean farms compared with around 8 percent on beef, hog, and dairy operations.

#### Farm Income

Net cash income falls to \$48 billion in 1996 then increases steadily through 2000, when it surpasses \$51 billion for the first time since 1995. With relatively small baseline inventory adjustments, net farm income remains in the \$37-\$41 billion range through 2000. While net farm income is 7 percent higher in 2000 than in 1995, net value added is 12 percent higher. This result highlights the role of production agriculture in creating income for participants in the agricultural sector other than farm operators. For example, the income production agriculture generates for farm labor in 2000 is 19 percent higher than in 1995. Lenders receive 18 percent of net value added in 2000 compared with 16 percent in 1995.

The forecast of farm income to farm operator households follows the pattern expected for net cash farm income to the sector, with farm income to households falling from an average of \$4,900 in 1995 to \$4,300 per farm operator household in 1996, then gradually rising through 2005. Off-farm income is the

dominant component of farm operator household income, however, and its dominance is expected to increase. The forecast for average off-farm income, which is based on current off-farm income and changes in the wage compensation index for nonfarm employment, projects modest increases in average off-farm income through 2005. In real terms, average total farm operator household income is expected to increase by 4 percent during the baseline period.

#### Farm Business Assets

Farm business asset values are expected to rise less than 5 percent over 1995-2000, compared with almost a 10 percent increase during 1990-1995. A decrease in the appreciation of land values from almost 14 percent over 1990-1995 to less than 4 percent over 1995-2000 is the principal cause for the more modest growth in total farm assets. While the rise in real estate asset values moderates, nonreal estate assets grow almost 8 percent, compared with an increase of 6 percent during 1990-1995. Projected increases in livestock and crop inventory values drive the rise in nonreal estate asset values. Higher prices could increase the value of livestock inventories by almost 16 percent, and the value of crop inventories by almost 18 percent. The growing proportion of assets in inventories should improve liquidity of the sector. A favorable liquidity situation can help to stabilize cash flows and reduce income variation.

#### Farm Business Debt

Total farm business debt is projected to rise almost 10 percent over 1995-2000, slightly less than the increase during 1990-1995. Despite the modest projected rise in farmland values, farm real estate debt is expected to increase more than 7 percent during 1995-2000. Expected changes in total farm business debt reflect changes in the composition of farm assets, with the largest increase (over 12

percent) occurring for nonreal estate debt. Despite the forecast of rising interest rates, bank lending to farmers and financing by input suppliers and other nontraditional lenders is expected to continue to contribute to the growth in nonreal estate debt.

Farm operators use of credit is not expected to place excessive demands on their ability to service debt. A projected increase in the farm sector debt-to-asset ratio from 16.3 in 1995 to 17.1 in 2000 reflects the increase in debt relative to the change in asset values. This rise in average indebtedness does not appear to be beyond the ability of the sector to repay. Farm operators use of debt repayment capacity, which compares actual debt to that supportable by current income, is projected to rise from 56 percent in 1995 to almost 62 percent during 1996-1998, and then decline to about 60 percent in 2000. The debt-to-asset ratio bears monitoring for further increases. These would represent growing financial risk in the sector, at a time when diminishing availability of government support and greater reliance on market forces will also be increasing farm operators' production and price risk. Insurance, hedging, forward contracting, and integration may gain in importance as means of reducing or spreading agricultural risks.

#### Farm Business Equity

Farm business equity is forecast to rise about 4 percent over 1995-2000, compared to an increase of over 9 percent during 1990-1995. In real terms, equity is projected to decline throughout the period, as the rate of growth in equity is expected to lag the general rate of inflation. The decline in real equity also reflects those forces driving agriculture to improve coordination through contracting and integration. Nonfarm participants are becoming more involved in the financial structure of the sector. These participants will gain ownership of a greater share of the

productive assets and equity of the sector, as well as a growing share of the net income it generates.

#### **Financial Performance Issues Confronting Farmers and Ranchers**

The availability of high quality, affordable food and welfare of farm people were the primary criteria used by society to evaluate the structure of agriculture early in this century. These issues were fundamental to establishing the role and scope of government intervention in the agricultural sector. Over time the focus of society has shifted to other characteristics of agriculture such as the efficiency of resource use, contribution to national growth, environmental stewardship, relationship to rural communities, and responsiveness to changing consumer preferences. Given the agriculture structure implied by the baseline results and society's focus on these elements, some emerging issues that will affect financial performance of production agriculture can be characterized as cost containment, risk management, industrialization, and rural community linkages.

#### **Cost Containment**

As operating margins tighten, reductions in per unit costs of output will be necessary to compete in world markets (see figure 3). Even with modest productivity gains, there will be greater pressure to increase farm size in order to spread costs over more units of output. The availability and adoption of technological advances has been an important factor in reducing per unit costs of production. In a more competitive, market orientated agriculture, information diffusion regarding new technologies becomes crucial to the adoption process. Even more important to cost containment is the inherent ability of operators to adopt both management and capital intensive technologies and the extent of adoption.

Despite output enhancing, cost reducing impacts of technological developments, expenses for certain operating inputs such as water and fertilizer and fixed expenses like interest are expected to pose continuing cost containment problems, particularly for those larger operations for which these items are now a significant component of total costs. Upward pressure on operating costs of livestock operations will not come from traditional sources such as feed. For these operations, compliance costs with environmental regulations may present the most significant challenges for cost containment. Farm operators may face new expense sources such as costs associated with information discovery and implementation of risk abatement strategies.

### **Risk Management**

Greater dependence on market outcomes coupled with declining government support represents a substantial change in the environment faced by farmers making business and financial decisions. Farmer's ability to manage business and financial risk and balance the tradeoffs among various production, marketing, and financing decisions will have a more significant impact on the financial success of their business.

There are several sources of business risk for the farm operator. Probably the most significant and recognizable are production and price risk. Production risk represents the random variability in the production process associated with unusual weather events, pest damage, and other unanticipated casualties. Price risk represents the fluctuations in both prices paid for production inputs and prices received for commodities produced. As agriculture gains a stronger market orientation, risk management strategies which have traditionally placed more emphasis on production such as diversifying commodity enterprises will move towards developing

marketing responses to sources of price risk (see figure 4).

Even with coordinated risk management strategies to deal with production and price risk, increased variability of market prices will require that producers place more importance on management of financial risk. The level of financial risk depends on the relative importance of debt and equity financing. Commercial lenders often adjust interest rates to reflect the borrower's creditworthiness. Additional non-price methods of managing credit risk include adjustments in collateral requirements, downpayments, maturities, and repayment schedules. Farm creditors, through collateral based lending policies in the early 1980's, not only contributed to the rise in financial risk in farming, but transferred a share of that risk to themselves, as evidenced by the estimated \$20 billion in lender loan losses during 1984-1989. Lending policies today emphasize the ability of the borrower to meet loan service requirements from current income. Such policies reduce lender exposure to the financial risk of farming, and, by limiting the maximum credit available to any borrower, reduce farm operator financial risk as well.

The agricultural production sector today is evolving along three parallel lines that require individual consideration of creditworthiness and financial risk: large commercial size farms operated independently by one or more farm families, the industrialized component with its varying forms of vertical coordination, and the large number of small, part-time, or limited resource farms that depend on off-farm income. These emerging farm structures face distinct financial risks and credit needs.

Industrialization of U.S. agriculture will affect the financial risk exposure of farmers as they seek to acquire the least cost financing for their operations. Vertical coordination through contractual arrangements and integration



provides alternatives for access to capital, and allows a spreading of financial risk from farm operators to input suppliers, processors, and other nonfarm participants in agricultural production.

### **Constraints to Continued Expansion of Industrial Agriculture**

Improved coordination between farm operators and other participants in the food and fiber sectors will increase with rising economic pressures to contain costs and manage risk. The continued expansion of industrial agriculture will result from economies of scale to be achieved through vertical and horizontal integration. Increased coordination is evidenced by the rising use of production and marketing contracts, and the increasing degree of coordination between contractors and contractees (see figure 5). Such contracts range from market-specification contracts, which require only that a predetermined quantity of a certain quality product will be delivered, to production-management contracts, which impose specified input usage and management practices on the contractee, to resource-provision contracts, where the coordinating firm supplies inputs, including financing, and the contractee performs the tasks necessary to meet production standards and quotas. In improving coordination between market participants, such contracts allow farm operators to minimize costs and spread risks. Environmental constraints to continued industrialization through integration maybe significant. As hog operations apply the poultry production model, there is increasing local concern over the environmental impacts of large concentrated hog populations on surface and ground water quality. Many local jurisdictions now require public hearings before hog operations can expand beyond a certain size.

### **Linkages to Rural Community Resources**

Farm operators are now participants in the local, regional, and national economies. Off-farm income is the dominant component of farm operator household income, accounting for 88 percent of farm operator household income in 1995. By the turn of the century, farm operator household income is expected to average almost \$50,000, and nearly 90 percent is expected to derive from off-farm sources. Dependence on off-farm sources of income, however, varies widely. For example, the share of income from off-farm sources decreases with farm size. Households with operators reporting farming as their major occupation depend less on off-farm income than households with operators reporting another major occupation. Groups that currently depend more heavily on farm income are likely to continue this dependence into the next century.

Nevertheless, farm households as a whole depend heavily on off-farm income, and most farm households receive at least some off-farm income. Off-farm income is crucial to the economic-well being of operator households. Results from the 1993 Farm Costs and Returns Survey (FCRS) indicate that about a third of all operators reported they were somewhat dissatisfied or very dissatisfied with their farm income, a much higher share than for the other sources of income. Yet, 87 percent of operators were satisfied with their standard of living, which implies that other sources of income make up for less than satisfactory levels of farm income (see figure 6).

The well-being of participants in the farm sector will continue to depend on the ability of rural communities to provide jobs and services. In the absence of improved rural job prospects, population loss will continue in more isolated rural areas. As an example of the losses that can occur, consider events of the 1980's in the 556 counties defined as farming-dependent,

which are heavily concentrated in the Great Plains. About 69 percent of these counties had declining employment between 1979 and 1989, and population change in the counties averaged -6.9 percent between 1980 and 1990.

### Data System Needs

Traditional data collection procedures will have to adapt in order to accurately reflect the complexities of modern agriculture. To properly measure farm operator household income, analysts need information about the asset ownership and flows of income to asset owners. It is no longer appropriate to assume that the farm business and the farm operators household provide all capital used in production. A variety of people, households, and other provide inputs and share in the farm businesses profit or losses.

Given expectations for the continued industrialization of agriculture, how do our data systems measure up? ERS has revised its surveys of individual farmers to obtain data on contractual arrangements, and the shares of income going to and expenses being paid by contractors and integrators. We identify how many households share farm business income and the amount that operators themselves earn from their farms.

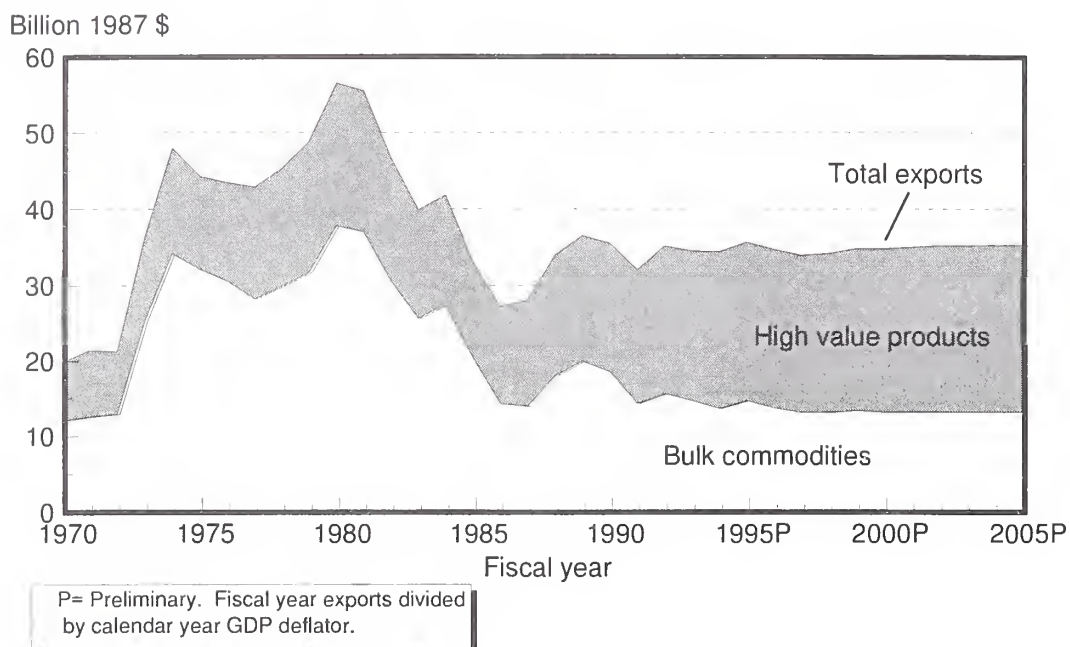
Since nonoperator landlords and contractors or integrators are not surveyed directly, we do not obtain data on the value of the assets they control that properly should be considered farm business assets, nor do we have data on their debt levels. As these participants contribute more equity to production agriculture it will become increasingly important to have reliable measurement of capital stock and flows.

Table 1--Selected farm sector financial measures, 1990-200p

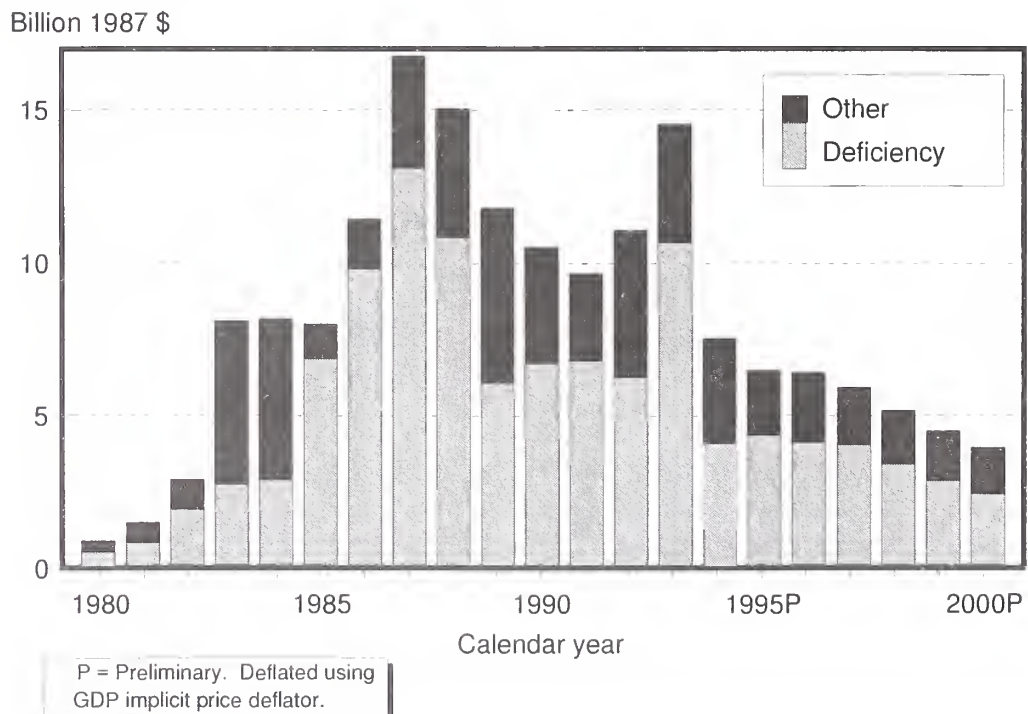
	1990	1991	1992	1993	1994F	1995P	1996P	1997P	1998P	1999P	2000P
Billion dollars											
Cash receipts	170.0	168.8	171.2	174.6	176.3	177.0	177.6	182.3	188.6	195.3	202.0
Crops	80.1	82.1	84.9	84.5	88.7	91.8	91.6	94.0	97.3	100.3	103.1
Livestock & products	89.8	86.7	86.3	90.1	87.6	85.1	86.0	88.3	91.2	95.0	99.0
Farm-related income	7.6	7.8	7.8	8.8	8.0	8.2	8.5	8.7	9.0	9.3	9.6
Government payments	9.3	8.2	9.2	13.4	8.0	10.2	8.6	8.3	7.5	6.8	6.2
Gross cash income	186.8	184.9	188.2	197.2	192.4	195.3	194.7	199.3	205.1	211.4	217.9
Cash expenses	131.8	131.7	130.8	138.7	142.7	144.1	146.6	150.5	155.5	160.4	165.4
Net cash income	55.1	53.2	57.4	58.5	49.4	51.2	48.1	48.8	49.6	51.0	52.5
Value of inventory change	3.4	-0.3	4.3	-3.6	5.3	-1.5	0.4	0.3	0.4	0.5	0.3
Non-money income	8.0	7.7	7.8	7.9	8.1	8.1	8.3	8.5	8.6	8.8	9.0
Gross farm income	198.2	192.3	200.2	201.4	205.8	201.9	203.4	208.1	214.1	220.7	227.2
Noncash expenses	16.8	15.5	15.2	15.4	15.6	15.7	15.6	15.9	15.9	16.3	16.6
Operator dwelling expenses	4.1	4.0	4.1	4.0	4.1	4.2	4.3	4.3	4.4	4.4	4.5
Total production expenses	151.3	151.2	150.1	158.0	162.4	164.0	166.4	170.7	175.8	181.1	186.5
Net farm income	46.9	41.1	50.1	43.4	43.3	37.9	37.0	37.5	38.3	39.7	40.7
Net value added	81.9	74.5	83.0	76.9	78.2	73.9	74.4	75.0	78.0	80.6	82.9
Farm assets	848.3	842.2	860.8	888.0	920.1	930.0	943.8	950.7	959.5	966.4	976.0
Farm debt	137.4	138.8	138.6	141.9	148.1	152.0	155.3	157.7	160.7	163.4	166.7
Farm equity	710.9	703.6	722.2	746.1	772.0	778.0	788.5	793.0	798.8	803.0	809.2
Percent											
Debt/equity ratio	19.3	19.7	19.2	19.0	19.3	19.5	19.7	19.9	20.1	20.4	20.6
Debt/assets ratio	16.2	16.5	16.1	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1

F = Forecast. P = Preliminary. Numbers may not add due to rounding.

**Figure 1**  
**Real Value of U.S. Agricultural Exports**

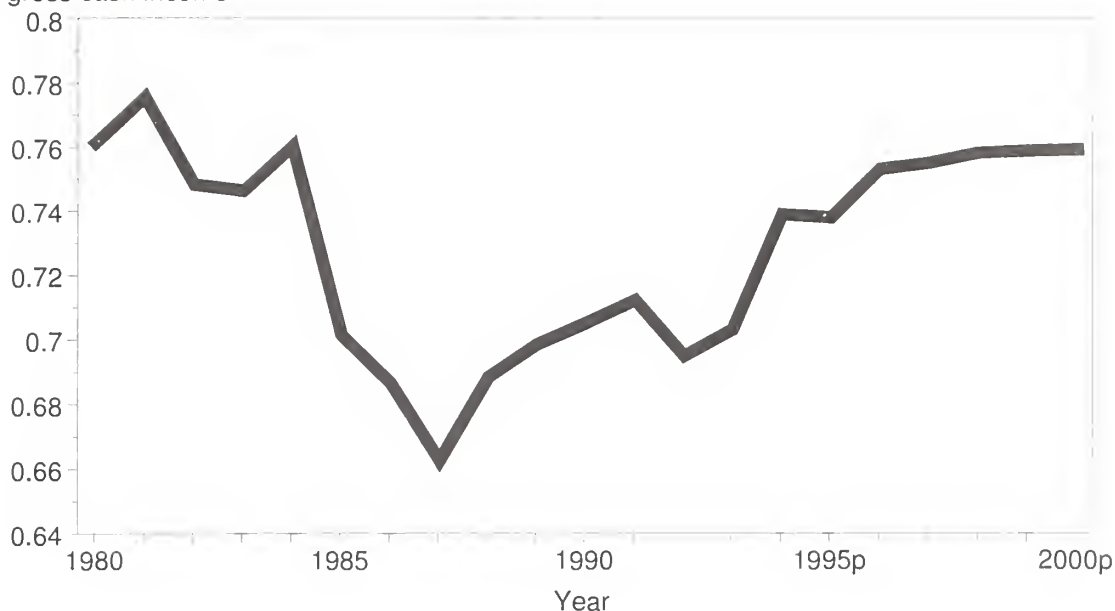


**Figure 2**  
**Real Value of Direct Government Payments**



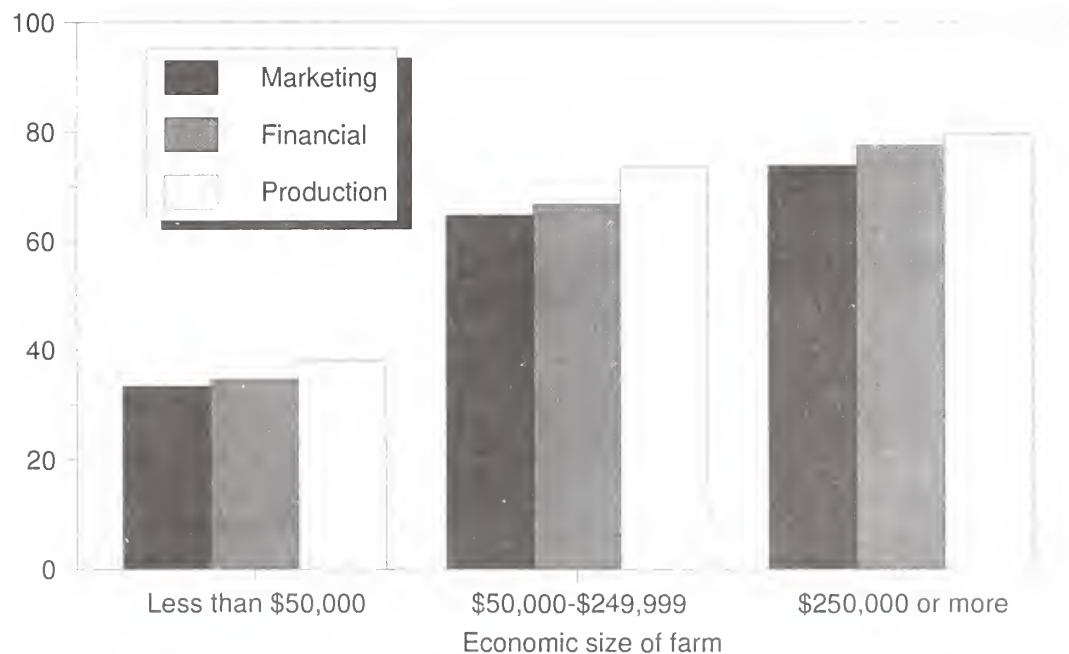
**Figure 3**  
**Cash operating margins are expected to tighten in production agriculture**

Cash expenses/  
gross cash income



**Figure 4**  
**Larger farm operations were more likely to use risk management strategies, production risk received most emphasis**

Percent

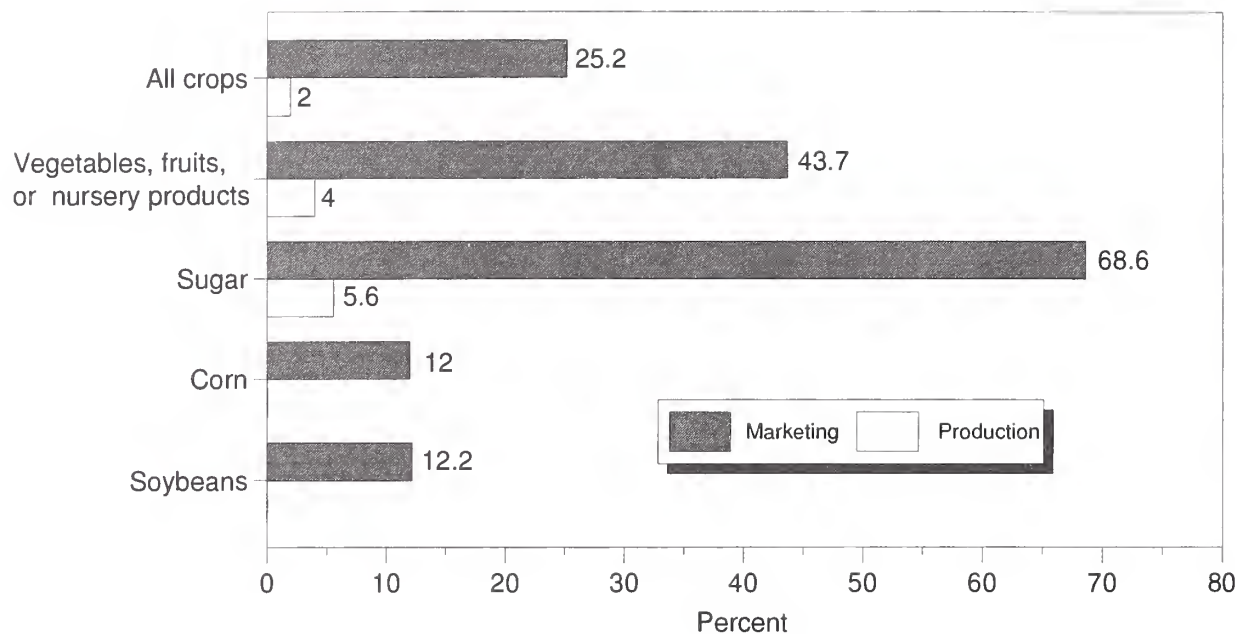


Source: 1993 Farm Costs and Returns Survey, USDA.

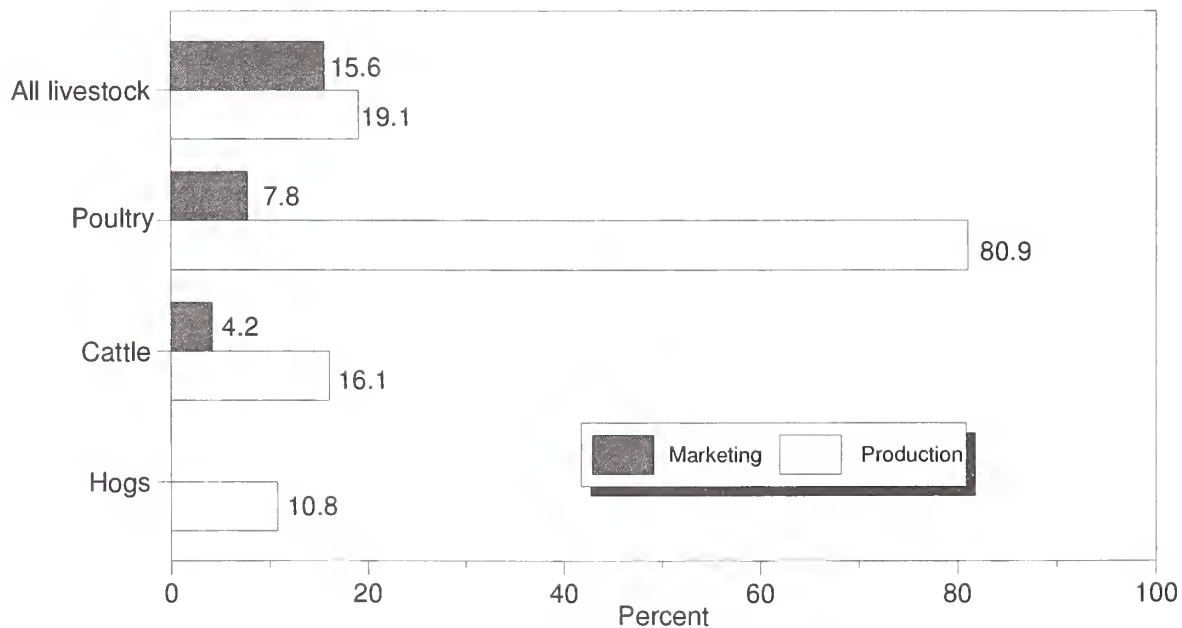


**Figure 5**  
**Relative significance of crop and livestock contract arrangements, 1993**

*One-fourth of the total value of crop production was marketed under contract in 1993*



*Production contracts are more common for livestock commodities, over 80 percent of the total value of poultry was produced under contract in 1993*

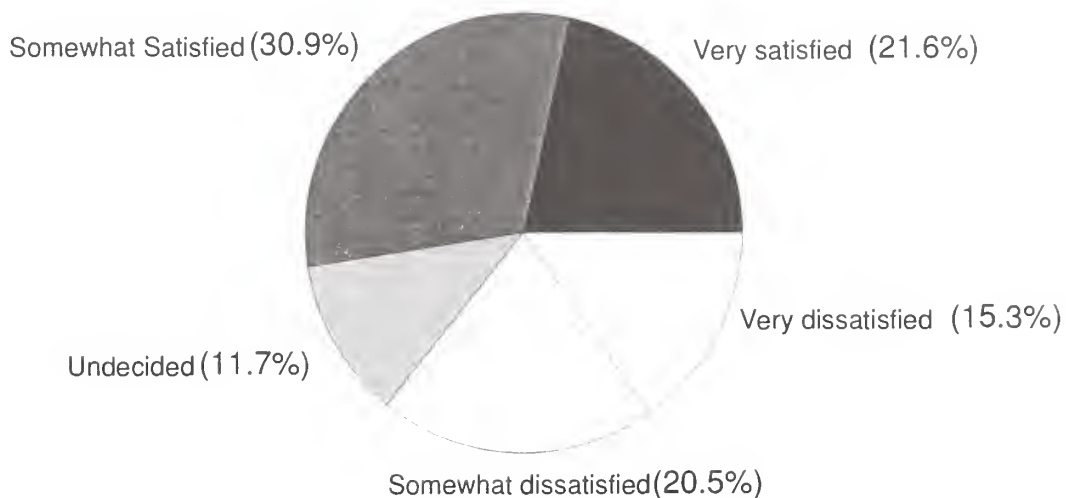


Source 1993 Farm Costs and Returns Survey, USDA.

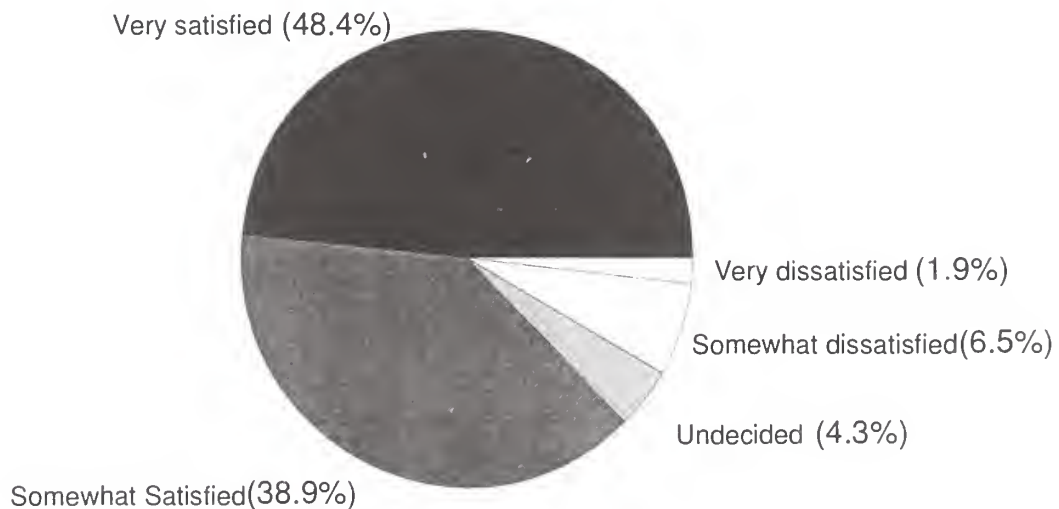
Figure 6

### Farm Operator Satisfaction with Aspects of Farming

*More than one-third of farm operators were dissatisfied with farming as a source of Income, but...*



*Most farm operators were satisfied with their standard of living*



Source: 1993 Farm Costs and Returns Survey, USDA.