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STATUS AND PROSPECTS FOR DAIRYING 1995-2000

AFPC Working Paper 95-7

April 1995



Department of Agricultural Economics
Texas Agricultural Experiment Station
Texas Agricultural Extension Service
Texas A&M University

A policy working paper is designed to provide economic research on a timely basis. It is an interim product of a larger AFPC research project which will eventually be published as a policy research report. These results are published at this time because they are believed to contain relevant information to the resolution of current policy issues. AFPC welcomes comments and discussions of these results and their implications. Address such comments to the author(s) at:

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STATUS AND PROSPECTS FOR DAIRYING, 1995-2000

Introduction

The 1995 farm bill will be influenced by the economic environment within the dairy industry. Dairy farm numbers have been declining for decades (Table 1). This decline in numbers has been accompanied by a trend toward larger farms to the point where 50 percent of the milk cows were located on 13 percent of the farms in 1992 (Tables 2 and 3). This change in structure has resulted in a larger share of U.S. milk being produced in the West and Southwest (Figure 1).

There is evidence that the trend toward fewer but larger farms is accelerating. The result is the potential for massive restructuring of traditional milk producing areas such as the Upper Midwest and the Northeast. This restructuring has been the result of basic economic and technological forces favoring larger farms, combined with reductions in the milk price support level. Often, larger farms appear to be locating in relatively concentrated geographic areas that have attracted the related production and processing infrastructure which enhances its overall efficiency.

All major dairy production regions in the United States have experienced increases in the average number of cows per farm (Table 4). However, three regions (Pacific, Southern Plains, and Southeast) have experienced more rapid growth than the remaining regions. As of 1992, the average number of cows per farm in the Southeast and Pacific regions respectively were about three and five times as large as the average herd size in the Upper Midwest region.

Table 1. Number of U.S. Dairy Farms, Cows on Farms and Cows per Farm, Selected Years, 1954 to 1992.

Year	Farms	Cows	Cows Per Farm
1954	2,935,842	20,182,803	7
1959	1,792,393	16,522,026	9
1964	1,133,912	14,622,604	13
1969	568,237	11,174,036	20
1974	403,754	10,654,516	26
1978	312,095	10,221,692	33
1982	277,762	10,849,890	39
1987	202,068	10,849,890	54
1992	155,339	9,491,818	61

Source: Census of Agriculture, various years.

Table 2. Percent of U.S. Dairy Farms With Milk Cows by Size Category, Selected Years, 1964 to 1992.

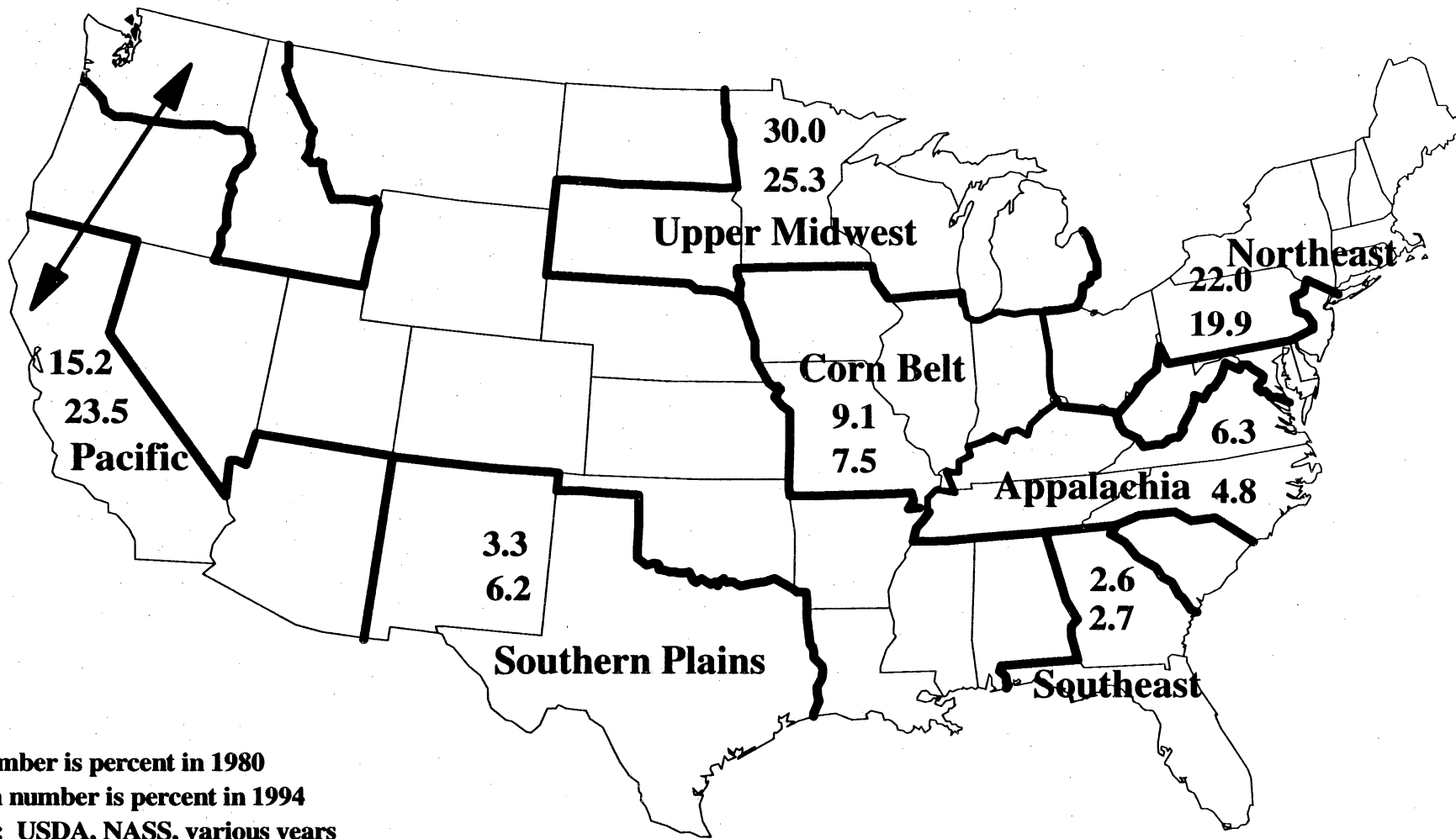
	1964	1969	1974	1978	1982	1987	1992
Size of Herd	----- Percent of Farms with the Following Size Herds -----						
1-19	77.2	64.1	55.5	50.3	41.8	32.5	28.1
20-49	18.7	27.4	29.4	30.4	31.9	33.5	31.8
50-99	3.3	6.7	11.5	14.4	19.2	23.9	26.9
100 or more	.8	1.8	3.6	4.9	4.1	10.1	13.1

Source: Census of Agriculture, various years.

Table 3. Percent of Milk Cows in Herds of Different Size, 1964 to 1992.

	1964	1969	1974	1978	1982	1987	1992
Size of Herd	----- Percent of Milk Cows on US Dairy Farms -----						
1-19	28.7	17.6	10.1	7.1	5.0	3.4	2.5
20-49	43.6	43.2	35.6	31.9	27.2	22.9	17.9
50-99	16.4	22.0	27.9	30.1	32.0	31.5	29.0
100 or more	11.3	17.2	26.4	30.9	35.8	42.2	50.5

Source: Census of Agriculture, various years.



Top number is percent in 1980
 Bottom number is percent in 1994
 Source: USDA, NASS, various years

Figure 1. Percent* of US Milk Production in Seven Major Regions, 1980 and 1994

* In each region, the upper number is the percent of US milk production in 1980 and the lower number is the percent of US milk production in 1994.

Table 4. Average Number of Cows per Farm, by Region, 1978 to 1992¹.

	1978	1982	1987	1992
	----- Cows Per Farm -----			
Appalachia	19.9	26.7	38.4	47.7
Corn Belt	23.3	29.1	35.5	41.6
Northeast	36.5	42.4	49.2	55.7
Pacific	79.5	107.5	165.3	242.7
Southeast	55.4	81.1	107.8	133.8
Southern Plains	27.9	37.4	61.5	83.7
Upper Midwest	34.9	39.1	45.0	49.7

Source: Census of Agriculture, various years.

¹ The states included in each region are those identified in Figure 1.

This year is likely to be a banner year for dairy policy analyses. Fostered by structural change, the release of BST, the passage of NAFTA, the new GATT agreement, and constraints on government spending appear to be creating a new U.S. dairy industry mindset favoring international competitiveness.

Purpose

Each year, AFPC (Texas A&M University) and FAPRI (University of Missouri and Iowa State University) cooperate to develop a six year outlook for the dairy industry. This outlook and related analyses have formed the basis for studies of specific dairy policy options as input into congressional deliberations over dairy policy.

As part of its responsibility to the Congress, the AFPC maintains a set of representative dairy farms located in each of the major U.S. milk production regions (Figure 2). These farms are developed with the assistance of dairy farmers, dairy management specialists, and Extension agents. Experience indicates that these representative farms do a very good job of indicating regional economic conditions in the dairy industry, assuming no change in government policy. In doing so, the farms reflect the economic forces driving the process of structural change.

The purpose of this working paper is to set forth our baseline for 1995 farm bill policy analyses. In doing so, it will surface some of the major economic issues, opportunities, and uncertainties that are inherent in today's industry. The baseline assumes no change in farm policy. In other words, it assumes that the 1990 farm bill provisions continue to operate through the year 2001.

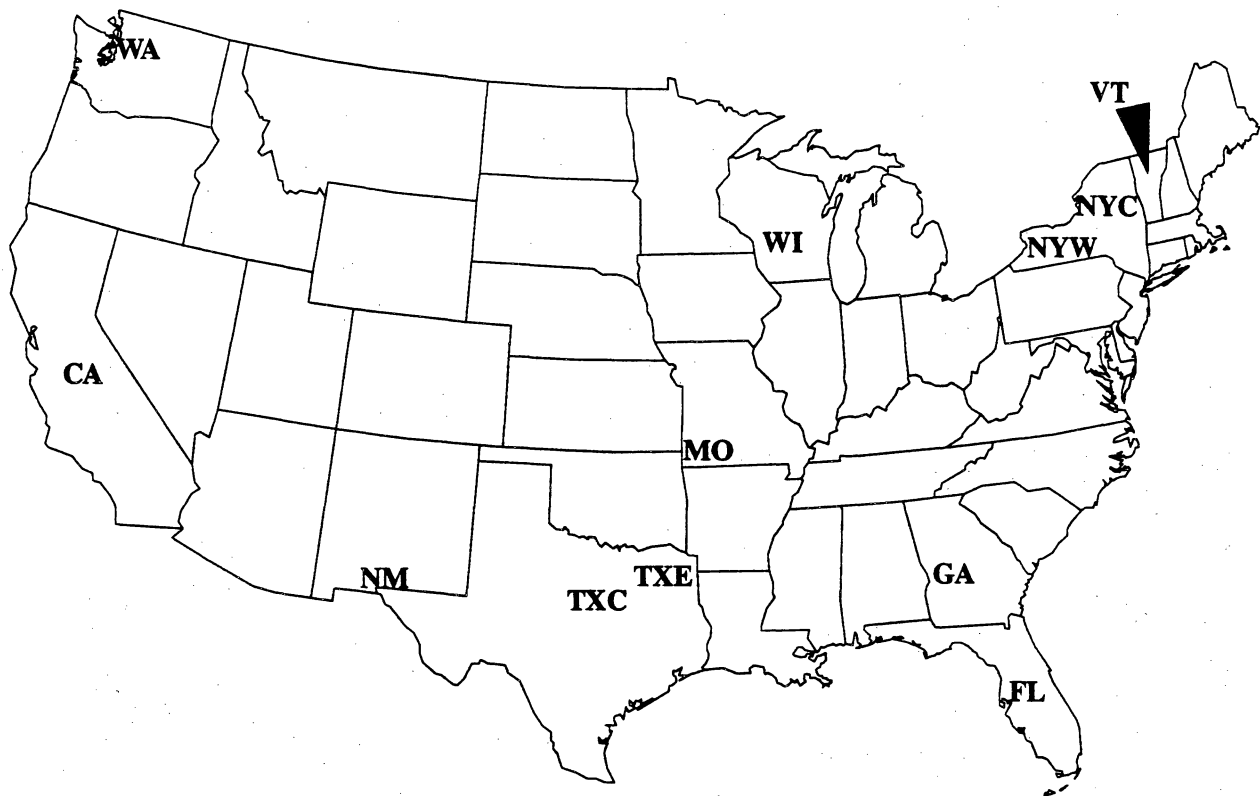


Figure 2. Panel Farms Producing Milk

Economic and Technological Factors Influencing Milk Production

Table 5 provides a summary of the major economic factors that are expected to influence milk production and the dairy industry over the next five years. Soybean meal prices decrease in 1994/95 by \$30/ton to \$150.80/ton and increase each year thereafter to \$179 ton in 2001. Following record corn production in 1994/95, corn prices are projected to rise then decrease, followed by increases in the final three years of the analysis. Hay prices increased sharply in 1993-94 due to weather adversities, then declined through 1995/96 before holding steady through year 2001.

Aside from inflationary pressures, whether these projected input prices materialize is dependent primarily on weather stability. Whether the pending release of CRP land into production becomes reality depends on the outcome of the 1995 farm bill. For example, adverse weather would result in higher prices than indicated. Materially, lower government support for crop production would almost certainly lead to greater price volatility. Throughout the next five years, therefore, dairymen who are dependent on purchased feed are well advised to consider forward contracting alternatives when economically warranted.

The introduction of BST in February 1994 represents a major new technology impacting milk production. In assessing future milk production, an important uncertainty is the rate at which BST will be adopted. In the past, dairy technologies have tended to be adopted relatively slow and not by the whole industry. This reflects the diversity and long-run nature of milk production. However, some regions, such as California and Florida, have adopted technologies more rapidly than others. Moreover, with an accelerating rate of adjustment in technology and regional shifts in milk production, it is possible that the BST technology could be adopted more rapidly than has

Table 5. Economic Factors Influencing Milk Production

	<u>1992/93</u>	<u>1993/94</u>	<u>1994/95</u>	<u>1995/96</u>	<u>1996/97</u>	<u>1997/98</u>	<u>1998/99</u>	<u>1999/00</u>	<u>2000/01</u>
Expenses									
Corn (\$/bu.)	2.07	2.50	2.15	2.31	2.24	2.11	2.21	2.22	2.25
Soybean Meal (\$/ton)	181.75	180.53	150.80	160.98	166.95	166.00	167.93	171.80	178.95
All Hay (\$/ton)	74.30	81.60	78.15	76.15	77.07	78.31	79.75	77.63	73.18
Inflation (%)	3.03	2.96	2.67	3.32	3.48	3.52	3.46	3.54	3.60
Mortgage Rate (%)	8.13	7.174	7.50	8.16	8.41	8.53	8.63	8.61	8.52
Receipts									
All-Milk (\$/cwt)	13.15	12.86	13.04	12.38	12.26	12.35	12.50	12.71	12.89
Cull Cows (\$/cwt)	44.84	47.52	42.56	40.24	38.11	35.12	35.46	38.08	42.38
Production									
Milk Output (bil. lbs.)	151.65	150.95	154.21	158.74	161.62	164.21	166.11	168.36	170.58
Output/Cow (cwt)	154.19	155.54	159.80	166.17	171.39	176.34	181.04	185.77	190.21
Cow Numbers (thou)	9,835	9,705	9,650	9,553	9,430	9,312	9,177	9,063	8,968
Policy									
Support Price (\$/cwt)	10.10	10.10	10.10	10.10	10.10	10.10	10.10	10.10	10.10
Milk Assessment(\$/cwt)	0.126	0.142	0.150	0.152	0.140	0.138	0.137	0.137	0.137

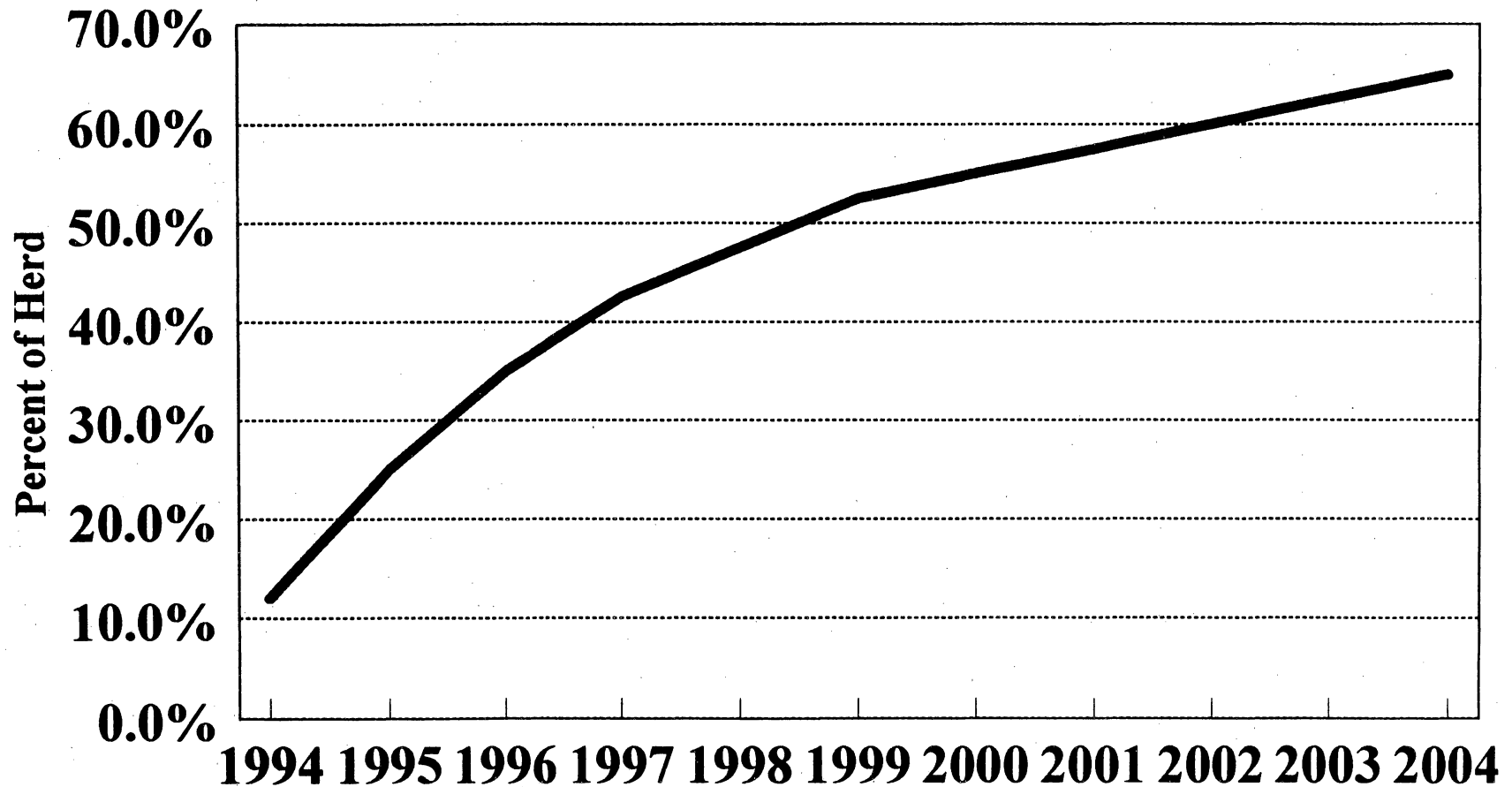
Source: FAPRI January 1995 Baseline

been typical of past technologies. The projected prices, production per cow and therefore total production in the FAPRI Baseline are highly influenced by the rate of BST adoption assumed when the projections were made. FAPRI and USDA have each utilized the same assumptions regarding BST adoption (Figure 3). In 1994 about 12 percent of the national dairy cow herd was injected with BST during some portion of their lactation. FAPRI projects that by 2004, 65 percent of the national dairy cow herd will be injected with BST (Figure 3).

With increased use of BST, U.S. milk production increases as indicated in Figure 4 and Table 5. The result is a projected decline in the all-milk price by \$0.66/cwt. to \$12.38/cwt in 1995/96 (Table 5). This decline is followed by increases in each of the next four years ending the period at \$12.84/cwt. in 2000/2001. Beginning in 1998/99, assessments were assumed to hold at about \$0.137 per cwt. Lower milk prices resulting from increased production due to BST leads to a projected accelerated reduction in cow numbers. If BST adoption is faster than is indicated in Figure 3 then actual milk prices would be expected to be lower than those currently projected in Table 5, and vice versa.

Since 1990, the milk price has experienced considerably more within-year instability than between years. It has not been unusual for the fall milk price to rise by 25 percent over the within-year monthly low. This unusually large variability results from low levels of CCC stocks of cheese and nonfat dry milk and relatively low levels of butter stocks. BST, if adopted more rapidly than projected with good management practices, could change that situation even more as milk prices are driven toward support levels and the market becomes burdened with surpluses.

Figure 3. Percent of Cows That Are Assumed To Be Treated With BST During the Year, 1994-2004*



* It is assumed that maximum adoption of BST will be on 65 percent of the cows and will occur 10 years after approval.

Figure 4. Total Projected U.S. Milk Production, 1992-2001



Representative Farms

AFPC maintains and updates the 22 representative dairy farms located in major milk production regions every 2 to 3 years. These farms are developed and updated with the assistance of panels of dairy farmers. The farmers on the panel are selected with the assistance of a state Extension dairy management specialist, a local county agent, and/or employees of a major cooperative serving the area. In most production areas, two dairy farm panels are selected:

- A panel representative of a moderate size full-time family dairy farm.
- A panel representative of a large size dairy farm, normally 2 to 3 times the size of the moderate farm.

Names of the facilitators and the members of the dairy panels are indicated in Appendix A. This project would not be possible without their cooperation, data, experiences, and judgments. These panel members serve as an invaluable resource to AFPC analysts in their willingness to answer questions that arise as policy changes are proposed.

The farm panels provide an extensive amount of data for what they judge to be a farm representative of dairy operations of their size in their production area. This data generally includes:

- Size of operation (acres and cows)
- Tenure arrangements
- Management practices
- Physical facilities
- Machinery complement
- Output per cow and crop yield (if applicable)

- Cost of production
- Mailbox milk price

The panel farm data provides input for a computer simulation model developed and maintained by James Richardson and Clair Nixon at Texas A&M. The model utilizes the crop prices, milk prices, interest rates, and inflation rates projected in Table 5. For each farm, these prices are adjusted regionally to represent local marketing order regulations, premium structures, marketing costs, and competitive conditions. In other words, the price utilized for each farm is a projection of what will actually be received on the farmer's milk check given the projected all-milk price.

As an aid to making sure the farm described by the panel accurately represents a dairy farm located in their area, the results of the initial simulations are sent to each panel member and discussed with them via a conference call. Adjustments invariably result from these conference calls as the panel identifies problem areas and suggests solutions. After each adjustment of panel farm input data, another conference call is held until the panel agrees that the results are representative of the farm they initially developed and described. There have been only a few instances where the panel never comes to an agreement. Updating proceeds with the same process, directly involving the producer panel in the discussions of what adjustments need to be made to keep the farm representative of current conditions in the area.

The major assumptions impacting the dairy results include:

- The initial debt for the panel farm was specified as being a uniform 30 percent. In the updating process, we had considerable discussion of appropriate debt levels with many of the panels. The 30 percent debt level is higher than used in the past because in updating

the panel members contended that higher debts are typical of progressive dairies attempting to adapt to change.

- The dairy herd size was held constant over the planning horizon. This means that herd and farm size are adjusted only when the farms are updated.
- The farm program parameters, crop prices, milk prices, interest rates, and input cost inflation were as indicated in Table 5.
- Feed grown and fed on the dairy farm is valued at its cost of production, not at the market price indicated in Table 5.
- Family living withdrawals were assumed at a minimum of \$25,000 annually with a maximum of \$50,000, depending on the profitability of the dairy.
- No off-farm income was allowed, thus the farm's financial experience reflects only its dairy-related economic activity over the study period.

The simulation model is constructed in a manner which allows incorporation of historical variation in input prices, milk prices, milk per cow, and crop yields. Variability due to weather and market forces over the past ten years is thus incorporated into the analysis.

Tables 6-8 provide a description of some of the important characteristics of the 22 panel dairy farms. Space limitation makes it necessary to abbreviate the name of each dairy. The dairies are ordered from west to east, across the United States. The first two letters in the abbreviated name are the standard abbreviation for the state where the farm is located. If there is more than one dairy location in the state, the third letter indicates where the dairy is located, such as E stands for east or C for central. If there is not more than one dairy location in the state, the

third letter indicates it is a dairy farm. The numbers indicate the number of cows on the farm.

The following are the abbreviations used, with a brief description of the farm:

- WAD175** a 175-cow Northern Washington (Whatcom County) moderate size dairy farm that had a herd average of 23,800 pounds of milk per cow. The farm grew 114 acres of silage and generated about 91 percent of its revenue from milk sales.
- WAD850** an 850-cow Northern Washington (Whatcom County) large dairy farm that had a herd average of 24,600 pounds of milk per cow. The farm grew 385 acres of silage and generated about 92 percent of its revenue from milk sales.
- CAD2150** a 2,150-cow Central California (Tulare County) large dairy farm that had a herd average of 22,700 pounds of milk per cow. The farm grew no feed and generated about 87 percent of its revenue from milk sales.
- NMD2000** a 2,000-cow Southern New Mexico (Dona Anna County) large dairy farm that had a herd average of 21,300 pounds of milk per cow. The farm grew 180 acres of silage and generated about 91 percent of its revenue from milk sales.
- TXCD300** a 300-cow Central Texas (Erath County) moderate size dairy farm that had a herd average of 16,100 pounds of milk per cow. The farm grew 303 acres of hay and silage, and generated about 91 percent of its revenue from milk sales.
- TXCD720** a 720-cow Central Texas (Erath County) large dairy farm that had a herd average of 19,200 pounds of milk per cow. The farm grew 380 acres of silage and produced about 90 percent of its receipts from milk sales.
- TXED200** a 200-cow Eastern Texas (Hopkins County) moderate size dairy farm that had a herd average of 16,400 pounds of milk per cow. By double cropping, the farm grew 450 acres of hay and generated about 87 percent of its receipts from milk sales.
- TXED812** an 812-cow Eastern Texas (Hopkins County) large dairy farm that had a herd average of 18,200 pounds of milk per cow. The farm grew 790 acres of hay, silage, and coastal pasture. The farm generated about 90 percent of its receipts from milk sales.

Table 6. Characteristics of Panel Farms in Washington, California, New Mexico, and Texas Producing Milk.

	WAD175	WAD850	CAD2150	NMD2000	TXCD300	TXCD720	TXED200	TXED812
Total Cropland	120	428	320	150	303	190	400	500
Acres Owned	60	225	320	150	150	190	200	500
Acres Leased	60	203	0	0	153	0	200	0
Total Pasture	0	0	0	0	150	155	0	300
Acres Owned	0	0	0	0	0	155	0	300
Acres Leased	0	0	0	0	150	0	0	0
Assets (\$1000)								
Total	799	3208	7358	6916	1170	2984	981	3262
Real Estate	426	1828	3082	2599	544	877	356	1514
Machinery	76	268	113	564	209	385	164	372
Other & Livestock	297	1113	4163	3753	417	1722	461	1376
1994 Livestock								
Dairy Cows	175	850	2150	2000	300	720	200	812
Cwt Milk/Cow	238	246	227	213	161	192	164	182
1994 Gross Receipts*								
Total	566.5	2770.5	6357.1	5745.5	755.3	2179.1	520.5	2219.9
Milk	517.0 91.3%	2551.2 92.1%	5524.0 86.9%	5237.3 91.2%	683.6 90.5%	1962.7 90.1%	450.1 86.5%	2003.0 90.2%
Dairy Cattle	39.3 6.9%	179.2 6.5%	798.1 12.6%	508.2 8.8%	71.7 9.5%	216.4 9.9%	70.4 13.5%	216.9 9.8%
Silage	10.2 1.8%	40.1 1.4%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%
Other Income	0.0 0.0%	0.0 0.0%	35.0 0.6%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%
1994 Planted Acreage**								
Total	114.0	385.0	0.0	180.0	303.0	380.0	450.0	790.0
Hay	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	136.0 44.9%	0.0 0.0%	250.0 55.6%	337.0 42.7%
Silage	114.0 100.0%	385.0 100.0%	0.0 0.0%	180.0 100.0%	167.0 55.1%	380.0 100.0%	0.0 0.0%	163.0 20.6%
Improved Pasture	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	200.0 44.4%	290.0 36.7%

*Receipts for 1994 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 1994 are included to indicate the relative importance of each enterprise to the farm; these values reflect acreage reduction percentages that year. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

- WID55** a 55-cow Eastern Wisconsin (Winnebago County) moderate size dairy farm that averaged 19,700 pounds of milk per cow, generating about 81 percent of its total revenue from milk sales. The farm grew 20 acres of silage, 43 acres of hay, 72 acres of haylage, 40 acres of corn for grain, and 15 acres of soybeans.
- WID190** a 190-cow Eastern Wisconsin (Winnebago County) large dairy farm that averaged 21,000 pounds of milk per cow. The farm grew 90 acres of silage, 120 acres of hay, 242 acres of haylage, 144 acres of corn for grain, and 87 acres of soybeans. The farm generated about 86 percent of its revenue from milk sales.
- NYWD600** a 600-cow Western New York (Wyoming County) moderate size dairy farm that averaged 20,600 pounds of milk per cow. The farm grew 470 acres of silage and 405 acres of haylage. About 89 percent of the farm revenue came from milk sales.
- NYWD1000** a 1,000-cow Western New York (Wyoming County) large dairy farm that averaged 20,600 pounds of milk per cow, generating about 89 percent of its total receipts from milk sales. The farm grew 850 acres of silage and 660 acres of haylage.
- NYCD110** a 110-cow Central New York (Cayuga County) moderate size dairy farm that averaged 20,600 pounds of milk per cow. The farm grew 88 acres of hay, 80 acres of silage, 77 acres of haylage, and 120 acres of corn for grain. About 89 percent of the farm's gross receipts came from milk sales.
- NYCD225** a 225-cow Central New York (Cayuga County) large dairy that averaged 20,600 pounds of milk per cow. The farm grew 99 acres of silage, 99 acres of hay, 128 acres of haylage, and 89 acres of corn for grain. The farm generated about 91 percent of its total receipts from milk sales.
- VTD70** a 70-cow Vermont (Washington County) moderate size dairy farm that averaged 21,500 pounds of milk per cow, generating about 86 percent of its revenue from milk sales. The farm grew 32 acres of hay, 50 acres of silage, and 56 acres of haylage.
- VTD186** a 186-cow Vermont (Washington County) large dairy farm that averaged 20,000 pounds of milk per cow, generating about 90 percent of its total revenue from milk sales. The farm grew 67 acres of hay, 117 acres of silage, and 100 acres of haylage.

Table 7. Characteristics of Panel Farms in Wisconsin, New York, and Vermont Producing Milk.

	WID55	WID190	NYWD600	NYWD1000	NYCD110	NYCD225	VTD70	VTD186
Total Cropland	195	685	875	1510	355	413	140	285
Acres Owned	152	411	600	967	205	309	100	225
Acres Leased	43	274	275	543	150	104	40	60
Total Pasture	30	0	200	200	50	300	125	100
Acres Owned	30	0	200	200	50	300	100	50
Acres Leased	0	0	0	0	0	0	25	50
Assets (\$1000)								
Total	509	1252	2343	4172	619	987	645	1132
Real Estate	266	529	1000	1810	383	473	365	587
Machinery	118	243	311	745	104	214	159	271
Other & Livestock	125	479	1033	1616	132	300	122	273
1994 Livestock								
Dairy Cows	55	190	600	1000	110	225	70	186
Cwt Milk/Cow	197	210	206	206	206	206	215	200
1994 Gross Receipts (\$1,000)*								
Total	176.8	612.1	1852.6	3055.9	314.0	667.7	233.3	551.1
Milk	142.8 80.8%	525.3 85.8%	1653.0 89.2%	2709.7 88.7%	278.5 88.7%	606.4 90.8%	200.7 86.0%	494.9 89.8%
Dairy Cattle	22.8 12.9%	68.9 11.3%	179.2 9.7%	249.6 8.2%	34.1 10.8%	61.2 9.2%	23.6 10.1%	50.3 9.1%
Hay	1.9 1.1%	3.6 0.6%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%
Silage	0.7 0.4%	0.0 0.0%	20.5 1.1%	96.6 3.2%	0.0 0.0%	0.0 0.0%	4.6 2.0%	5.9 1.1%
Haylage	0.3 0.2%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	2.9 1.3%	0.0 0.0%
Corn	1.1 0.6%	2.8 0.5%	0.0 0.0%	0.0 0.0%	1.4 0.5%	0.0 0.0%	0.0 0.0%	0.0 0.0%
Soybeans	0.0 0.0%	6.9 1.1%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%
Other Income	4.1 2.3%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	1.5 0.6%	0.0 0.0%
1994 Planted Acreage**								
Total	190.0	683.0	875.0	1510.0	365.0	415.0	138.0	284.0
Hay	43.0 22.6%	120.0 17.6%	0.0 0.0%	0.0 0.0%	88.0 24.1%	99.0 23.9%	32.0 23.2%	67.0 23.6%
Silage	20.0 10.5%	90.0 13.2%	470.0 53.7%	850.0 56.3%	80.0 21.9%	99.0 23.9%	50.0 36.2%	117.0 41.2%
Haylage	72.0 37.9%	242.0 35.4%	405.0 46.3%	660.0 43.7%	77.0 21.1%	128.0 30.8%	56.0 40.6%	100.0 35.2%
Corn	40.0 21.1%	144.0 21.1%	0.0 0.0%	0.0 0.0%	120.0 32.9%	89.0 21.4%	0.0 0.0%	0.0 0.0%
Soybeans	15.0 7.9%	87.0 12.7%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%

*Receipts for 1994 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 1994 are included to indicate the relative importance of each enterprise to the farm; these values reflect acreage reduction percentages that year. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

- MOD77** a 77-cow Southwestern Missouri (Christian County) moderate size dairy farm that had a herd average of 19,600 pounds of milk per cow. The farm grew 161 acres of hay and generated about 86 percent of its revenue from milk sales.
- MOD220** a 220-cow Southwestern Missouri (Christian County) large dairy farm that had a herd average of 20,300 pounds of milk per cow. The farm grew 452 acres of hay, 160 acres of silage, and 40 acres of alfalfa haylage. About 86 percent of the farm's revenue came from milk sales.
- GAD160** a 160-cow Central Georgia (Putnam County) moderate size dairy farm that had a herd average of 18,500 pounds of milk per cow. The farm grew 150 acres of improved pasture. The farm generated about 91 percent of the total revenue from milk sales.
- GAD600** a 600-cow Southern Georgia (Spalding County) large size dairy farm that had a herd average of 19,800 pounds of milk per cow. The farm grew 150 acres of hay, 400 acres of silage, and 150 acres of improved pasture. About 90 percent of the farm's revenue came from milk sales.
- FLD375** a 375-cow North Florida (Lafayette County) moderate size dairy farm that had a herd average of 16,800 pounds of milk per cow. The farm grew 590 acres of hay and generated about 93 percent of its revenue from milk sales.
- FLD1500** a 1,500-cow South Central Florida (Okeechobee County) large dairy farm that had a herd average of 17,400 pounds of milk per cow. The farm grew 300 acres of hay and 800 acres of improved pasture. About 91 percent of the farm's total revenue came from milk sales.

Aside from differences in the size of farm and in output per cow, it is important to note that some farms produce significant quantities of inputs (crops) for milk production while others produce no crops -- buy all their feed. Moreover, some utilize pasture for milking cows while others operate as a drylot dairy. For example, the East Texas, Georgia, and Florida dairies as well as the large Missouri dairy make extensive use of pasture. Most of the other representative dairies utilize very little pasture as a major component of their ration.

Table 8. Characteristics of Panel Farms in Missouri, Georgia, and Florida Producing Milk.

	MOD77	MOD220	GAD160	GAD600	FLD375	FLD1500
Total Cropland	161	600	0	350	590	300
Acres Owned	130	402	0	300	440	300
Acres Leased	31	198	0	50	150	0
Total Pasture	110	0	200	150	60	800
Acres Owned	30	0	200	150	60	800
Acres Leased	80	0	0	0	0	0
Assets (\$1000)						
Total	442	1301	686	2032	1300	5334
Real Estate	206	713	396	858	704	2833
Machinery	98	238	86	269	119	283
Other & Livestock	138	350	204	905	477	2217
1994 Livestock						
Dairy Cows	77	220	160	600	375	1500
Cwt Milk/Cow	196	203	185	198	168	174
1994 Gross Receipts (\$1,000)*						
Total	232.2	682.9	466.6	1890.6	1102.5	4606.8
Milk	198.6 85.5%	586.8 85.9%	422.7 90.6%	1698.4 89.8%	1021.2 92.6%	4178.8 90.7%
Dairy Cattle	33.6 14.5%	61.6 9.0%	43.9 9.4%	164.0 8.7%	81.2 7.4%	398.4 8.6%
Hay	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	21.3 0.5%
Silage	0.0 0.0%	18.3 2.7%	0.0 0.0%	28.2 1.5%	0.0 0.0%	0.0 0.0%
Haylage	0.0 0.0%	16.2 2.4%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%
Improved Pasture	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	8.3 0.2%
1994 Planted Acreage **						
Total	161.0	1002.0	150.0	700.0	1180.0	1100.0
Hay	161.0 100.0%	452.0 45.1%	0.0 0.0%	150.0 21.4%	590.0 50.0%	300.0 27.3%
Silage	0.0 0.0%	160.0 16.0%	0.0 0.0%	400.0 57.1%	0.0 0.0%	0.0 0.0%
Haylage	0.0 0.0%	40.0 4.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%	0.0 0.0%
Improved Pasture	0.0 0.0%	350.0 34.9%	150.0 100.0%	150.0 21.4%	590.0 50.0%	800.0 72.7%

*Receipts for 1994 are included to indicate the relative importance of each enterprise to the farm. Percents indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 1994 are included to indicate the relative importance of each enterprise to the farm; these values reflect acreage reduction percentages that year. Total planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage of total planted acreage accounted for by the crop.

Income and Growth Prospects

The farm level results are greatly influenced by the assumed choice of adopting or not adopting BST. The 22 representative dairies are analyzed with and without the adoption of BST. When BST is used, the dairies were assumed to have adopted the technology in 1994 on one-third of their herds. This assumption was based on discussions with members of farm panels currently using BST. The average increase in milk production per cow due to BST for the panel dairies was assumed to be 9 pounds per cow per day. Milk production per cow was increased at the average rate of increase experienced over the last 10 years due to genetic improvement under the BST and no BST scenarios. This means that with BST use the increase in production per cow associated with BST use was added to the percent increase due to genetic improvement.

The dairy ration was adjusted each year of the analysis to account for increased feed requirements associated with BST use. The initial cost of BST was assumed to be \$0.41/day for each treated cow. A four percent annual inflation rate was assumed for the cost of BST.

Net cash farm incomes from 1992 to 1994 reflect actual prices and yields experienced in those years, based on producer information and state yield impacts. Milk production per cow and crop yields after 1994 are simulated based on historical variability in each region and prices are regionalized relative to FAPRI's mean price projections.

The results in terms of income and growth prospects are, perhaps, best reviewed in terms of the concepts of net cash income and the real change in net worth defined as follows:

- Net cash income includes all receipts from milk, livestock and crops sold, including any applicable government payments less all cash expenses. Out of net cash income, the

Table 9. Implications of the 1990 Farm Bill and the January 1994 FAPRI Baseline on the Economic Viability of Representative Farms that Primarily Produce Milk w/BST.

	WAD175	WAD850	CAD2150	NMD2000	TXCD300	TXCD720	TXED200	TXED812
Average Change in Real Net Worth (%)	19.54	-4.08	111.71	63.11	-86.71	96.72	-100.00	10.70
Average Annual Ratio Expenses/Receipts (%)	82.68	93.49	74.55	84.12	104.14	79.64	112.38	90.73
Average Government Payments/Receipts (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Cash Receipts (\$1000)								
1992	535.94	2641.53	6044.54	5425.00	699.64	2044.53	488.33	2092.54
1993	531.09	2610.10	6005.55	5389.94	698.32	2038.31	488.55	2084.40
1994	566.49	2770.53	6357.14	5745.47	755.30	2179.10	520.47	2219.90
1995	548.07	2670.22	6141.24	5573.15	740.51	2134.00	508.82	2168.64
1996	550.66	2685.51	6174.65	5614.94	748.34	2156.30	513.32	2191.67
1997	561.79	2736.66	6296.65	5735.96	765.13	2204.06	523.67	2242.30
1998	577.45	2819.22	6477.05	5897.41	783.16	2259.97	541.01	2319.43
1999	603.02	2946.44	6777.24	6164.58	816.40	2356.92	564.15	2419.68
2000	629.16	3076.19	7090.22	6440.13	851.00	2458.31	588.64	2523.47
1995-2000 Average	578.36	2822.37	6492.84	5904.36	784.09	2261.60	539.93	2310.86
Average Annual Net Cash Income (\$1000)								
1992	83.88	170.40	1428.60	724.87	-0.43	337.21	-34.40	229.55
1993	81.05	121.63	1415.58	676.95	-14.04	324.36	-46.40	153.91
1994	103.39	227.57	1630.99	863.72	3.13	406.49	-48.53	219.25
1995	96.81	179.82	1485.15	860.16	-14.87	398.88	-76.26	172.85
1996	89.41	135.26	1516.85	819.52	-35.55	412.23	-93.10	155.79
1997	91.15	122.70	1550.83	854.74	-42.61	467.91	-103.93	170.91
1998	98.05	153.43	1638.83	979.80	-52.41	513.27	-82.57	212.12
1999	112.46	218.07	1836.85	1158.74	-58.67	561.93	-60.95	248.39
2000	127.92	294.76	2097.04	1318.36	-68.23	614.49	-40.41	315.95
1995-2000 Average	102.63	184.01	1687.59	998.55	-45.39	494.79	-76.20	212.67
Average Annual Govt. Payments (\$)								
1992	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1995	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1997	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1999	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1995-2000 Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Real Net Worth (\$1000)								
1992	566.61	2291.15	4995.57	4594.97	741.44	1777.07	563.42	2216.89
1993	590.40	2291.10	5667.41	4936.22	682.43	1968.92	518.17	2297.14
1994	596.08	2242.55	6059.46	5090.84	609.11	2083.10	452.96	2285.33
1995	600.32	2210.10	6437.67	5288.93	528.41	2192.91	371.10	2251.96
1996	599.03	2144.21	6801.66	5459.55	431.01	2263.93	283.42	2163.49
1997	598.40	2061.70	7129.07	5572.21	336.41	2396.83	0.00	2130.39
1998	604.91	2046.28	7599.34	5829.63	257.49	2589.85	0.00	2160.25
1999	615.22	2068.14	8206.75	6241.19	182.74	2821.63	0.00	2211.14
2000	636.28	2122.96	8940.53	6760.92	103.05	3080.81	0.00	2309.41
1995-2000 Average	609.03	2108.90	7519.17	5858.74	306.52	2557.66	0.00	2204.44
Net Income Adjustment for 1995-2000 in Dollars (\$1000)	-37.70	20.00	-1521.42	-726.38	147.57	-375.58	120.54	-68.93
Net Income Adjustment for 1995-2000 as % Receipts (%)	-6.65	0.72	-23.87	-12.58	19.37	-17.04	22.90	-3.06

Change in Real Net Worth - Percentage change in real net worth over the simulation period, 1992-2000.

Average Annual Ratio of Expenses/Receipts - Ratio of all cash expenses to all farm receipts including government payments.

Government Payments/Receipts - Total government payments from all eligible programs divided by total cash receipts including government payments.

Cash Receipts - Total cash receipts from crops, dairy, livestock, government payments, and other farm related activities.

1995-2000 Average - Is an average calculated over the 1995-2000 period.

Net Cash Income - Total cash receipts minus total cash expenses; excludes family living expenses principal, payments, and costs to replace capital assets.

Government Payments - Total deficiency, diversion, and other program payments.

Real Net Worth - Total assets minus total liabilities, including accrued income taxes and discounted by the CPI.

Net Income Adjustment in Dollars - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth.

Net Income Adjustment % Receipts - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth expressed as a percent of cash receipts.

farmer must pay family living, principal payments, cost of capital replacement, and state and/or federal income taxes.

- Real change in net worth is the percent change in the present value of ending net worth. It indicates whether the farmer is gaining or eroding equity over the study period, after adjusting for inflation.

Tables 9-14 provide detailed data on the simulation results for each of the panel farms over the six year time horizon (1992-2000). Tables 9, 10, and 11 present the results assuming BST is adopted. Tables 12, 13, and 14 present the results assuming no BST. The projected net income and net worth results are summarized in Figures 5-26.

Net Cash Income

All 22 dairy farms experience higher average annual net farm incomes under the assumption of BST adoption. The increase in average annual net cash farm income for BST use versus no BST ranges from \$4,100 for the 77 cow Missouri dairy (MOD77) to \$153,400 for the 1500 cow Florida dairy (FLD1500). BST adoption is less profitable for both Georgia dairies the last year of the analyses due to substantial increases in feed prices.

Only three of the 22 dairy farms (TXCD300, TXED200, and NYCD110) experience negative average net cash farm incomes over the 1995-2000 period with BST use. Without BST use, the two moderate size Texas Dairies (TXCD300, TXED200), the moderate size Central New York dairy (NYCD110), and the large Vermont dairy (VTD186) experienced negative average net cash farm incomes over the 1995-2000 period.

**Table 10. Implications of the 1990 Farm Bill and the January 1994 FAPRI Baseline
on the Economic Viability of Representative Farms that Primarily Produce Milk w/ BST.**

	WID55	WID190	NYWD600	NYWD1000	NYCD110	NYCD225	VTD70	VTD186
Average Change in Real Net Worth (%)	3.58	33.57	58.30	123.99	-78.90	6.90	-20.97	-39.83
Average Annual Ratio Expenses/Receipts (%)	67.94	76.90	80.98	69.92	99.32	86.77	82.69	95.86
Average Government Payments/Receipts (%)	1.47	0.63	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Cash Receipts (\$1000)								
1992	167.06	581.45	1749.86	2826.99	293.86	629.59	213.53	514.48
1993	166.28	581.94	1763.17	2930.24	300.37	626.51	214.49	521.54
1994	176.82	612.09	1852.64	3055.88	314.00	667.66	233.30	551.12
1995	168.85	587.25	1802.18	2969.14	302.64	648.90	226.78	535.04
1996	168.89	587.72	1814.04	2988.22	304.01	653.08	226.86	537.18
1997	171.16	595.14	1848.38	3042.86	309.55	665.69	230.24	545.81
1998	174.86	608.60	1897.00	3122.93	318.09	683.65	237.78	560.03
1999	181.76	634.41	1976.57	3257.38	332.65	714.07	247.57	583.40
2000	189.24	661.25	2057.81	3395.75	348.15	745.66	262.15	608.25
1995-2000 Average	175.79	612.39	1899.33	3129.38	319.18	685.18	238.56	561.62
Average Annual Net Cash Income (\$1000)								
1992	55.87	138.95	329.52	764.26	18.27	97.10	36.87	41.11
1993	56.55	143.58	348.47	881.30	19.33	107.60	38.39	40.59
1994	63.75	162.56	377.04	956.87	25.13	112.06	48.85	53.65
1995	53.39	128.59	336.04	902.65	7.24	83.32	41.88	27.45
1996	50.50	123.06	309.93	877.94	-2.78	73.59	32.65	6.58
1997	51.68	125.89	322.23	890.24	-6.38	66.11	32.86	5.56
1998	53.03	130.64	349.93	938.71	-11.11	69.43	37.32	5.26
1999	57.23	144.14	392.13	1008.73	-15.77	88.39	42.02	10.02
2000	59.69	161.35	422.38	1077.51	-14.72	100.82	51.35	15.11
1995-2000 Average	54.25	135.61	355.44	949.30	-7.25	80.28	39.68	11.66
Average Annual Govt. Payments (\$)								
1992	3.50	5.26	0.00	0.00	0.00	0.00	0.00	0.00
1993	1.26	1.89	0.00	0.00	0.00	0.00	0.00	0.00
1994	3.06	4.59	0.00	0.00	0.00	0.00	0.00	0.00
1995	2.05	3.07	0.00	0.00	0.00	0.00	0.00	0.00
1996	2.45	3.67	0.00	0.00	0.00	0.00	0.00	0.00
1997	3.07	4.61	0.00	0.00	0.00	0.00	0.00	0.00
1998	2.59	3.89	0.00	0.00	0.00	0.00	0.00	0.00
1999	2.54	3.82	0.00	0.00	0.00	0.00	0.00	0.00
2000	2.48	3.72	0.00	0.00	0.00	0.00	0.00	0.00
1995-2000 Average	2.53	3.80	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Real Net Worth (\$1000)								
1992	336.43	785.34	1468.07	2795.67	425.78	648.17	427.24	764.49
1993	340.68	831.41	1602.96	3184.50	405.03	672.86	428.79	739.55
1994	350.17	862.49	1685.57	3507.42	378.14	679.78	422.35	728.45
1995	350.80	880.56	1744.29	3790.60	336.00	671.67	413.33	688.73
1996	343.71	890.33	1774.86	4021.51	285.52	661.60	387.75	616.74
1997	338.01	896.56	1806.32	4245.71	234.46	639.52	367.78	561.93
1998	332.24	912.16	1869.37	4488.58	184.53	626.51	350.60	514.00
1999	335.99	936.92	1965.52	4825.03	132.21	641.65	337.89	481.09
2000	334.52	970.79	2083.13	5171.52	92.98	658.87	330.94	451.56
1995-2000 Average	339.21	914.55	1873.91	4423.83	210.95	649.97	364.72	552.34
Net Income Adjustment for 1995-2000 in Dollars (\$1000)	-0.96	-73.68	-265.63	-879.06	95.00	-12.89	28.18	67.41
Net Income Adjustment for 1995-2000 as % Receipts (%)	-0.55	-12.17	-14.26	-28.68	30.28	-1.92	12.12	12.24

Change in Real Net Worth - Percentage change in real net worth over the simulation period, 1992-2000.

Average Annual Ratio of Expenses/Receipts - Ratio of all cash expenses to all farm receipts including government payments.

Government Payments/Receipts - Total government payments from all eligible programs divided by total cash receipts including government payments.

Cash Receipts - Total cash receipts from crops, dairy, livestock, government payments, and other farm related activities.

1995-2000 Average - Is an average calculated over the 1995-2000 period.

Net Cash Income - Total cash receipts minus total cash expenses; excludes family living expenses principal, payments, and costs to replace capital assets.

Government Payments - Total deficiency, diversion, and other program payments.

Real Net Worth - Total assets minus total liabilities, including accrued income taxes and discounted by the CPI.

Net Income Adjustment in Dollars - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth.

Net Income Adjustment % Receipts - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth expressed as a percent of cash receipts.

**Table 11. Implications of the 1990 Farm Bill and the January 1994 FAPRI Baseline
on the Economic Viability of Representative Farms that Primarily Produce Milk w/ BST.**

	MOD77	MOD220	GAD160	GAD600	FLD375	FLD1500
Average Change in Real Net Worth (%)	4.58	9.64	-27.59	17.50	-28.67	10.91
Average Annual Ratio Expenses/Receipts (%)	73.90	81.81	91.53	90.09	96.94	91.10
Average Government Payments/Receipts (%)	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Cash Receipts (\$1000)						
1992	216.36	633.15	429.44	1759.58	1020.28	4276.34
1993	216.70	629.82	429.13	1726.86	1018.60	4285.85
1994	232.16	682.95	466.58	1890.62	1102.46	4606.75
1995	227.35	666.45	460.93	1865.29	1087.91	4536.34
1996	230.05	675.35	469.55	1899.28	1102.08	4591.67
1997	235.52	691.27	483.95	1956.50	1128.07	4695.31
1998	241.54	706.40	494.48	2001.22	1151.33	4795.13
1999	252.04	736.05	515.54	2083.64	1198.41	4991.06
2000	263.15	766.70	537.45	2168.58	1247.46	5194.39
1995-2000 Average	241.61	707.04	493.65	1995.75	1152.54	4800.65
Average Annual Net Cash Income (\$1000)						
1992	52.23	105.34	21.58	126.37	4.68	211.68
1993	55.79	106.54	17.11	71.81	-4.67	147.48
1994	63.36	133.70	42.10	197.75	44.67	401.11
1995	60.93	117.37	50.89	212.58	60.29	527.58
1996	57.66	113.77	42.75	187.44	36.39	429.74
1997	58.78	122.61	41.97	199.27	32.82	434.25
1998	59.51	127.58	40.71	207.62	34.82	480.14
1999	68.41	140.30	49.69	245.61	47.15	522.57
2000	75.25	158.25	56.30	271.50	51.75	579.75
1995-2000 Average	63.42	129.98	47.05	220.67	43.87	495.67
Average Annual Govt. Payments (\$)						
1992	0.00	0.00	0.00	0.00	0.00	0.00
1993	0.00	0.00	0.00	0.00	0.00	0.00
1994	0.00	0.00	0.00	0.00	0.00	0.00
1995	0.00	0.00	0.00	0.00	0.00	0.00
1996	0.00	0.00	0.00	0.00	0.00	0.00
1997	0.00	0.00	0.00	0.00	0.00	0.00
1998	0.00	0.00	0.00	0.00	0.00	0.00
1999	0.00	0.00	0.00	0.00	0.00	0.00
2000	0.00	0.00	0.00	0.00	0.00	0.00
1995-2000 Average	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Real Net Worth (\$1000)						
1992	298.18	877.97	452.60	1433.22	850.75	3153.30
1993	301.18	882.51	432.45	1451.40	793.06	3164.09
1994	302.87	894.03	411.05	1435.42	755.31	3220.82
1995	305.79	895.28	392.28	1460.67	731.90	3352.94
1996	300.72	888.43	374.47	1460.24	686.55	3346.45
1997	298.43	883.59	355.47	1455.53	641.42	3376.86
1998	292.27	888.82	336.87	1477.66	617.44	3522.96
1999	295.05	901.55	333.51	1545.80	621.37	3679.83
2000	302.57	925.17	335.68	1614.91	629.93	3924.22
1995-2000 Average	299.14	897.14	354.71	1502.47	654.77	3533.88
Net Income Adjustment for 1995-2000 in Dollars (\$1000)	-4.19	-29.56	40.00	-75.67	87.38	-162.47
Net Income Adjustment for 1995-2000 as % Receipts (%)	-1.78	-4.30	8.40	-3.92	7.82	-3.48

Change in Real Net Worth - Percentage change in real net worth over the simulation period, 1992-2000.

Average Annual Ratio of Expenses/Receipts - Ratio of all cash expenses to all farm receipts including government payments.

Government Payments/Receipts - Total government payments from all eligible programs divided by total cash receipts including government payments.

Cash Receipts - Total cash receipts from crops, dairy, livestock, government payments, and other farm related activities.

1995-2000 Average - Is an average calculated over the 1995-2000 period.

Net Cash Income - Total cash receipts minus total cash expenses; excludes family living expenses principal, payments, and costs to replace capital assets.

Government Payments - Total deficiency, diversion, and other program payments.

Real Net Worth - Total assets minus total liabilities, including accrued income taxes and discounted by the CPI.

Net Income Adjustment in Dollars - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth.

Net Income Adjustment % Receipts - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth expressed as a percent of cash receipts.

Table 12. Implications of the 1990 Farm Bill and the January 1994 FAPRI Baseline on the Economic Viability of Representative Farms that Primarily Produce Milk w/o BST.

	WAD175	WAD850	CAD2150	NMD2000	TXCD300	TXCD720	TXED200	TXED812
Average Change in Real Net Worth (%)	12.92	-15.34	103.99	50.39	-100.00	81.08	-100.00	5.03
Average Annual Ratio Expenses/Receipts (%)	83.77	95.28	75.12	85.67	106.64	81.02	114.70	91.88
Average Government Payments/Receipts (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Cash Receipts (\$1000)								
1992	535.94	2641.53	6044.54	5425.00	699.64	2044.53	488.33	2092.54
1993	531.09	2610.10	6005.55	5389.94	698.32	2038.31	488.55	2084.40
1994	546.72	2679.81	6133.02	5519.53	716.20	2085.25	499.77	2137.16
1995	527.30	2578.52	5902.77	5331.58	698.38	2032.90	486.57	2079.75
1996	529.98	2584.65	5938.51	5375.53	706.53	2055.98	491.24	2103.49
1997	539.78	2634.64	6058.52	5494.71	723.05	2103.07	501.45	2153.51
1998	556.01	2717.70	6265.30	5682.89	748.31	2176.33	518.52	2229.69
1999	577.48	2824.67	6545.85	5930.79	781.04	2271.86	541.30	2339.08
2000	595.81	2933.04	6839.17	6186.55	815.19	2372.04	565.48	2431.01
1995-2000 Average	554.39	2712.20	6258.35	5667.01	745.42	2168.70	517.43	2222.75
Average Annual Net Cash Income (\$1000)								
1992	83.88	170.40	1428.60	724.87	-0.43	337.21	-34.40	229.55
1993	81.05	121.63	1415.58	676.95	-14.04	324.36	-46.40	153.91
1994	94.50	160.44	1502.39	749.60	-16.31	354.13	-58.43	190.89
1995	85.25	103.56	1357.57	688.45	-39.41	340.97	-87.84	133.29
1996	77.98	79.06	1376.91	641.14	-54.02	350.60	-105.28	107.79
1997	78.77	67.67	1444.99	695.64	-68.20	389.25	-116.09	127.00
1998	86.72	90.45	1556.83	831.74	-78.46	454.48	-98.63	160.17
1999	100.43	142.87	1762.97	1015.11	-81.32	511.93	-74.53	215.19
2000	113.27	205.72	2018.56	1190.47	-85.21	577.09	-51.75	277.71
1995-2000 Average	90.40	114.89	1586.31	843.76	-67.77	437.39	-89.02	170.19
Average Annual Govt. Payments (\$)								
1992	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1995	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1997	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1999	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1995-2000 Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Real Net Worth (\$1000)								
1992	566.61	2291.15	4995.57	4594.97	741.44	1777.07	563.42	2216.89
1993	590.40	2291.10	5667.41	4936.22	682.43	1968.92	518.17	2297.14
1994	591.83	2204.95	6000.65	5025.85	591.11	2048.59	443.79	2270.11
1995	590.41	2115.72	6317.86	5128.03	489.01	2121.99	351.84	2221.95
1996	583.78	2011.88	6619.43	5204.46	376.94	2157.40	254.27	2106.90
1997	577.78	1894.89	6898.03	5239.43	262.78	2243.73	0.00	2057.01
1998	579.68	1845.29	7332.44	5430.53	165.91	2399.43	0.00	2064.84
1999	585.68	1846.06	7910.20	5776.18	79.91	2599.76	0.00	2100.77
2000	601.02	1873.78	8614.70	6233.61	0.00	2835.84	0.00	2191.19
1995-2000 Average	586.39	1931.27	7282.11	5502.04	202.57	2393.02	0.00	2123.77
Net Income Adjustment for 1995-2000 in Dollars (\$1000)	-25.20	89.34	-1407.22	-567.88	170.66	-311.56	134.34	-27.62
Net Income Adjustment for 1995-2000 as % Receipts (%)	-4.59	3.32	-22.72	-10.15	23.32	-14.62	26.39	-1.26

Change in Real Net Worth - Percentage change in real net worth over the simulation period, 1992-2000.

Average Annual Ratio of Expenses/Receipts - Ratio of all cash expenses to all farm receipts including government payments.

Government Payments/Receipts - Total government payments from all eligible programs divided by total cash receipts including government payments.

Cash Receipts - Total cash receipts from crops, dairy, livestock, government payments, and other farm

Government Payments - Total deficiency, diversion, and other program payments.

Real Net Worth - Total assets minus total liabilities, including accrued income taxes and discounted by the CPI.

Net Income Adjustment in Dollars - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth.

Net Income Adjustment % Receipts - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth expressed as a percent of cash receipts.

**Table 13. Implications of the 1990 Farm Bill and the January 1994 FAPRI Baseline
on the Economic Viability of Representative Farms that Primarily Produce Milk w/o BST.**

	WID55	WID190	NYWD600	NYWD1000	NYCD110	NYCD225	VTD70	VTD186
Average Change in Real Net Worth (%)	-0.20	26.13	48.66	114.50	-87.75	-1.63	-25.75	-50.33
Average Annual Ratio Expenses/Receipts (%)	69.02	78.80	82.36	70.73	101.29	88.44	84.66	97.90
Average Government Payments/Receipts (%)	1.52	0.66	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Cash Receipts (\$1000)								
1992	167.06	581.45	1749.86	2826.99	293.86	629.59	213.53	514.48
1993	166.28	581.94	1763.17	2930.24	300.37	626.51	214.49	521.54
1994	170.75	591.16	1780.41	2930.79	301.57	640.56	225.84	529.91
1995	161.72	561.41	1723.60	2839.21	288.81	619.83	219.00	511.35
1996	162.21	562.09	1736.75	2863.40	290.26	624.26	218.68	512.93
1997	164.54	569.32	1769.15	2914.38	295.70	636.66	221.69	521.65
1998	167.70	582.14	1824.54	3006.24	305.94	657.09	229.34	536.45
1999	173.13	601.47	1898.07	3127.55	319.51	684.35	237.71	556.45
2000	179.05	623.06	1974.52	3253.29	333.70	712.70	247.04	577.06
1995-2000 Average	168.06	583.25	1821.11	3000.68	305.65	655.81	228.91	535.98
Average Annual Net Cash Income (\$1000)								
1992	55.87	138.95	329.52	764.26	18.27	97.10	36.87	41.11
1993	56.55	143.58	348.47	881.30	19.33	107.60	38.39	40.59
1994	60.32	148.23	330.73	877.49	17.44	95.83	43.84	39.66
1995	49.43	112.30	285.00	824.71	-1.48	64.77	35.95	14.49
1996	46.63	105.05	261.23	805.98	-9.41	55.14	27.02	0.73
1997	47.17	106.97	277.06	835.07	-14.71	50.62	26.85	-7.99
1998	48.11	110.26	301.50	876.77	-16.48	53.81	30.79	-11.49
1999	51.86	118.34	340.19	939.41	-22.31	68.59	34.35	-8.71
2000	52.58	130.25	387.92	1008.29	-25.95	80.41	36.89	-7.77
1995-2000 Average	49.30	113.86	308.82	881.71	-15.06	62.22	31.97	-3.45
Average Annual Govt. Payments (\$)								
1992	3.50	5.26	0.00	0.00	0.00	0.00	0.00	0.00
1993	1.26	1.89	0.00	0.00	0.00	0.00	0.00	0.00
1994	3.06	4.59	0.00	0.00	0.00	0.00	0.00	0.00
1995	2.05	3.07	0.00	0.00	0.00	0.00	0.00	0.00
1996	2.45	3.67	0.00	0.00	0.00	0.00	0.00	0.00
1997	3.07	4.61	0.00	0.00	0.00	0.00	0.00	0.00
1998	2.59	3.89	0.00	0.00	0.00	0.00	0.00	0.00
1999	2.54	3.82	0.00	0.00	0.00	0.00	0.00	0.00
2000	2.48	3.72	0.00	0.00	0.00	0.00	0.00	0.00
1995-2000 Average	2.53	3.80	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Real Net Worth (\$1000)								
1992	336.43	785.34	1468.07	2795.67	425.78	648.17	427.24	764.49
1993	340.68	831.41	1602.96	3184.50	405.03	672.86	428.79	739.55
1994	348.54	856.83	1662.59	3468.82	372.37	674.30	422.53	714.73
1995	347.78	867.42	1700.24	3713.91	322.88	655.24	406.59	663.84
1996	339.40	869.27	1712.05	3912.18	266.71	636.53	374.67	599.87
1997	332.18	868.17	1727.30	4110.74	209.39	602.90	351.62	524.79
1998	324.53	876.34	1774.67	4326.46	160.25	586.36	332.35	463.45
1999	326.51	892.62	1850.85	4633.79	104.16	596.41	320.26	417.47
2000	322.33	916.69	1956.25	4952.55	53.96	606.29	310.92	372.74
1995-2000 Average	332.12	881.75	1786.89	4274.94	186.22	613.96	349.40	507.03
Net Income Adjustment for 1995-2000 in Dollars (\$1000)	4.32	-54.44	-222.57	-806.35	102.37	3.16	35.31	82.23
Net Income Adjustment for 1995-2000 as % Receipts (%)	2.57	-9.32	-12.35	-27.19	33.75	0.49	15.67	15.48

Change in Real Net Worth - Percentage change in real net worth over the simulation period, 1992-2000.

Average Annual Ratio of Expenses/Receipts - Ratio of all cash expenses to all farm receipts including government payments.

Government Payments/Receipts - Total government payments from all eligible programs divided by total cash receipts including government payments.

Cash Receipts - Total cash receipts from crops, dairy, livestock, government payments, and other farm related activities.

1995-2000 Average - Is an average calculated over the 1995-2000 period.

Net Cash Income - Total cash receipts minus total cash expenses; excludes family living expenses principal, payments, and costs to replace capital assets.

Government Payments - Total deficiency, diversion, and other program payments.

Real Net Worth - Total assets minus total liabilities, including accrued income taxes and discounted by the CPI.

Net Income Adjustment in Dollars - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth.

Net Income Adjustment % Receipts - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth expressed as a percent of cash receipts.

Table 14. Implications of the 1990 Farm Bill and the January 1994 FAPRI Baseline on the Economic Viability of Representative Farms that Primarily Produce Milk w/o BST.

	MOD77	MOD220	GAD160	GAD600	FLD375	FLD1500
Average Change in Real Net Worth (%)	0.39	4.90	-34.51	10.33	-50.83	-2.94
Average Annual Ratio Expenses/Receipts (%)	74.60	83.04	92.93	91.23	99.50	93.36
Average Government Payments/Receipts (%)	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Cash Receipts (\$1000)						
1992	216.36	633.15	429.44	1759.58	1020.28	4276.34
1993	216.70	629.82	429.13	1726.86	1018.60	4285.85
1994	222.87	649.44	444.01	1810.22	1044.03	4376.36
1995	217.38	634.36	436.63	1779.19	1024.60	4286.86
1996	220.16	645.43	445.43	1813.37	1039.20	4344.26
1997	225.56	662.76	459.68	1870.78	1064.83	4446.46
1998	234.17	687.05	479.72	1950.56	1102.23	4601.60
1999	245.51	719.19	504.84	2051.00	1149.65	4799.10
2000	257.54	752.66	531.19	2155.80	1203.09	5004.35
1995-2000 Average	233.39	683.57	476.25	1936.78	1097.27	4580.44
Average Annual Net Cash Income (\$1000)						
1992	52.23	105.34	21.58	126.37	4.68	211.68
1993	55.79	106.54	17.11	71.81	-4.67	147.48
1994	58.44	115.50	28.51	148.92	11.90	270.57
1995	56.18	100.40	35.35	156.94	20.10	360.59
1996	52.23	93.28	27.25	132.68	-5.23	265.84
1997	53.02	100.16	25.81	140.87	-11.71	249.37
1998	55.90	113.71	32.65	178.02	-3.09	329.62
1999	64.81	131.56	46.27	238.04	12.27	385.43
2000	73.74	153.52	59.68	290.46	24.37	462.80
1995-2000 Average	59.31	115.44	37.83	189.50	6.12	342.27
Average Annual Govt. Payments (\$)						
1992	0.00	0.00	0.00	0.00	0.00	0.00
1993	0.00	0.00	0.00	0.00	0.00	0.00
1994	0.00	0.00	0.00	0.00	0.00	0.00
1995	0.00	0.00	0.00	0.00	0.00	0.00
1996	0.00	0.00	0.00	0.00	0.00	0.00
1997	0.00	0.00	0.00	0.00	0.00	0.00
1998	0.00	0.00	0.00	0.00	0.00	0.00
1999	0.00	0.00	0.00	0.00	0.00	0.00
2000	0.00	0.00	0.00	0.00	0.00	0.00
1995-2000 Average	0.00	0.00	0.00	0.00	0.00	0.00
Average Annual Real Net Worth (\$1000)						
1992	298.18	877.97	452.60	1433.22	850.75	3153.30
1993	301.18	882.51	432.45	1451.40	793.06	3164.09
1994	300.76	886.68	403.12	1410.96	725.67	3142.82
1995	301.22	880.49	375.88	1418.23	670.68	3185.60
1996	293.80	866.19	350.60	1390.83	591.04	3097.74
1997	288.74	852.79	323.27	1359.55	511.91	3045.14
1998	281.28	852.24	302.50	1369.68	461.63	3117.65
1999	283.23	862.29	298.37	1437.03	441.39	3229.73
2000	290.45	885.12	303.60	1516.38	434.26	3434.45
1995-2000 Average	289.79	866.52	325.70	1415.28	518.48	3185.05
Net Income Adjustment for 1995-2000 in Dollars (\$1000)	-0.35	-15.90	50.39	-43.68	125.66	10.00
Net Income Adjustment for 1995-2000 as % Receipts (%)	-0.15	-2.38	10.90	-2.32	11.70	0.22

Change in Real Net Worth - Percentage change in real net worth over the simulation period, 1992-2000.

Average Annual Ratio of Expenses/Receipts - Ratio of all cash expenses to all farm receipts including government payments.

Government Payments/Receipts - Total government payments from all eligible programs divided by total cash receipts including government payments.

Cash Receipts - Total cash receipts from crops, dairy, livestock, government payments, and other farm related activities.

1995-2000 Average - Is an average calculated over the 1995-2000 period.

Net Cash Income - Total cash receipts minus total cash expenses; excludes family living expenses principal, payments, and costs to replace capital assets.

Government Payments - Total deficiency, diversion, and other program payments.

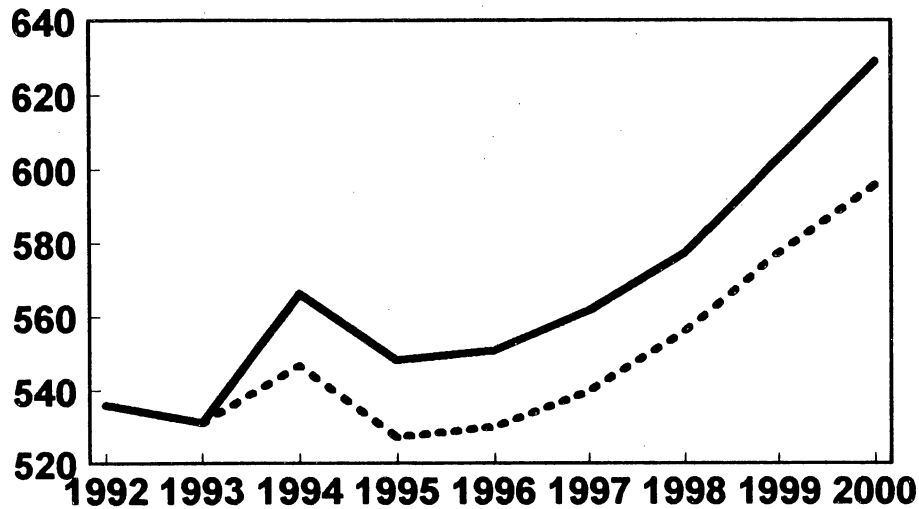
Real Net Worth - Total assets minus total liabilities, including accrued income taxes and discounted by the CPI.

Net Income Adjustment in Dollars - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth.

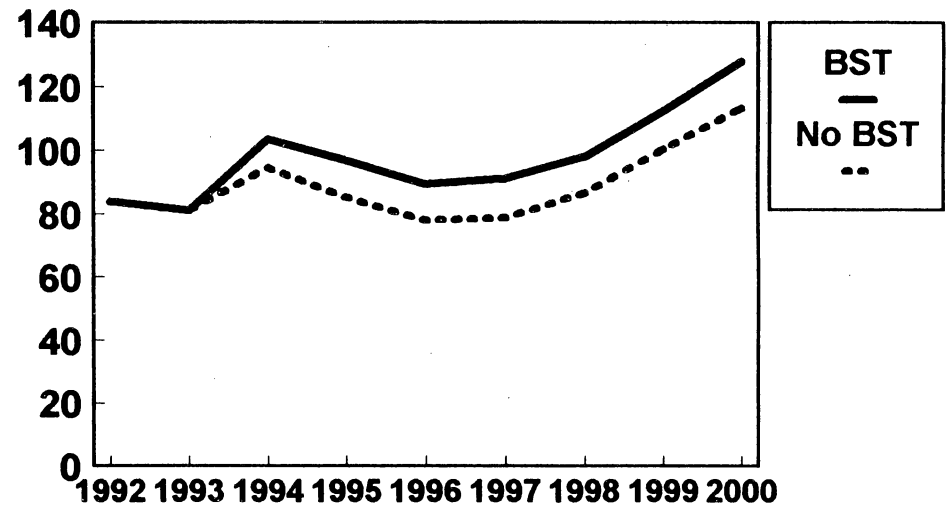
Net Income Adjustment % Receipts - Annual increase in income from 1995-2000 necessary to prevent the loss in real net worth expressed as a percent of cash receipts.

Figure 5. Washington Moderate Dairy Farm (WAD175) Assuming FAPRI Jan. 1995 Baseline

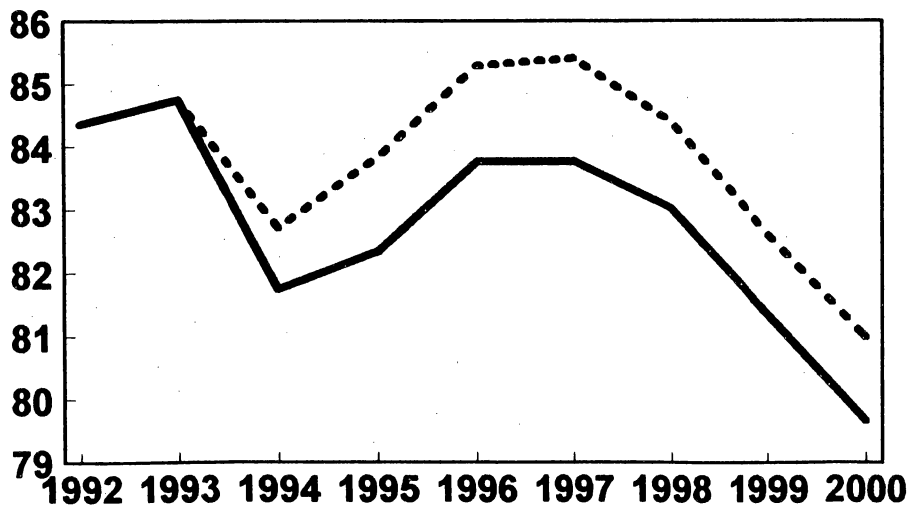
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

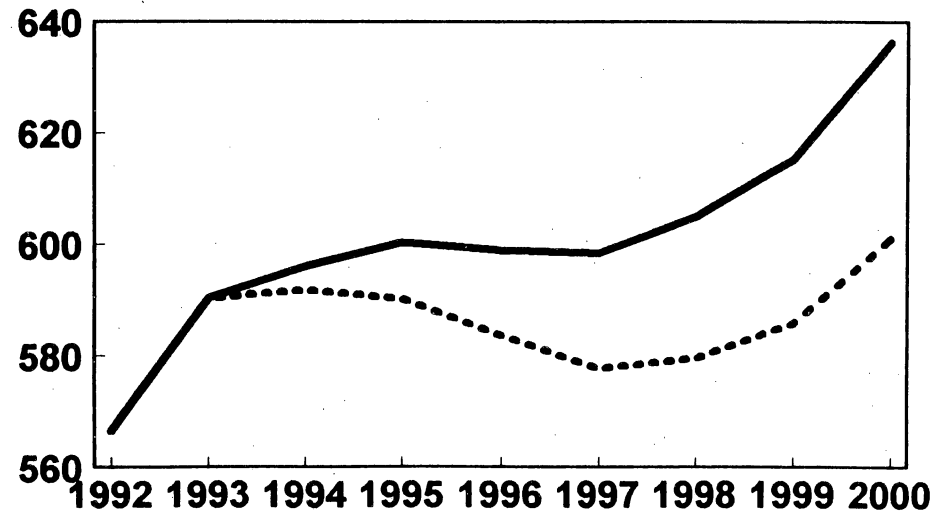
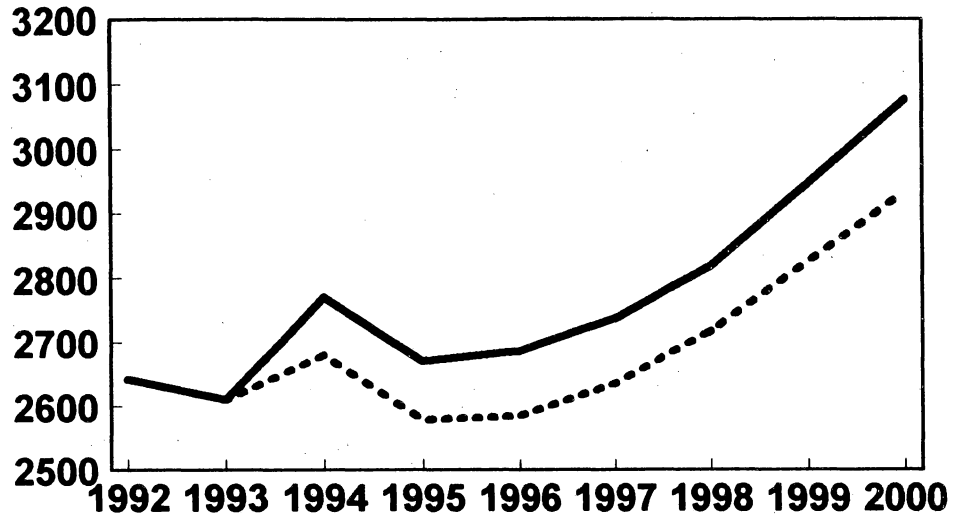
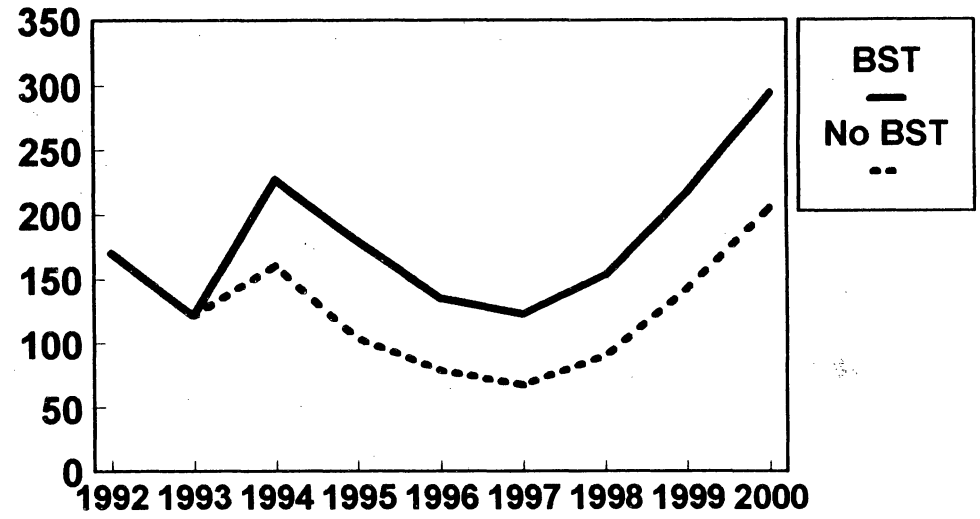


Figure 6. Washington Large Dairy Farm (WAD850) Assuming FAPRI Jan. 1995 Baseline

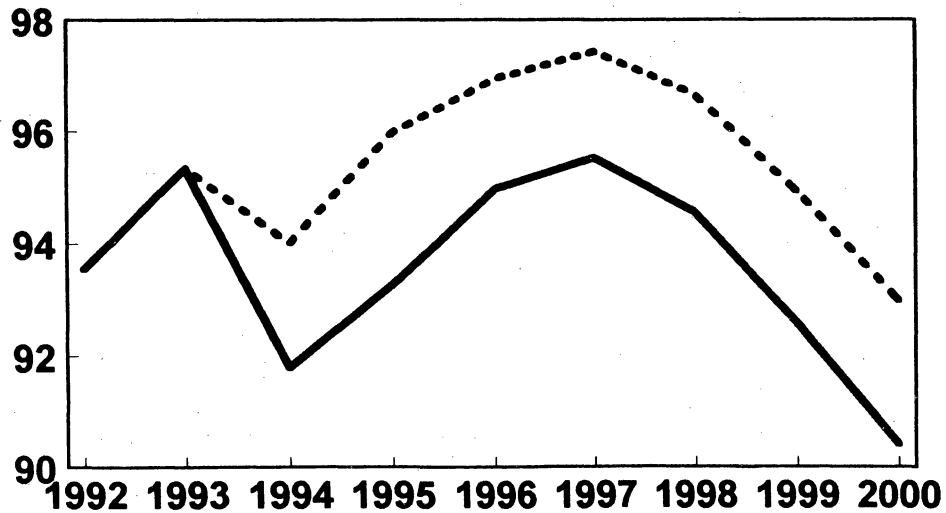
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

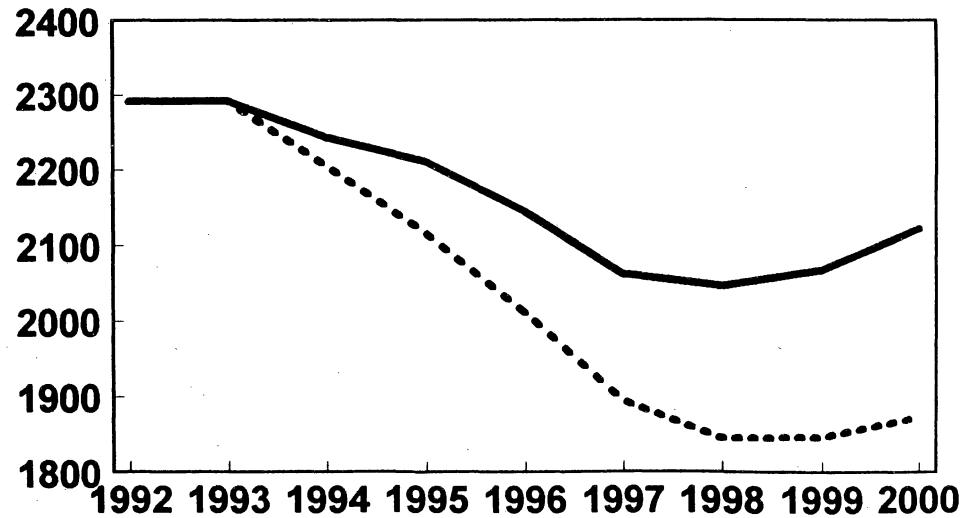
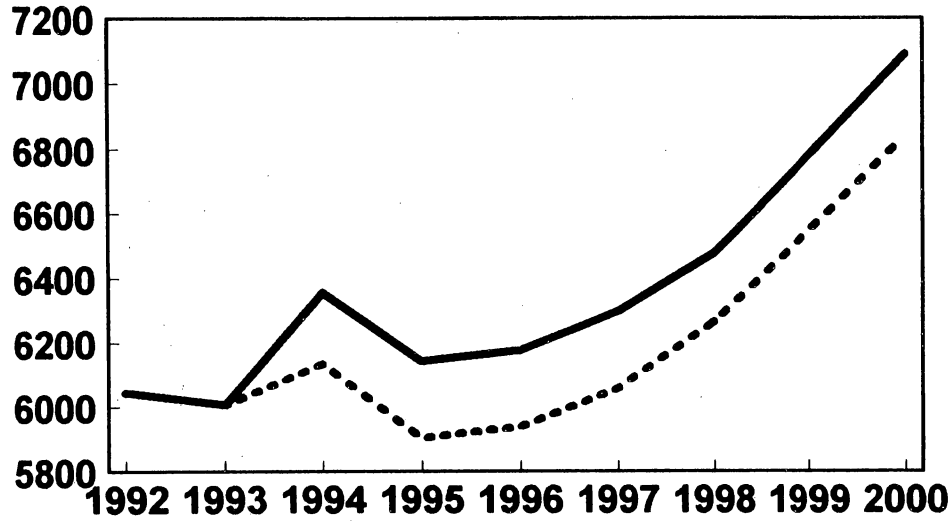
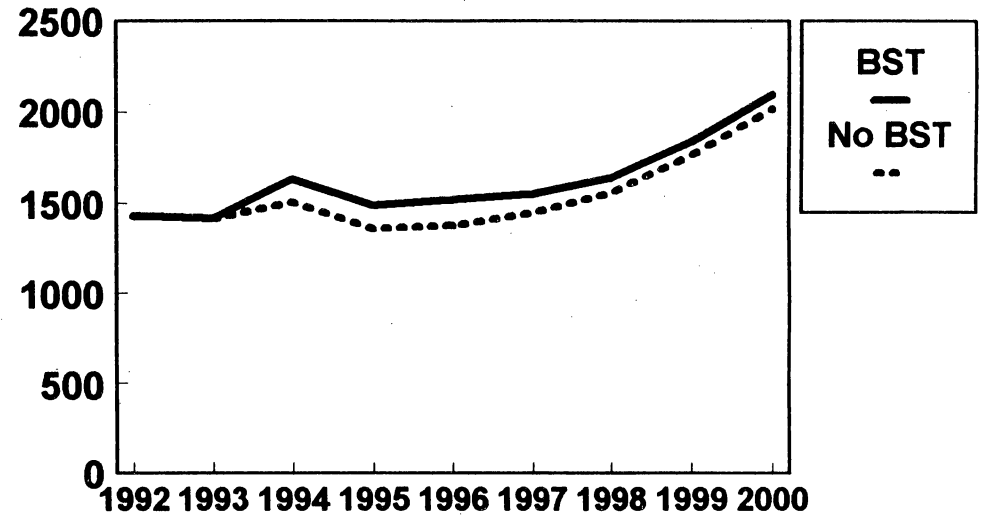


Figure 7. California Large Dairy Farm (CAD2150) Assuming FAPRI Jan. 1995 Baseline

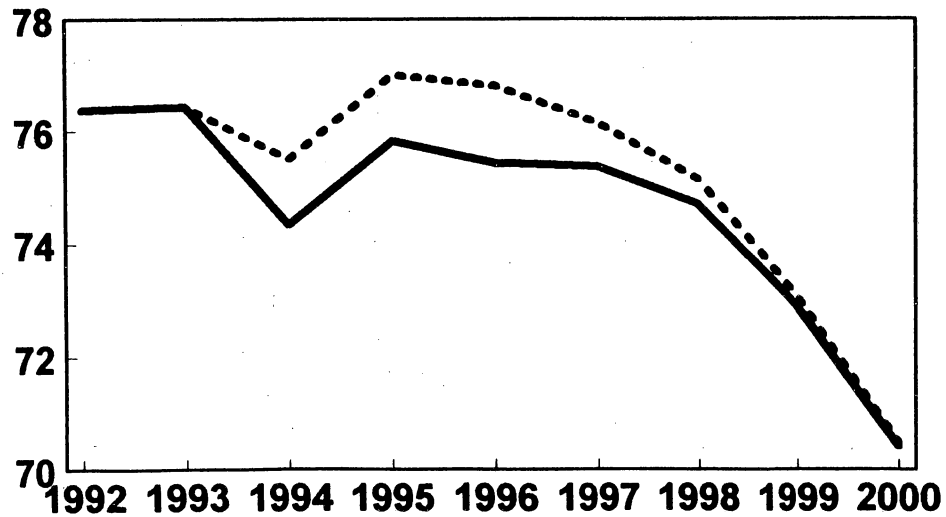
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

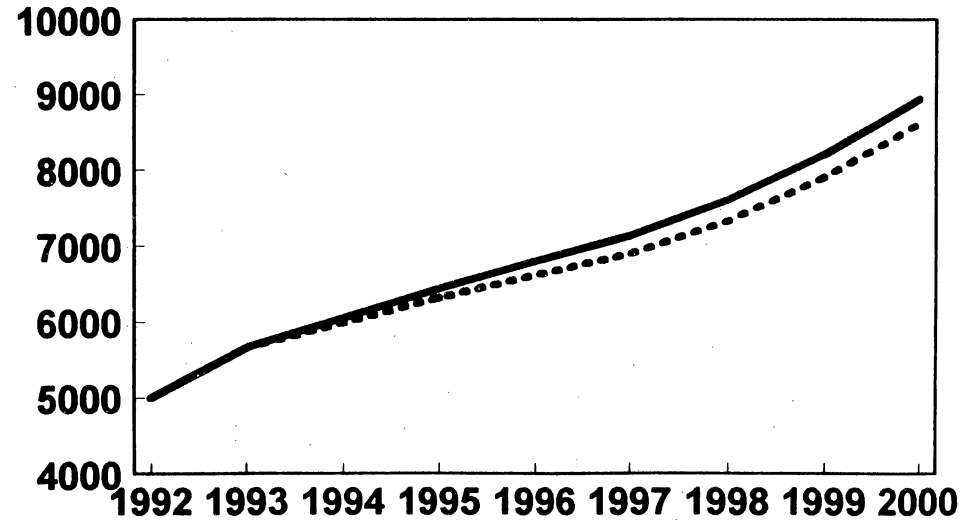
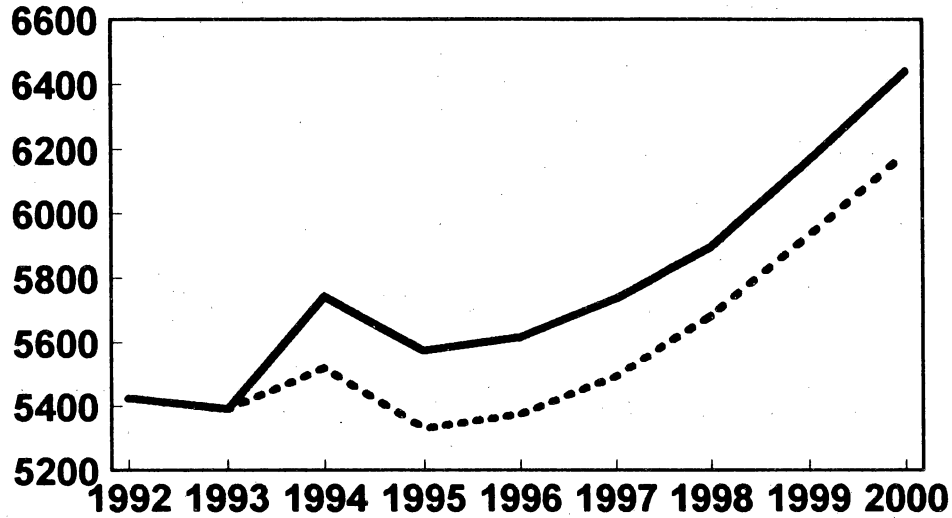
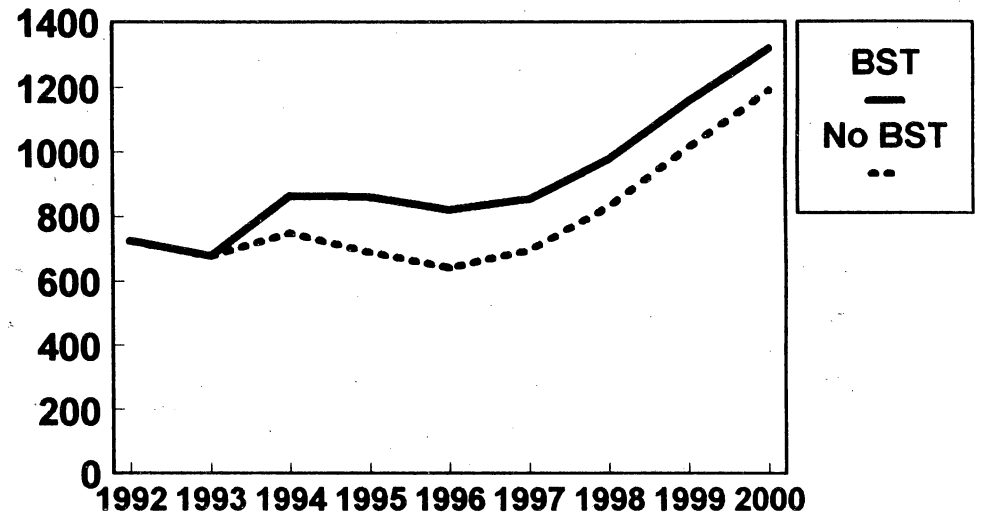


Figure 8. New Mexico Large Dairy Farm (NMD2000) Assuming FAPRI Jan. 1995 Baseline

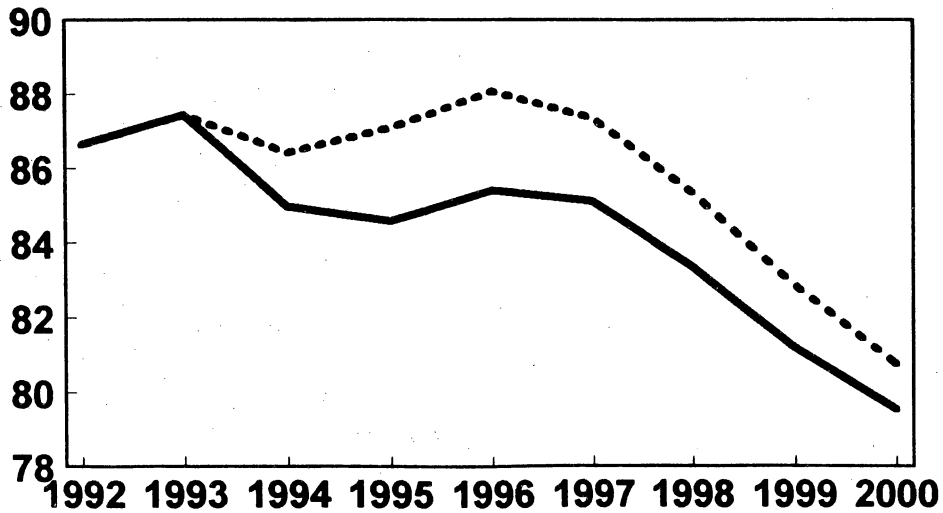
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

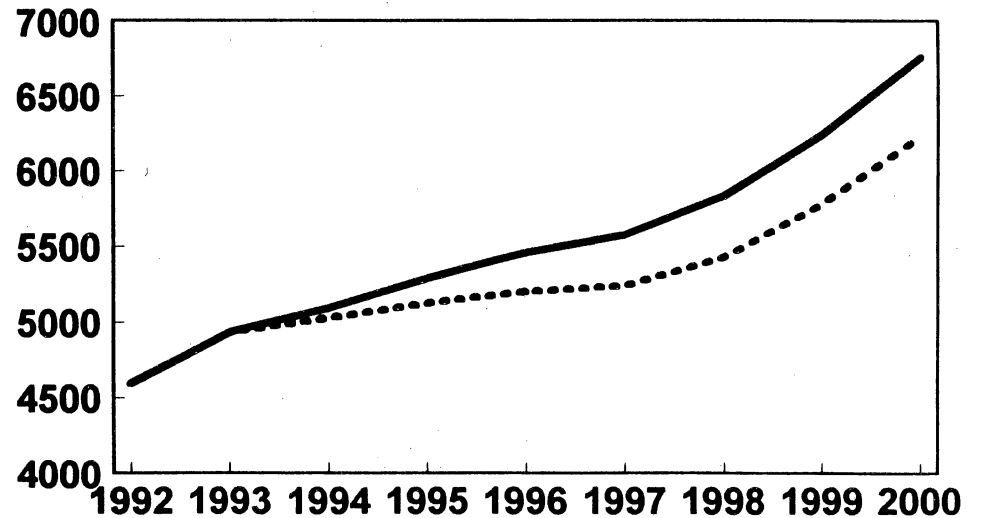
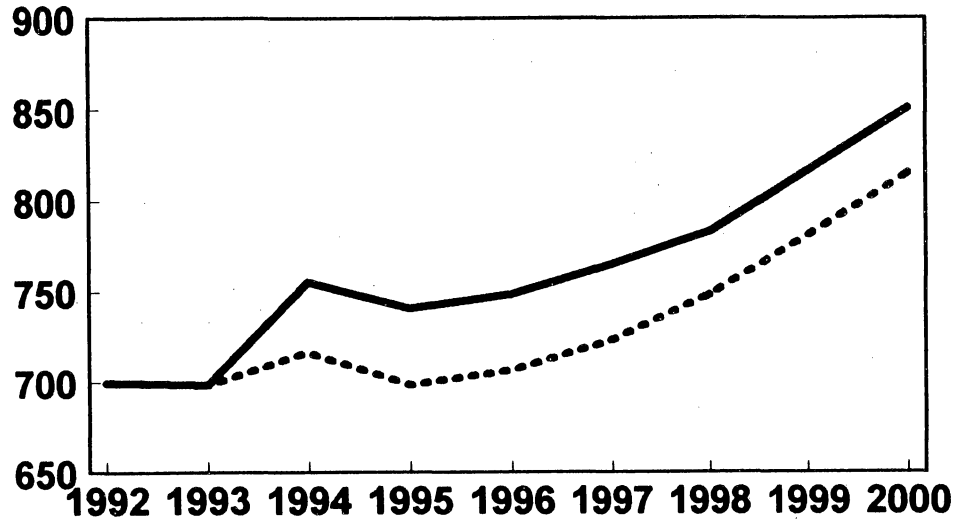
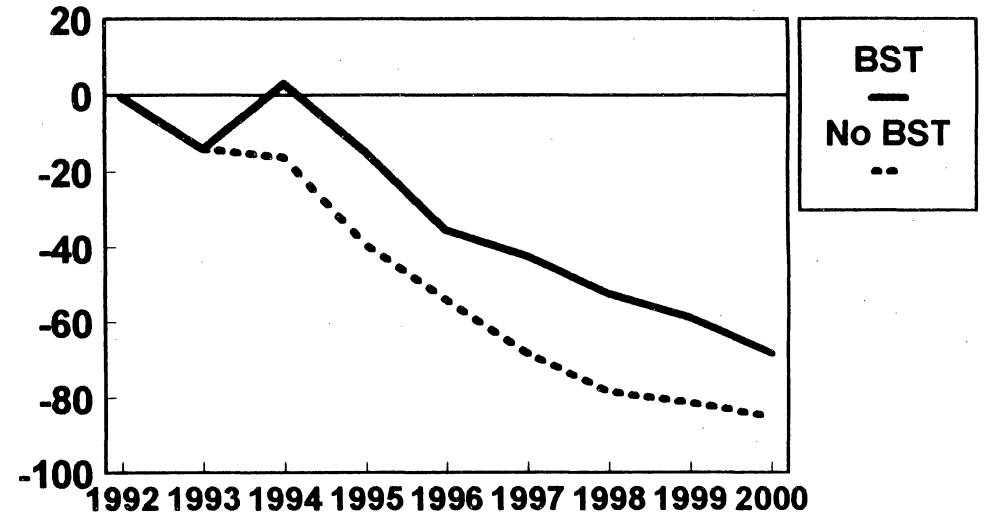


Figure 9. Central Texas Moderate Dairy Farm (TXCD300) Assuming FAPRI Jan. 1995 Baseline

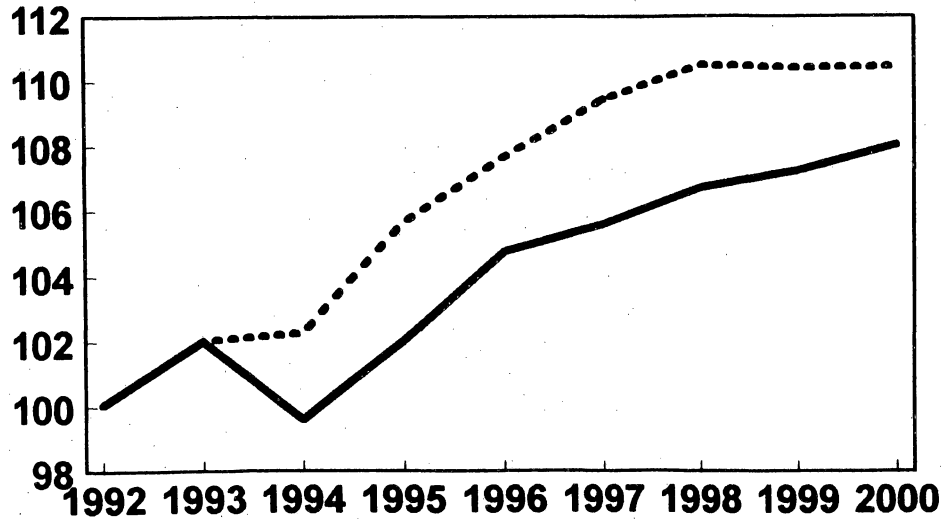
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

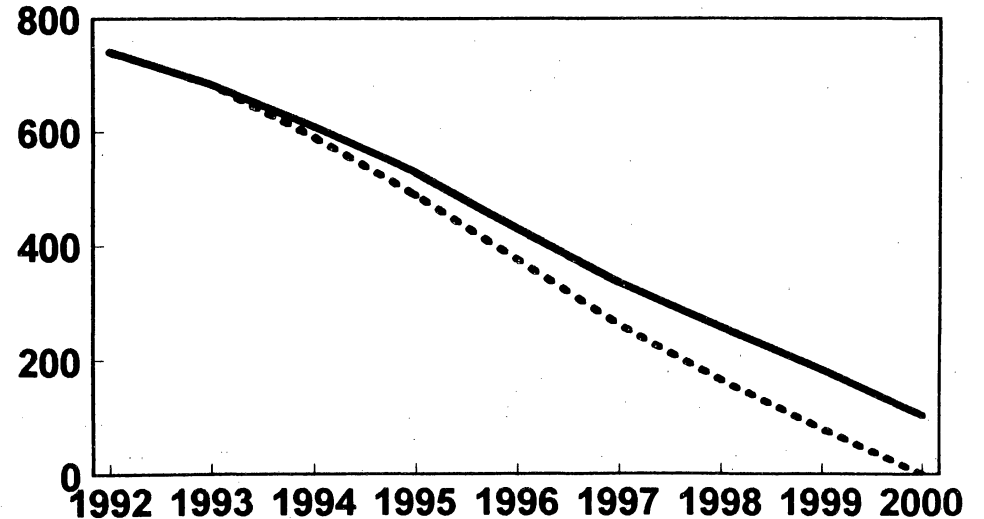
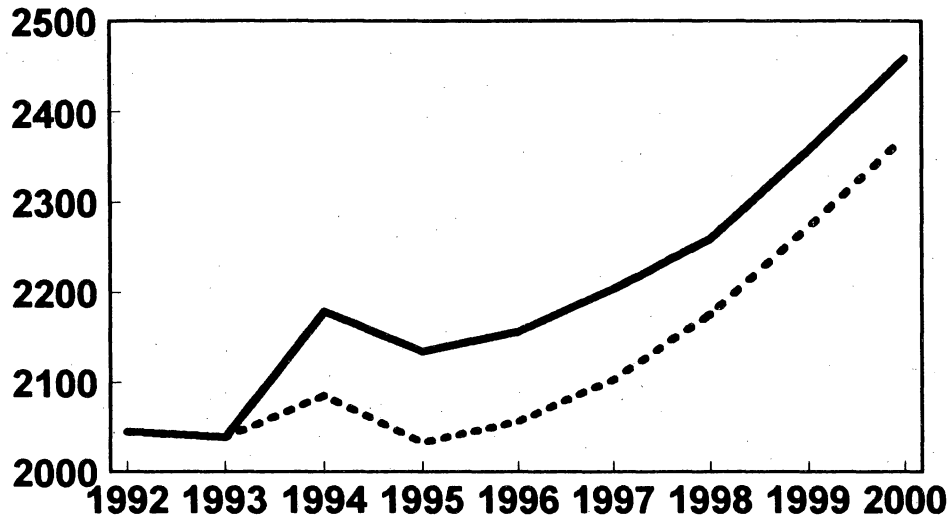
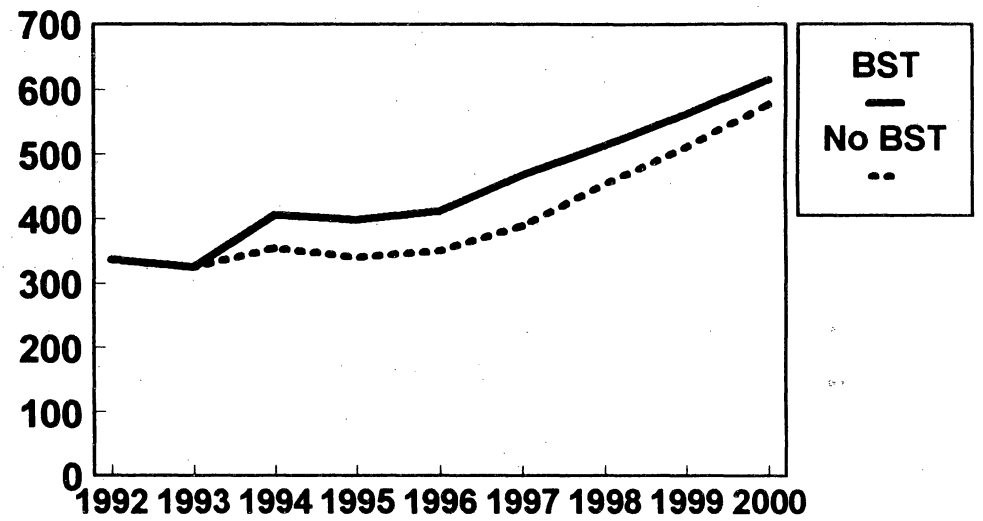


Figure 10. Central Texas Large Dairy Farm (TXCD720) Assuming FAPRI Jan. 1995 Baseline

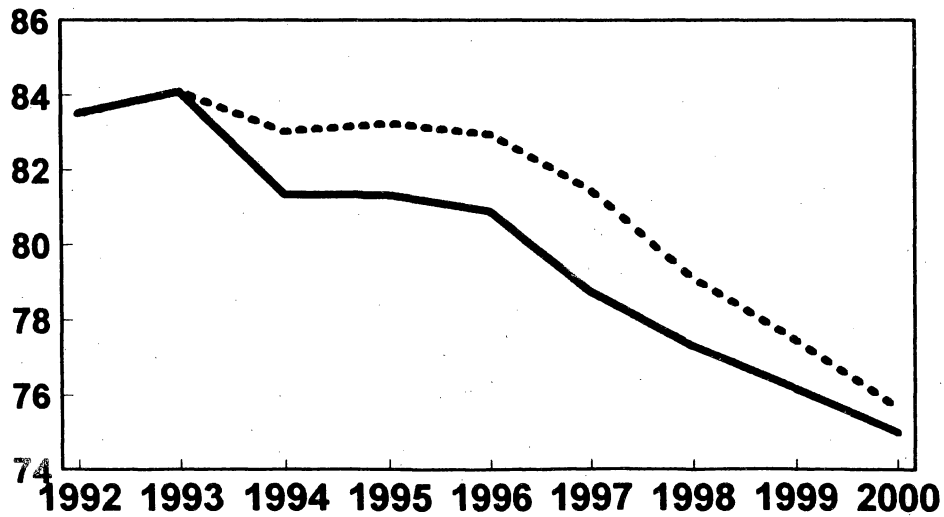
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

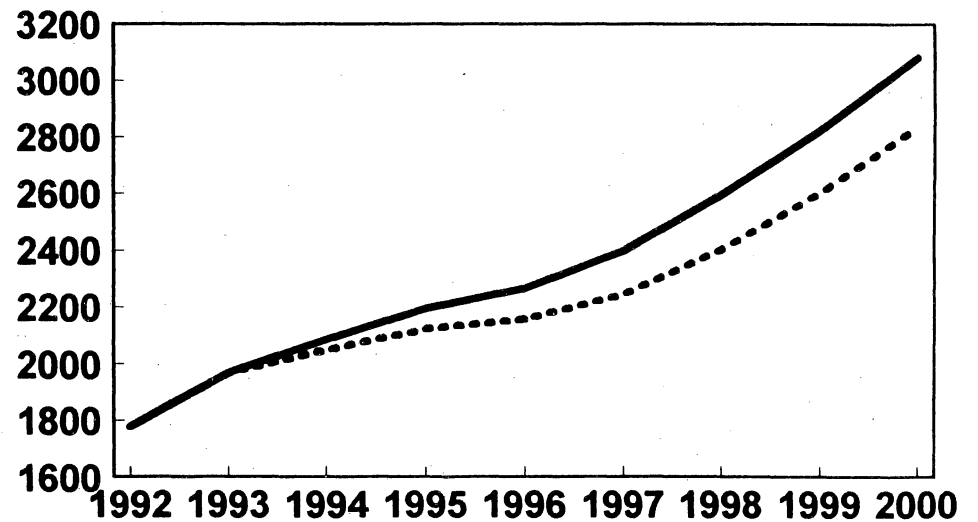
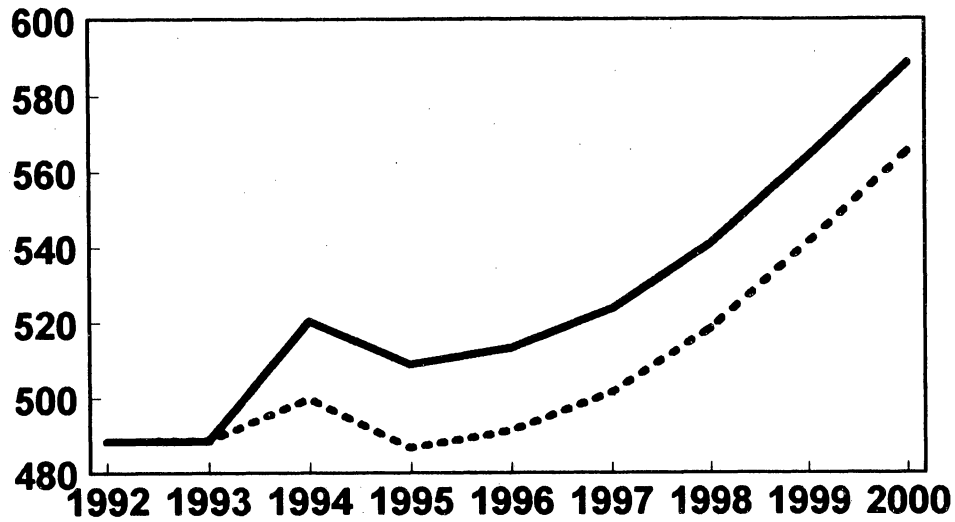
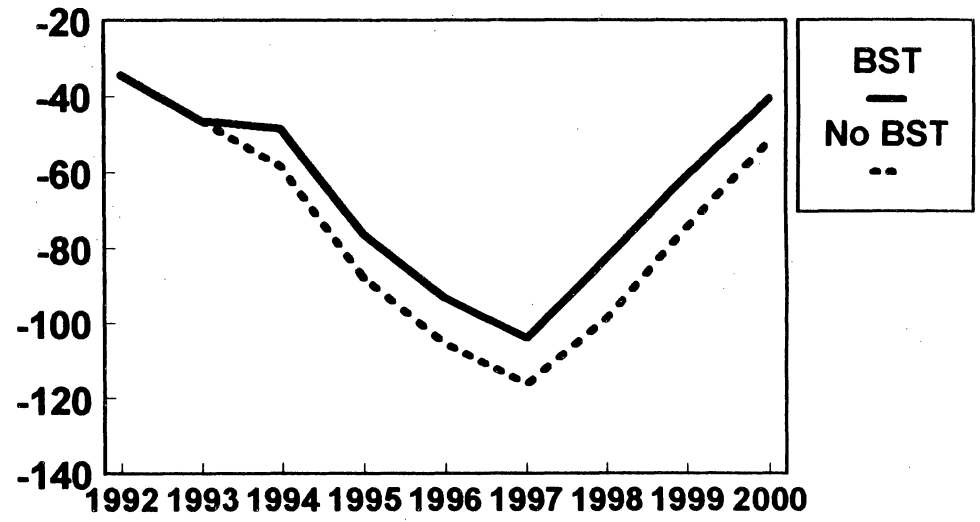


Figure 11. East Texas Moderate Dairy Farm (TXED200) Assuming FAPRI Jan. 1995 Baseline

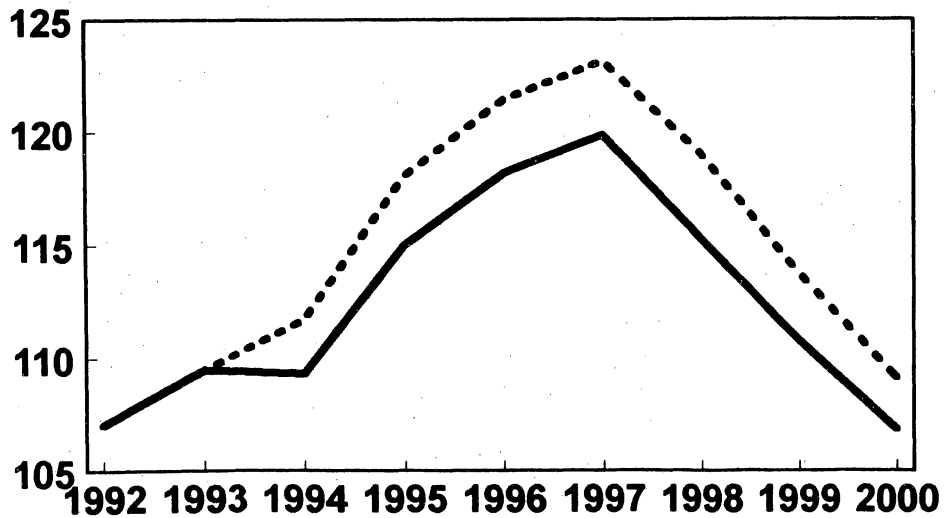
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

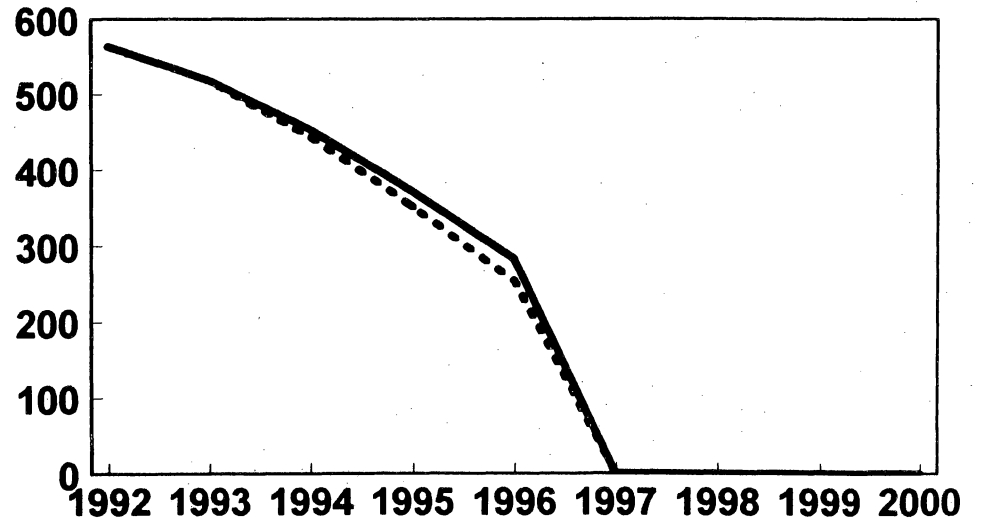
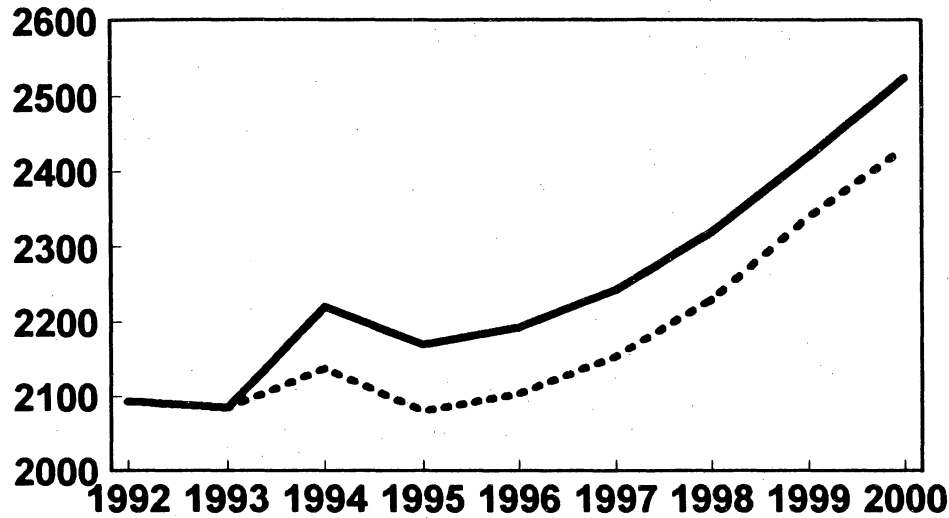
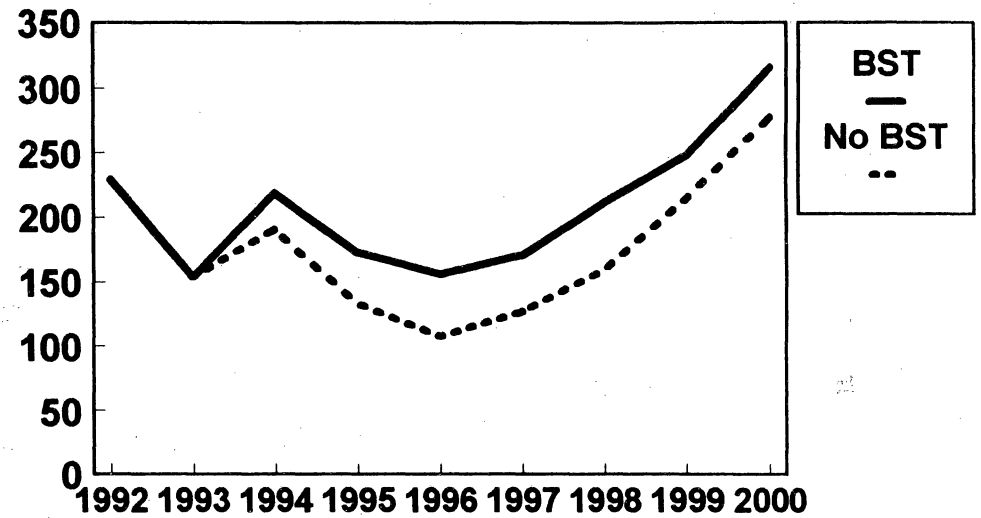


Figure 12. East Texas Large Dairy Farm (TXED812) Assuming FAPRI Jan. 1995 Baseline

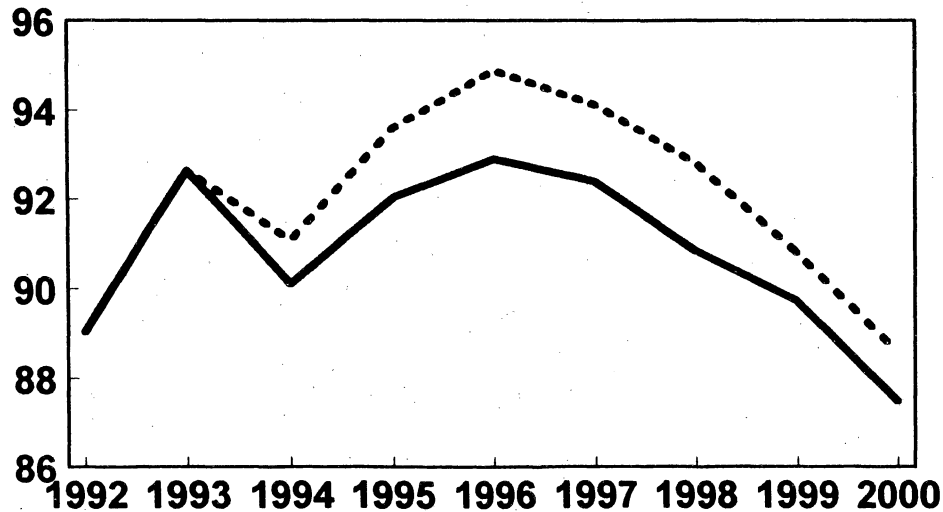
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

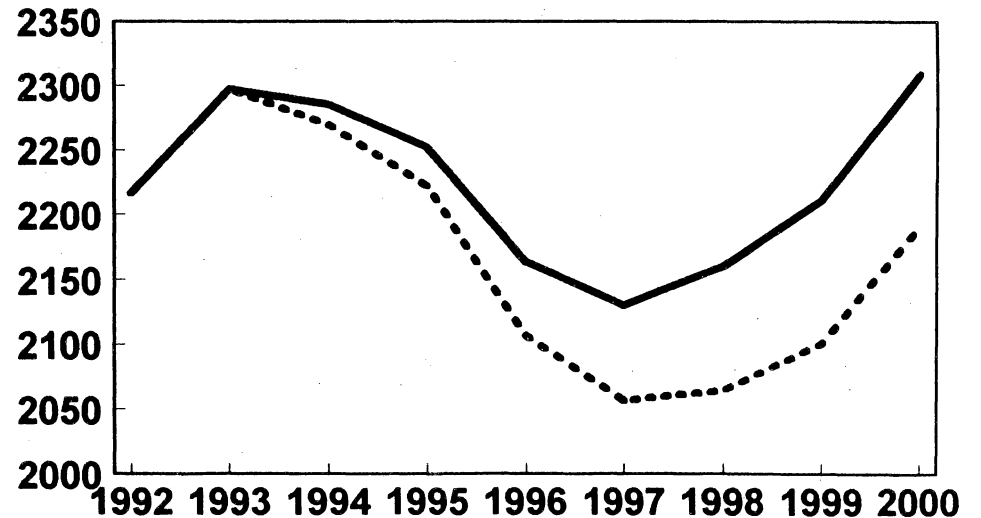
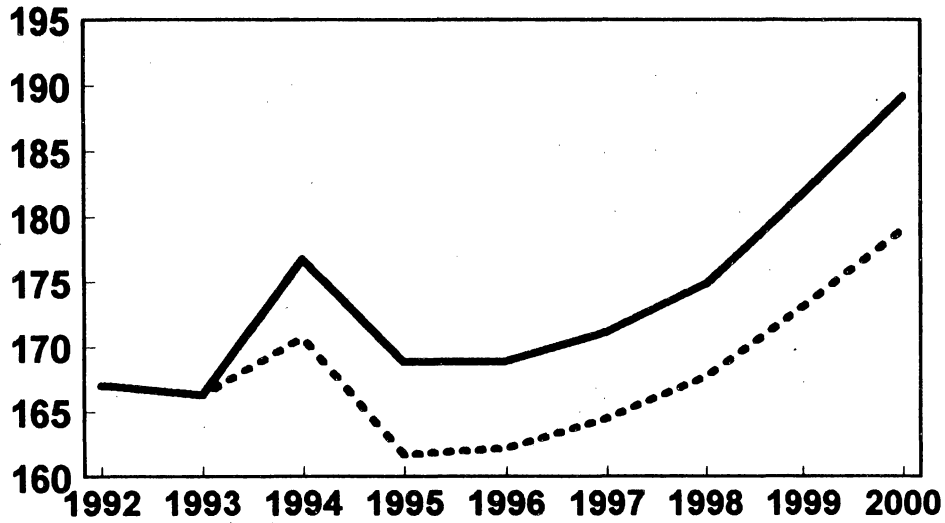
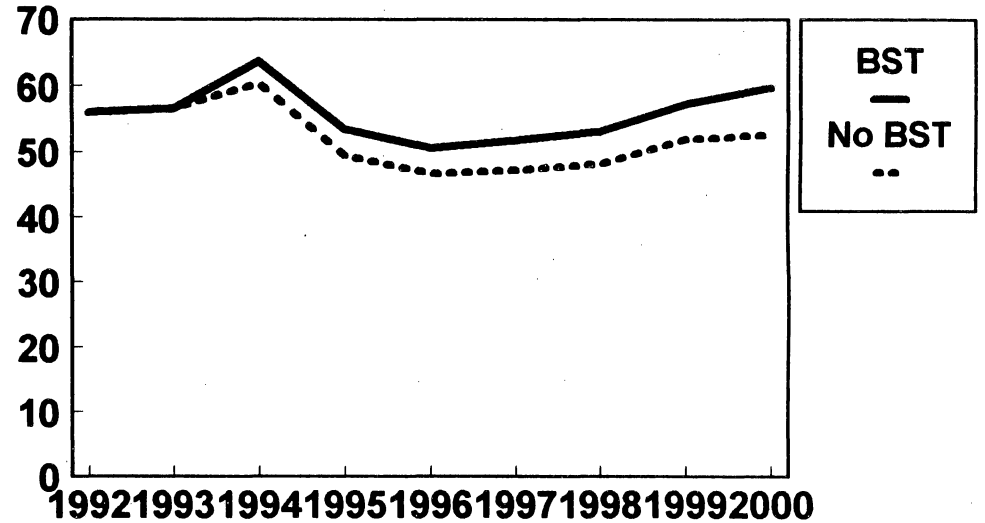


Figure 13. Wisconsin Moderate Dairy Farm (WID55) Assuming FAPRI Jan. 1995 Baseline

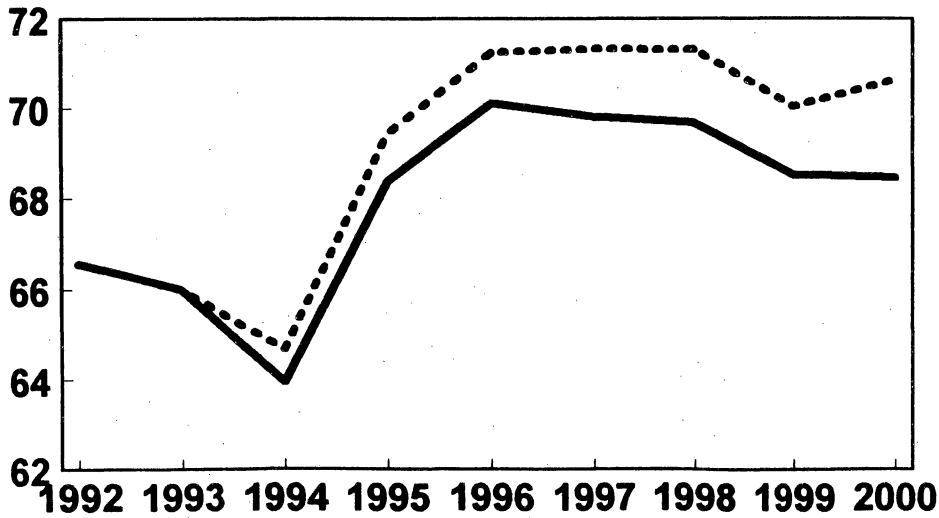
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

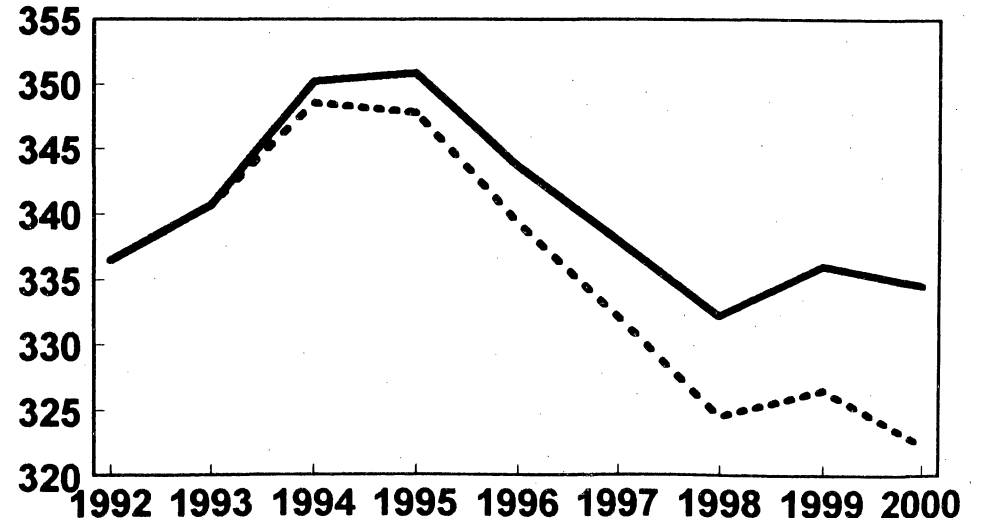
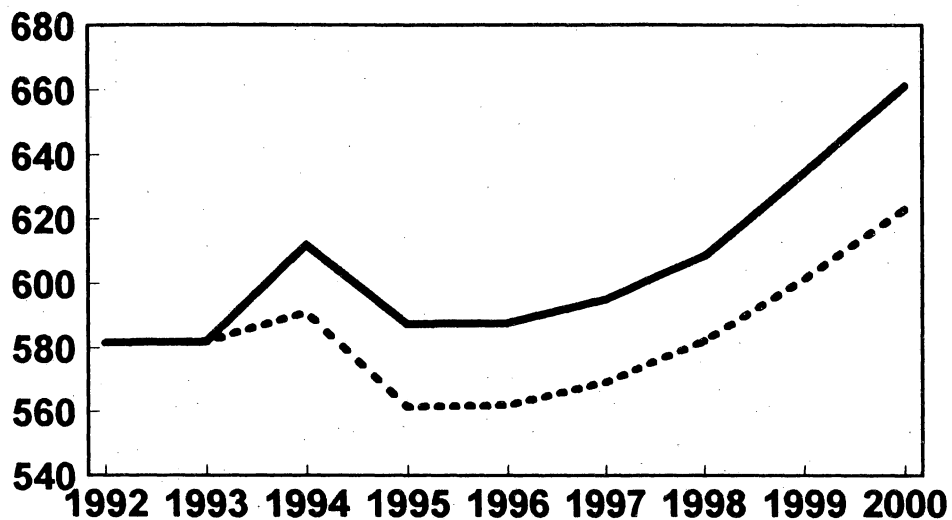
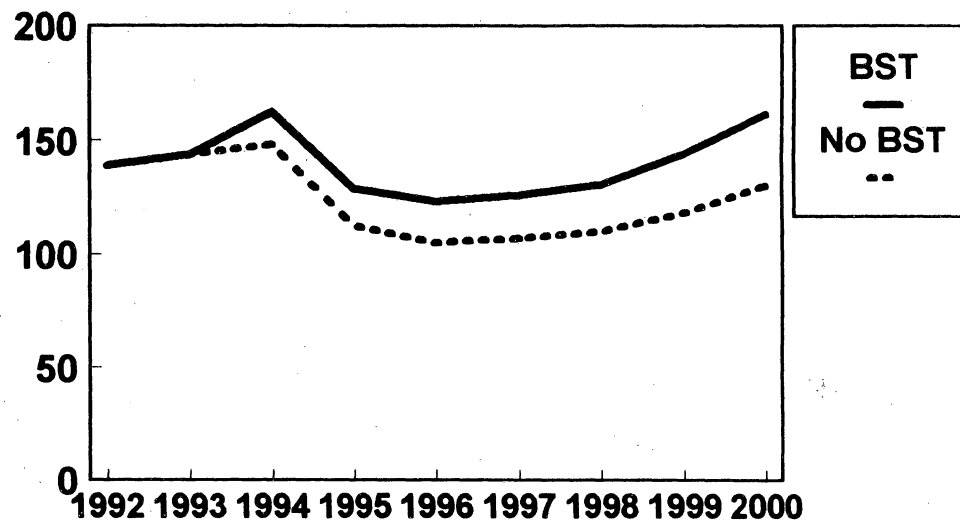


Figure 14. Wisconsin Large Dairy Farm (WID190) Assuming FAPRI Jan. 1995 Baseline

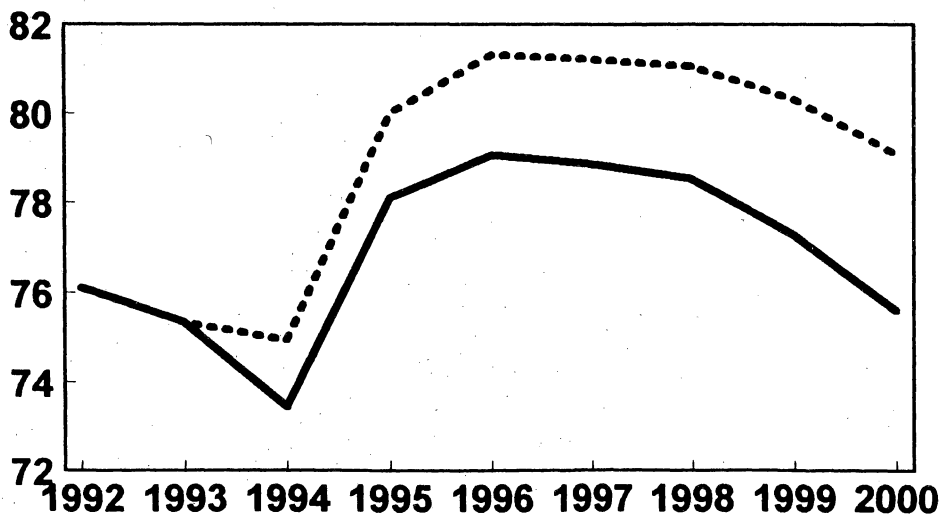
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

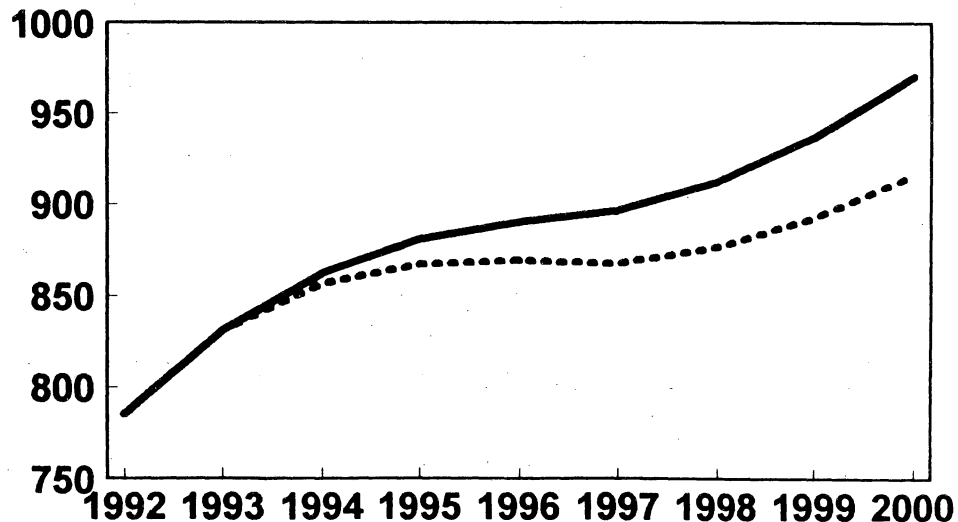
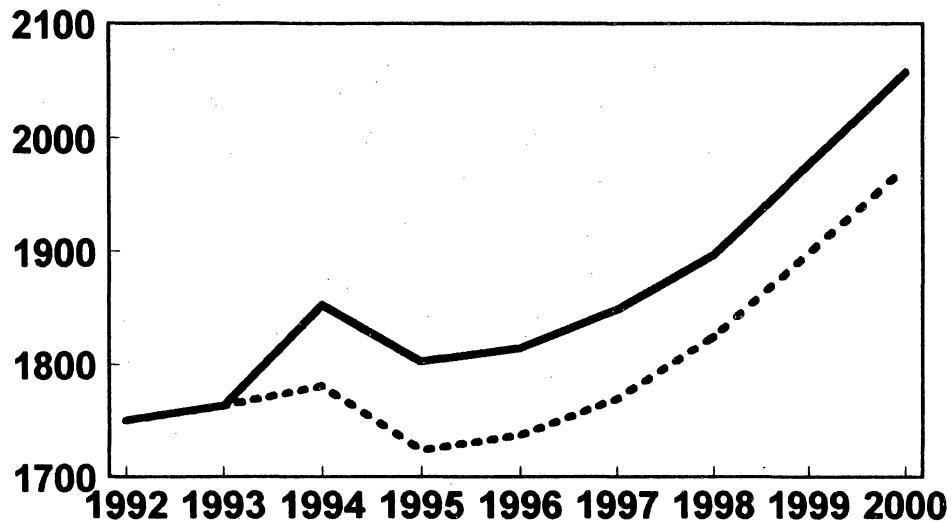
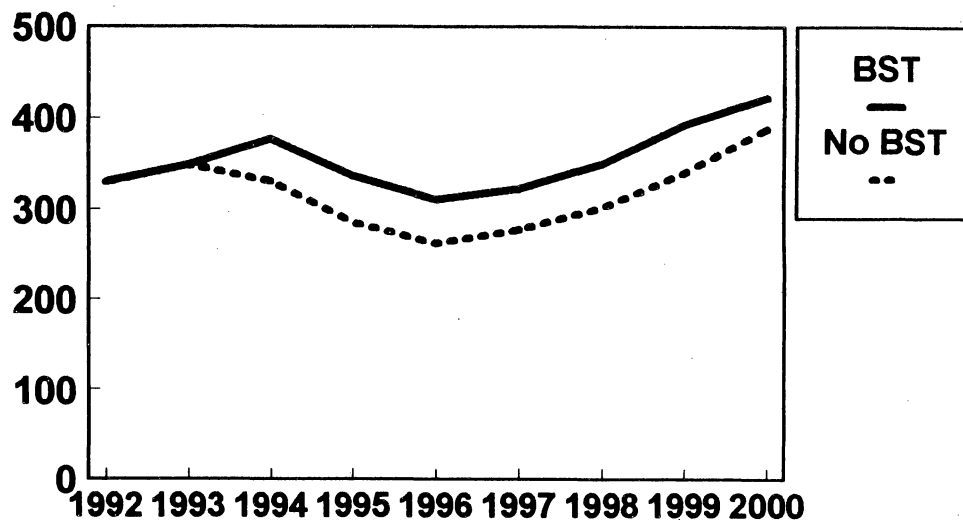


Figure 15. Western New York Moderate Dairy Farm (NYWD600) Assuming FAPRI Jan. 1995 Baseline

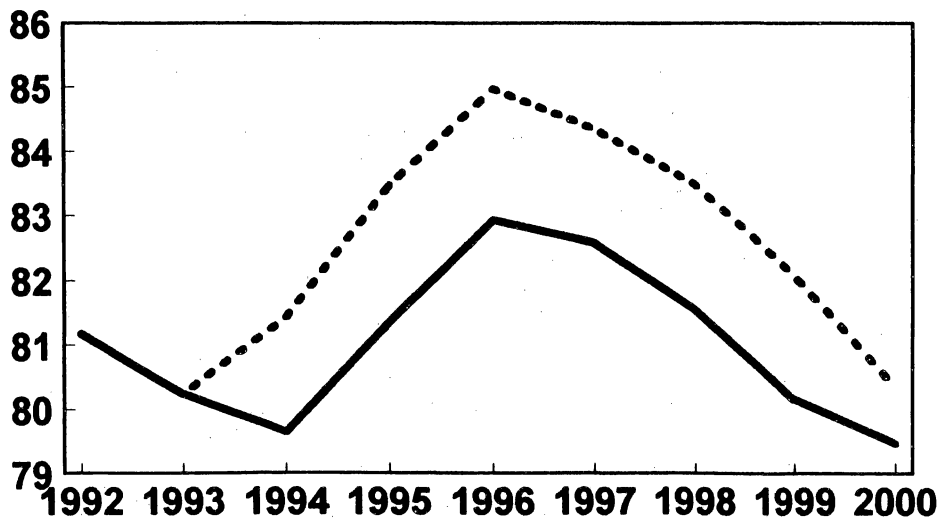
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

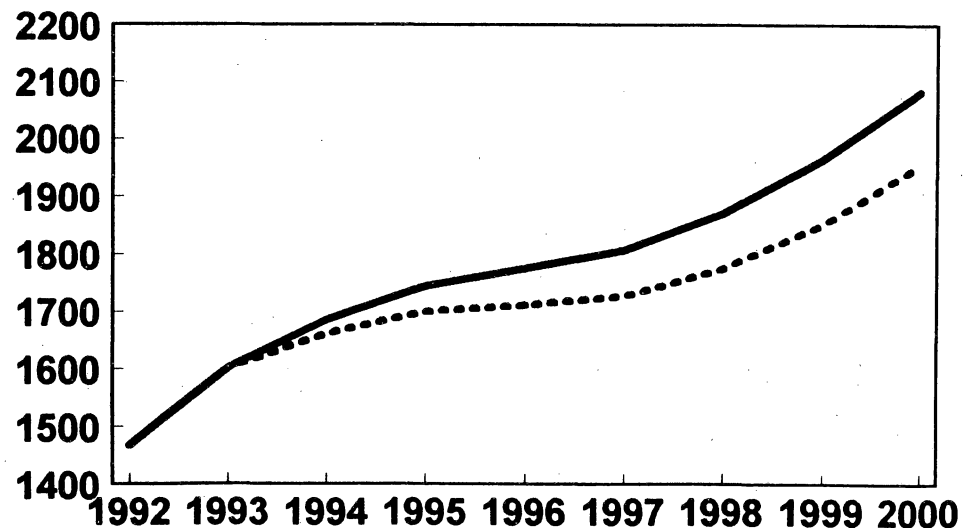
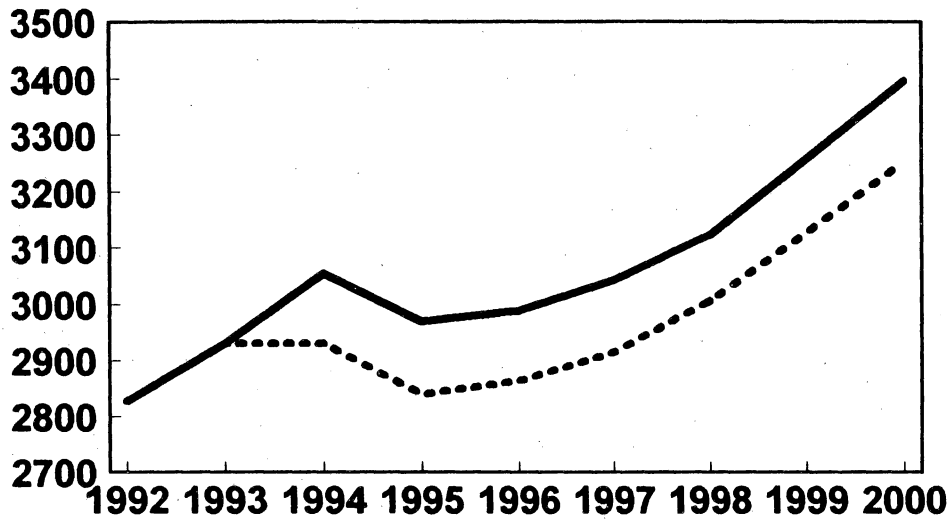
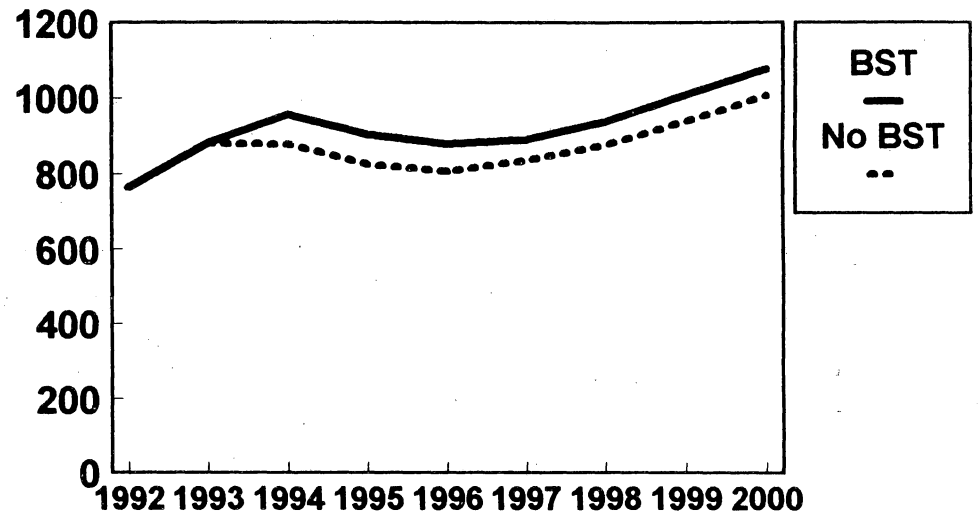


Figure 16. Western New York Large Dairy Farm (NYWD1000) Assuming FAPRI Jan. 1995 Baseline

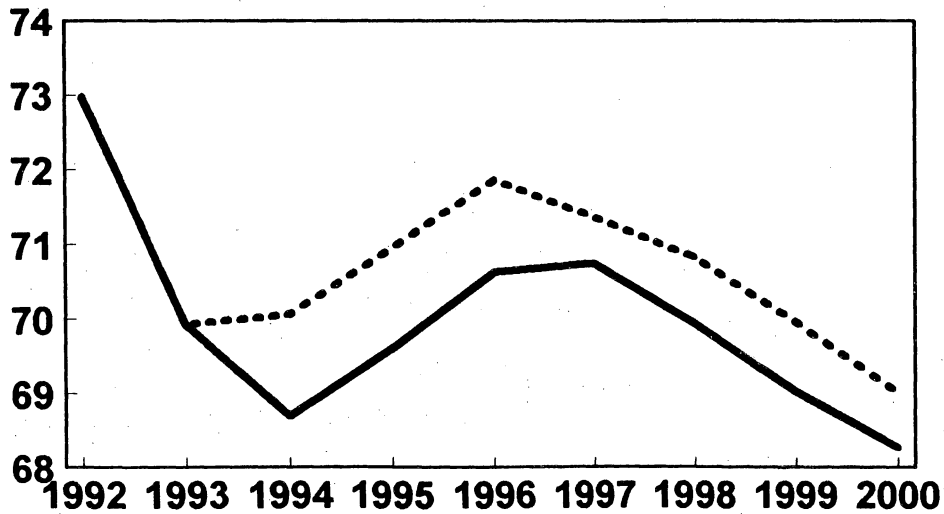
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

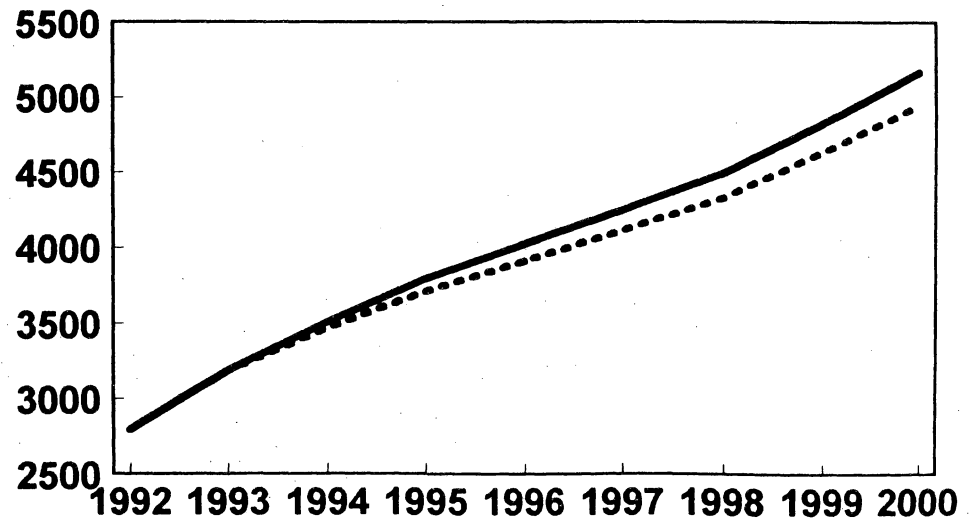
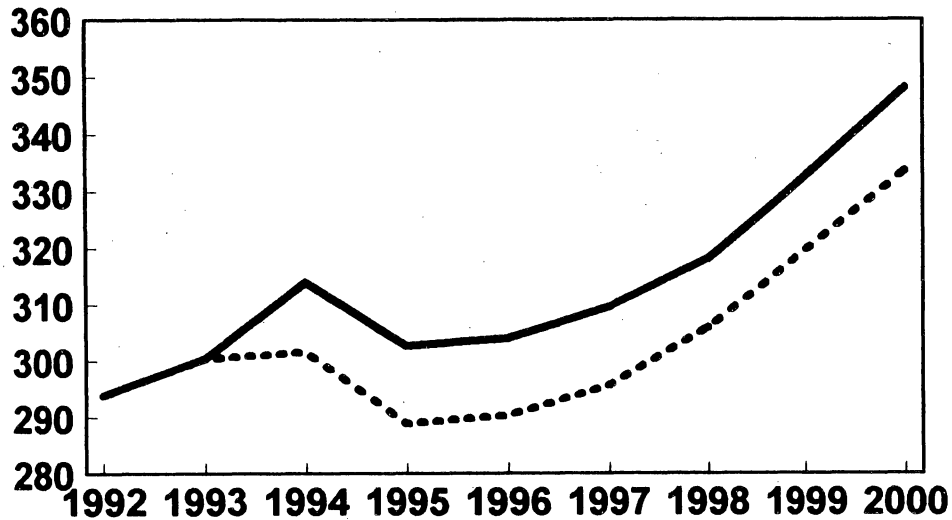
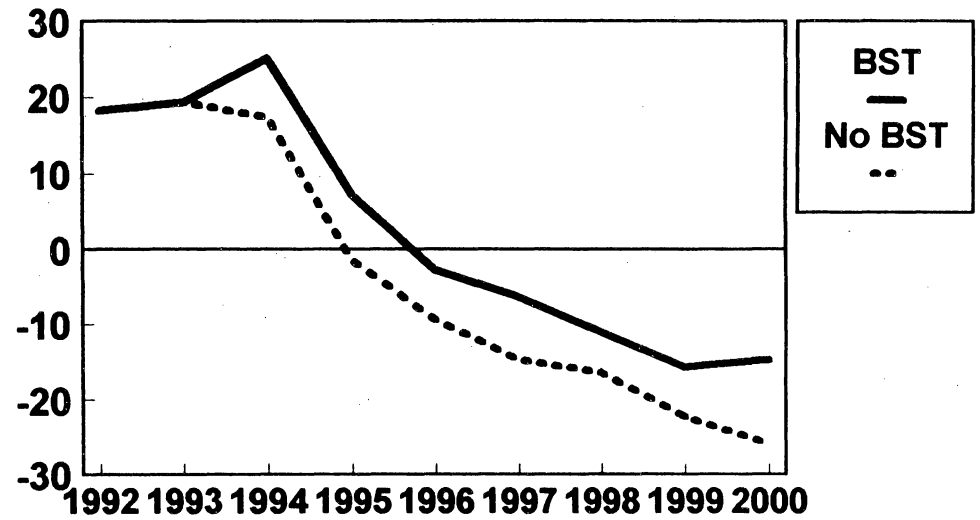


Figure 17. Central New York Moderate Dairy Farm (NYCD110) Assuming FAPRI Jan. 1995 Baseline

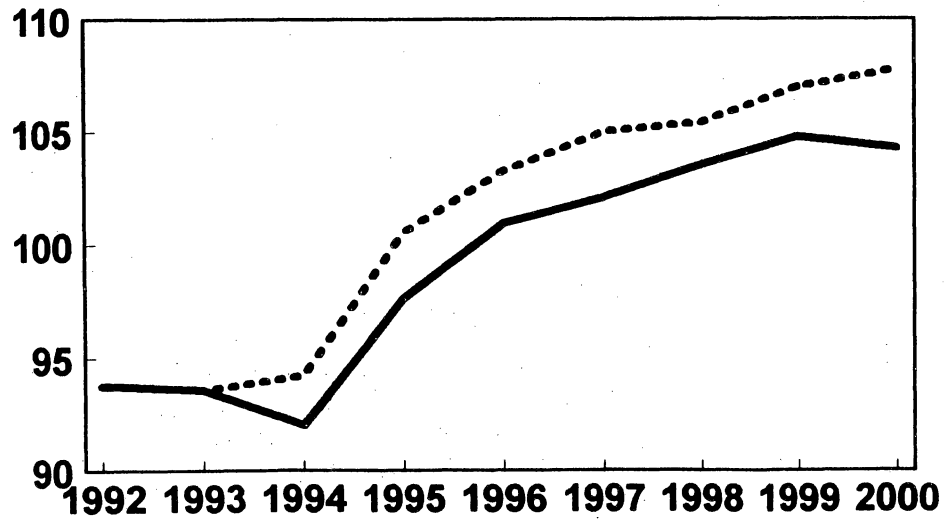
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

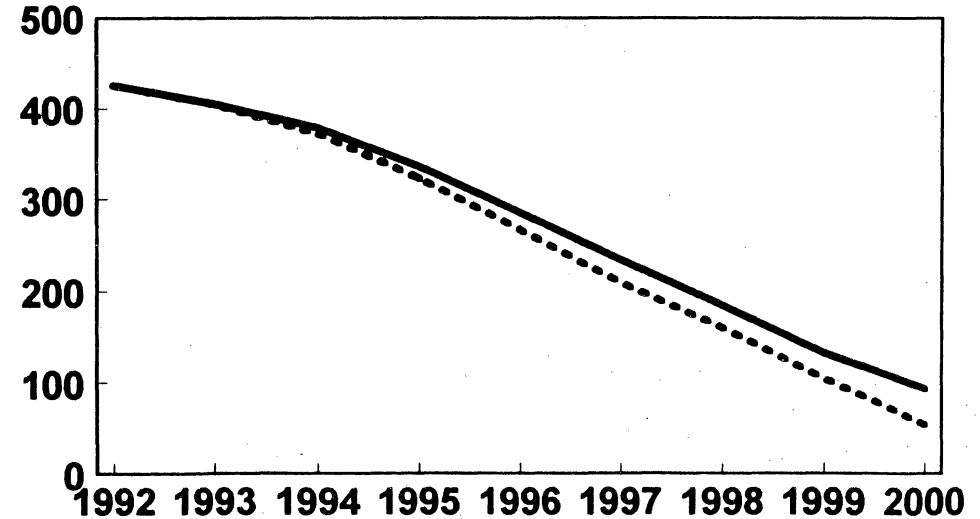
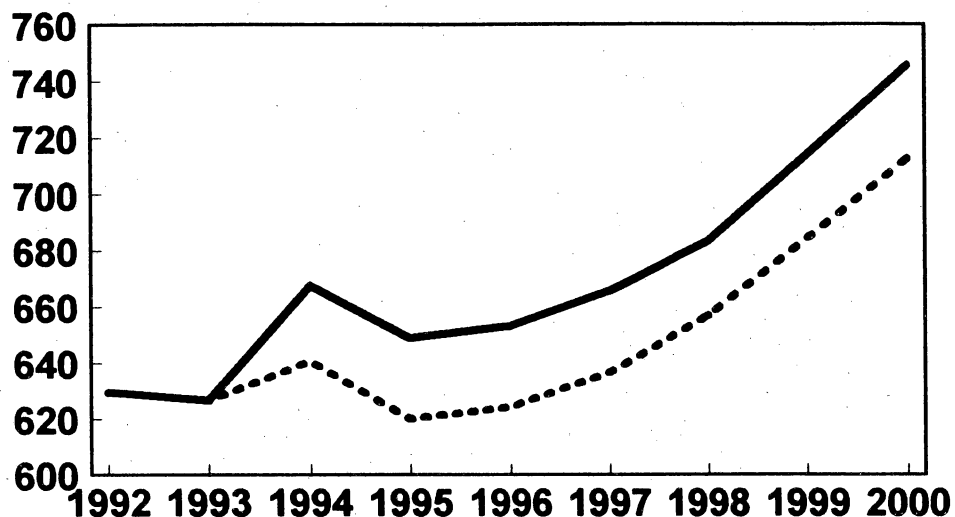
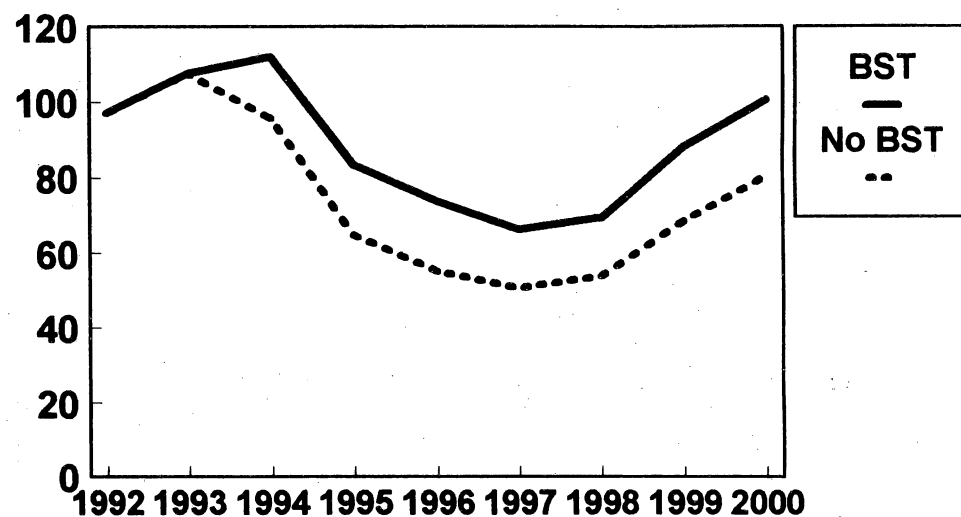


Figure 18. Central New York Large Dairy Farm (NYCD225) Assuming FAPRI Jan. 1995 Baseline

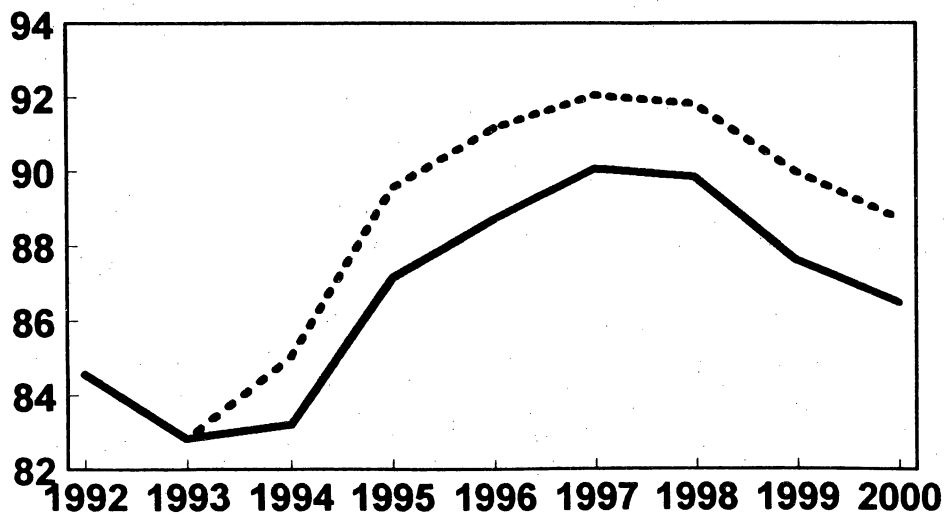
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

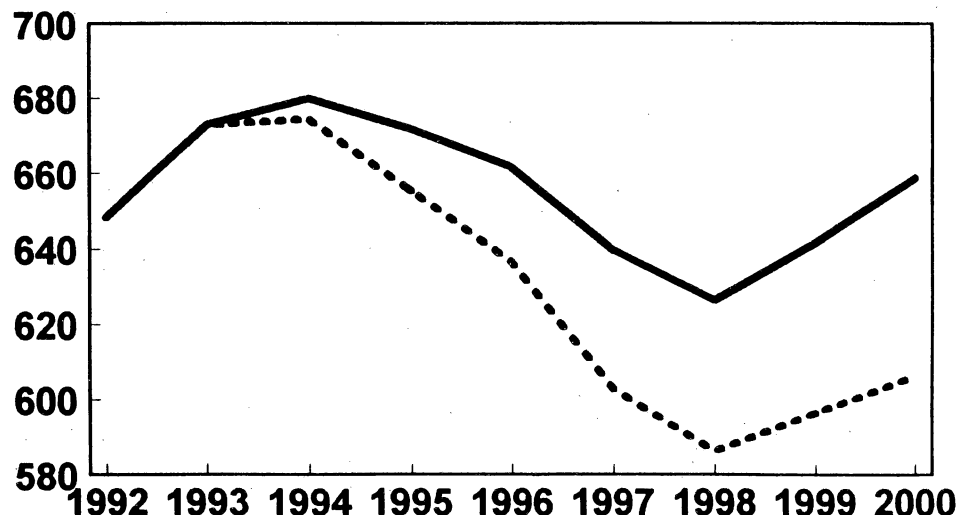
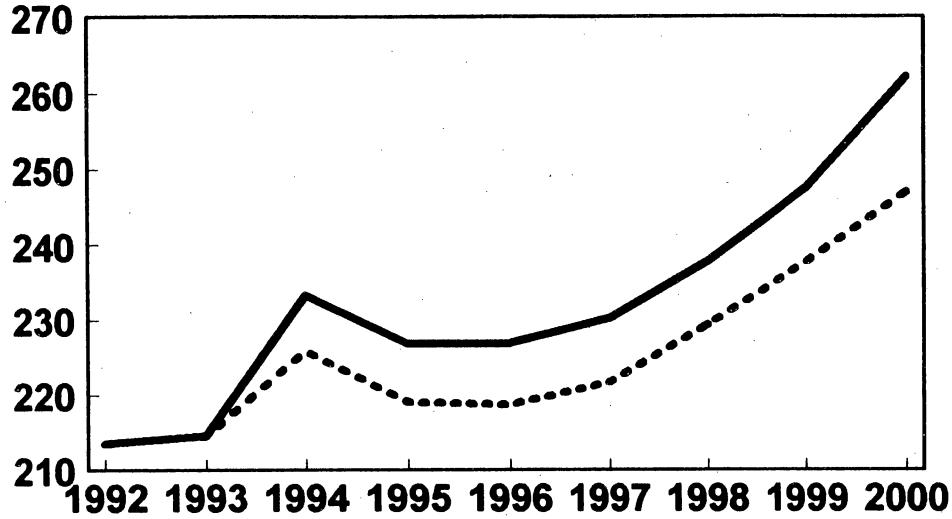
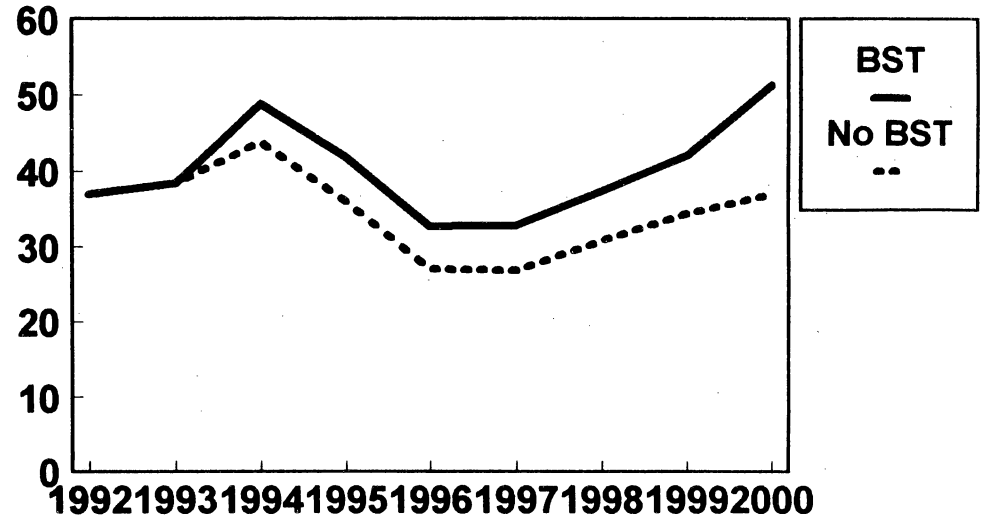


Figure 19. Vermont Moderate Dairy Farm (VTD70) Assuming FAPRI Jan. 1995 Baseline

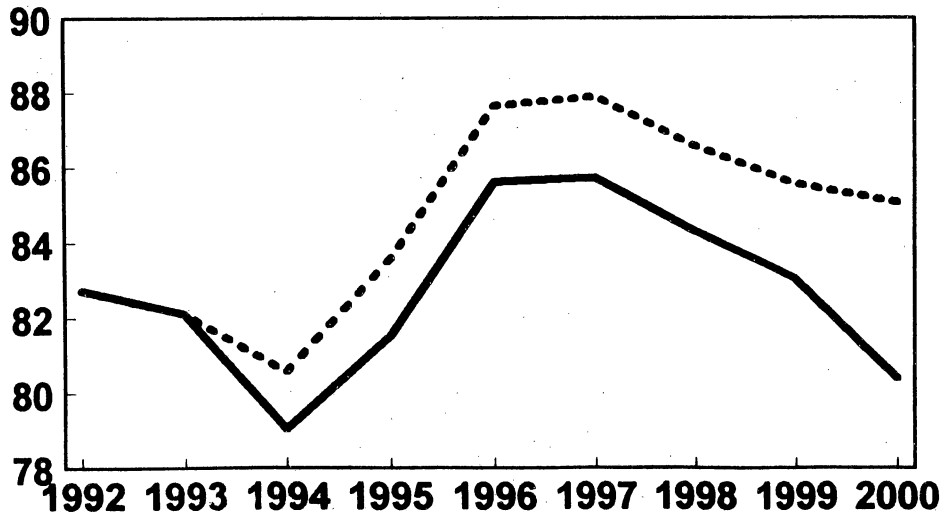
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

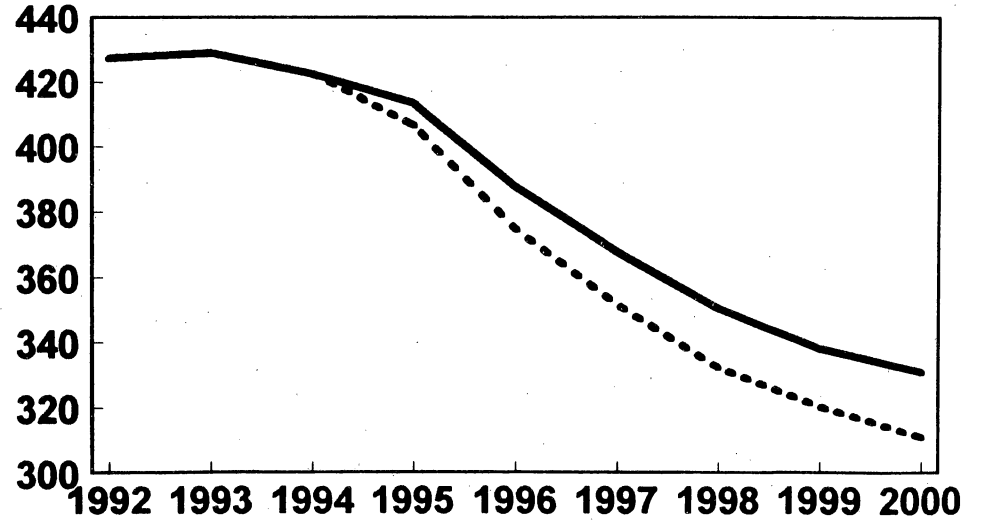
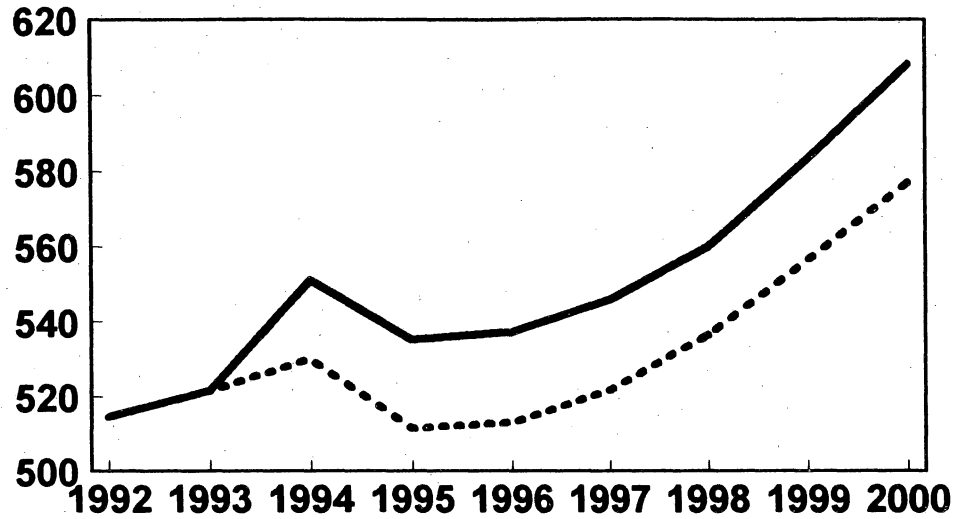
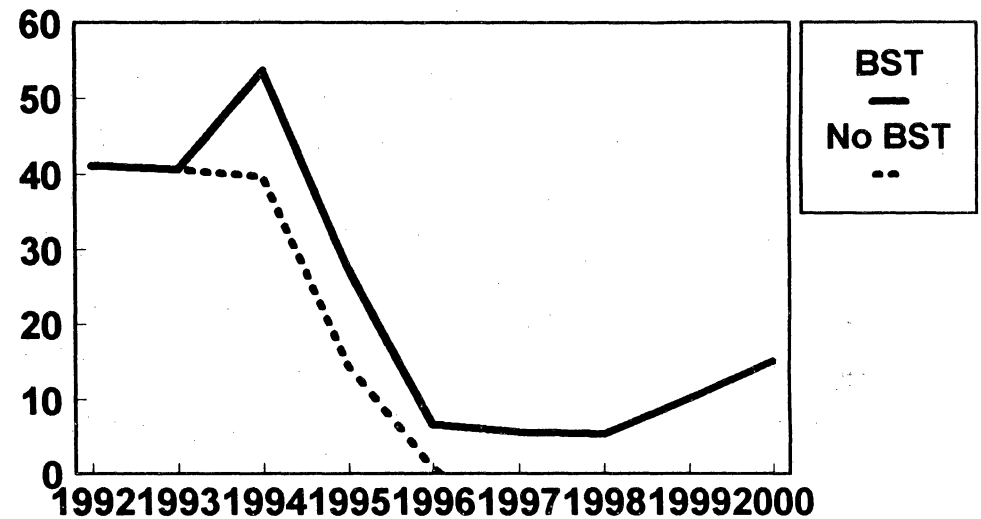


Figure 20. Vermont Large Dairy Farm (VTD186) Assuming FAPRI Jan. 1995 Baseline

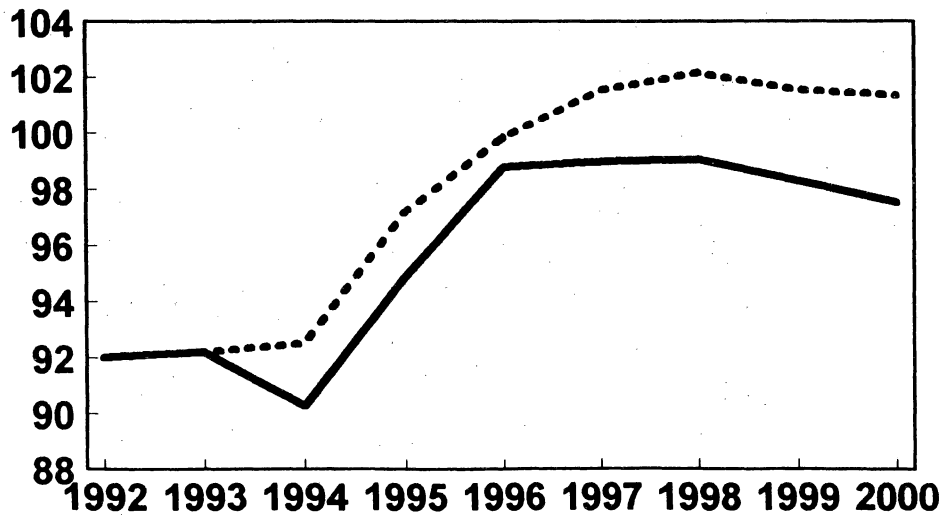
Cash Receipts (\$1,000s)



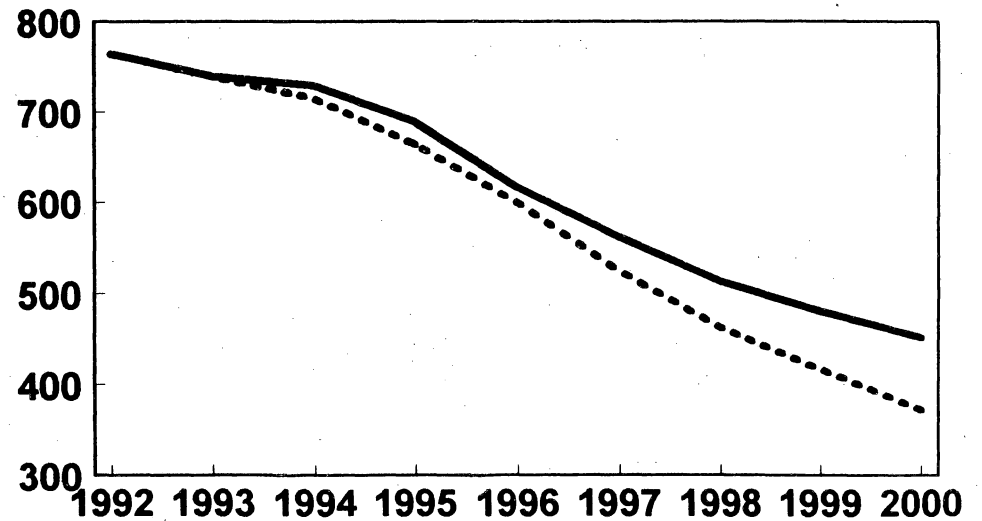
Net Cash Farm Income (\$1,000s)



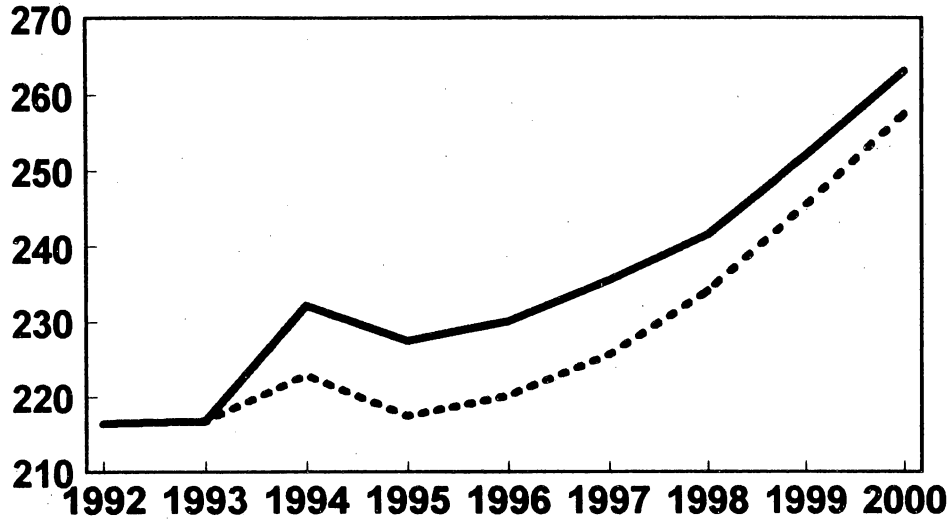
Ratio of Expenses to Receipts (%)



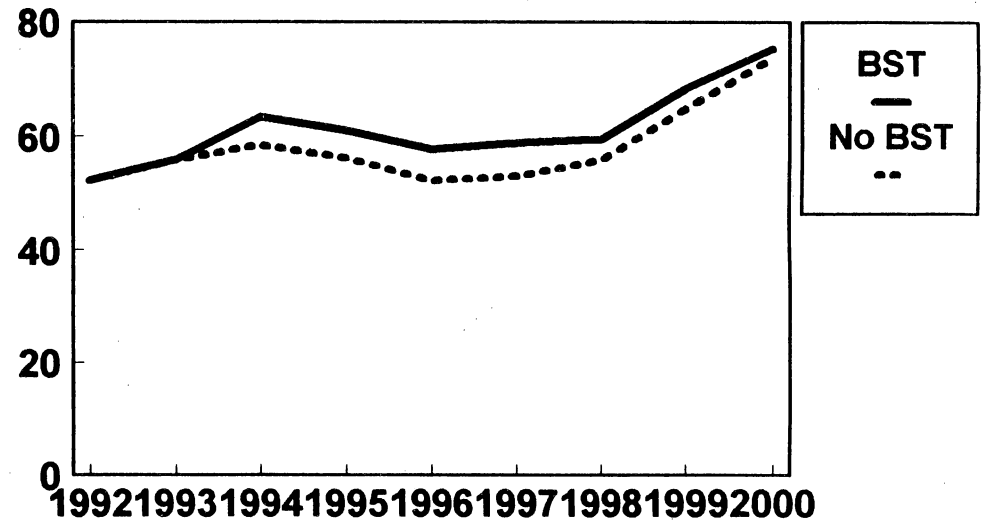
Real Net Worth (\$1,000s)



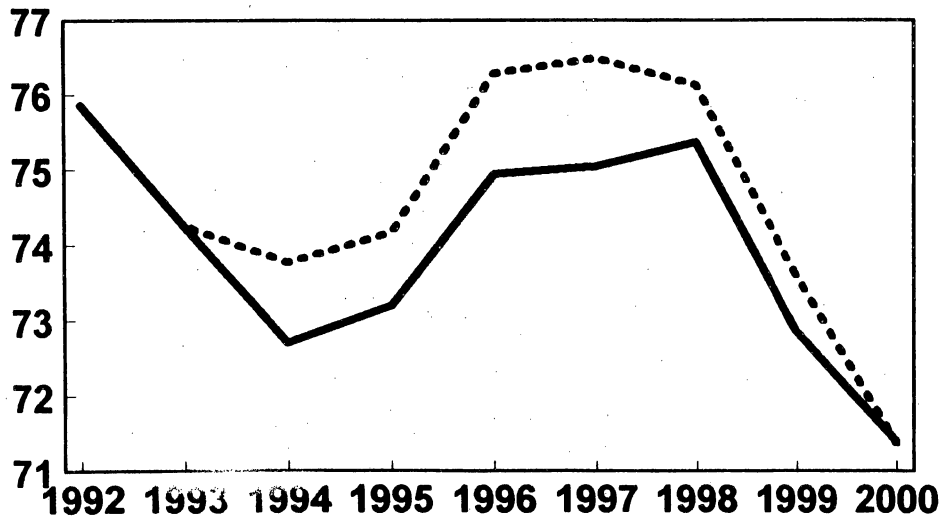
**Figure 21. Missouri Moderate Dairy Farm
(MOD77) Assuming FAPRI Jan. 1995 Baseline**
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

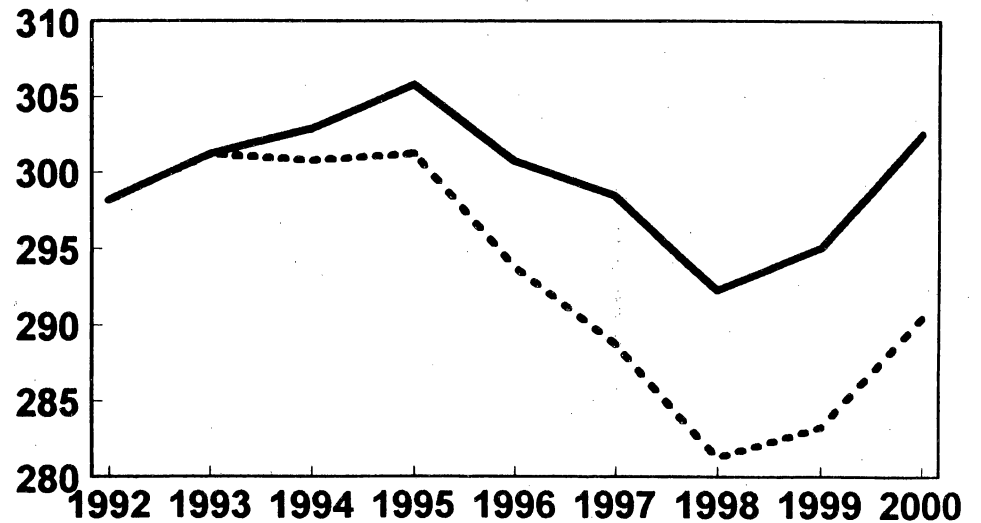
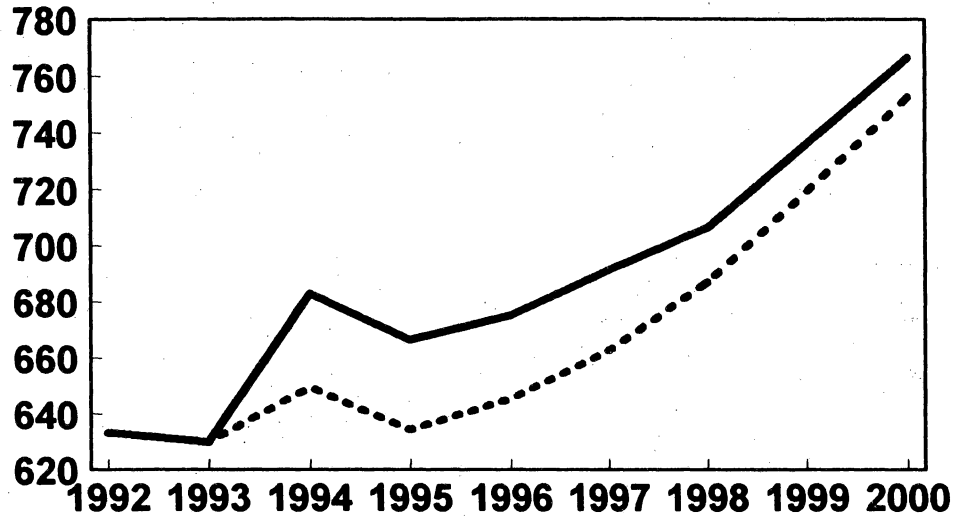
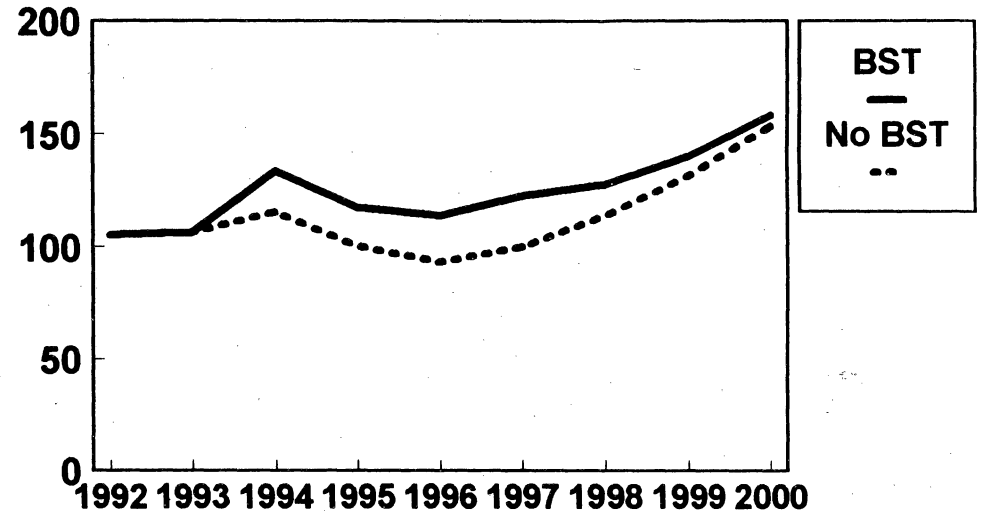


Figure 22. Missouri Large Dairy Farm (MOD220) Assuming FAPRI Jan. 1995 Baseline

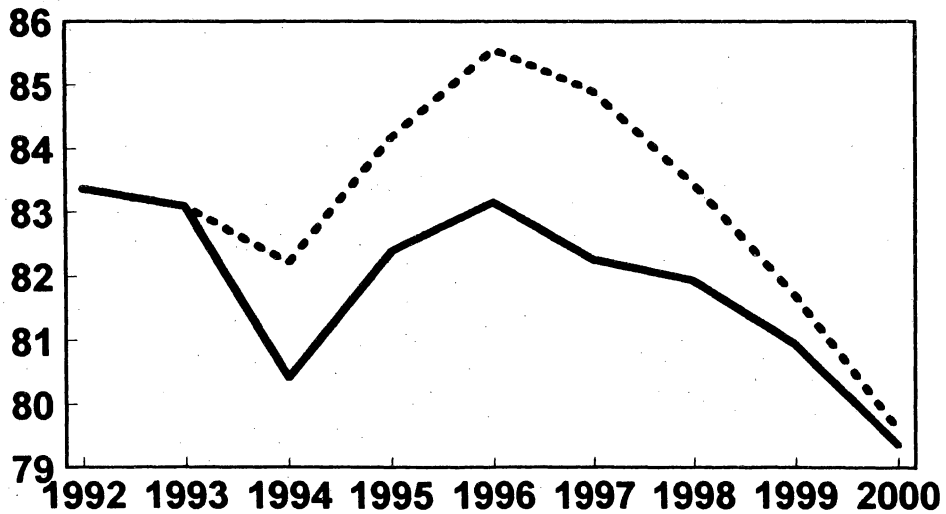
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

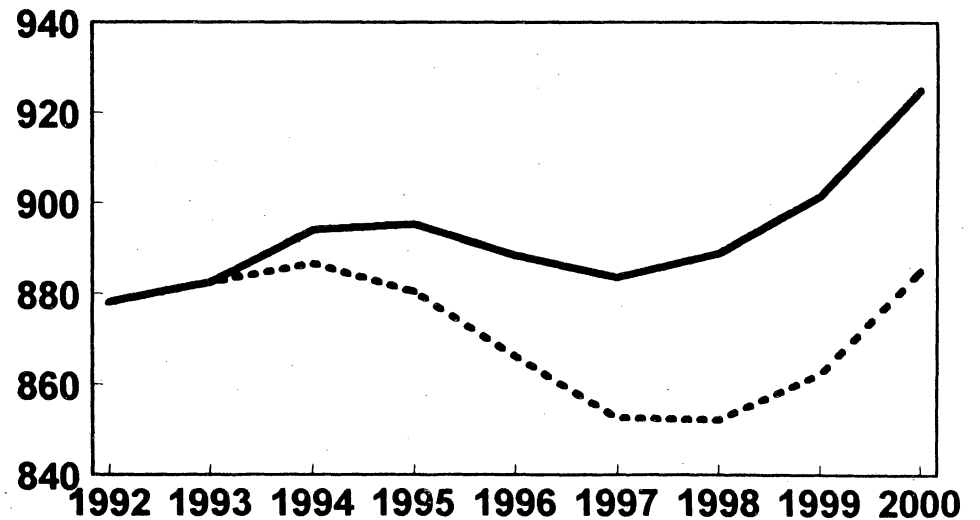
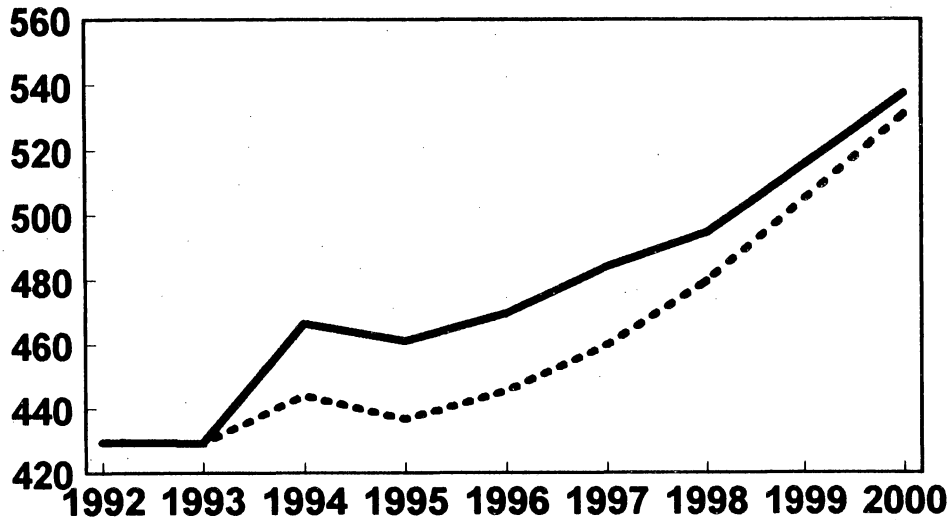
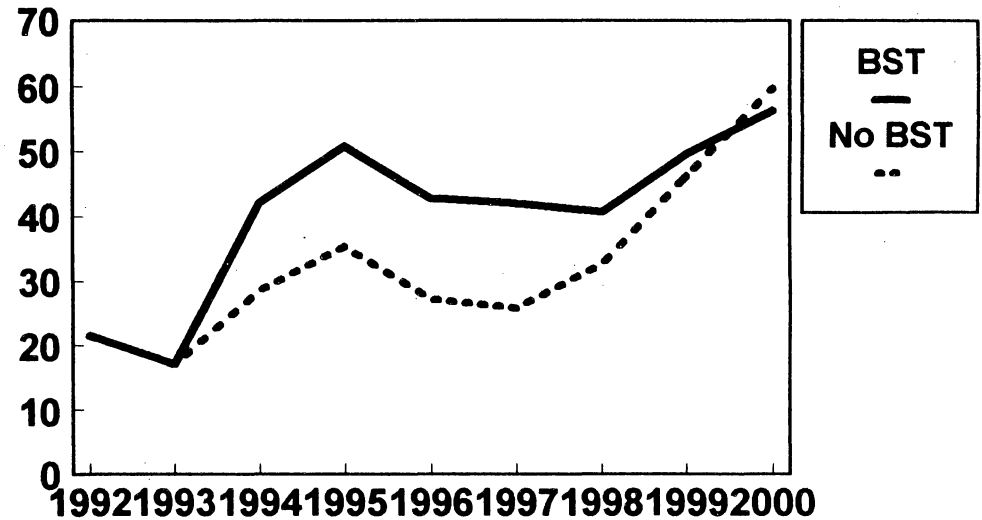


Figure 23. Georgia Moderate Dairy Farm (GAD160) Assuming FAPRI Jan. 1995 Baseline

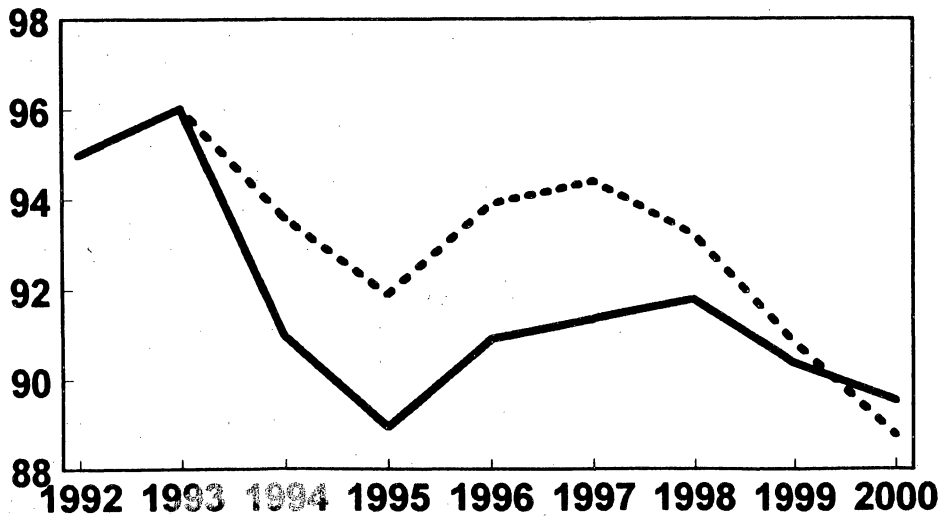
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

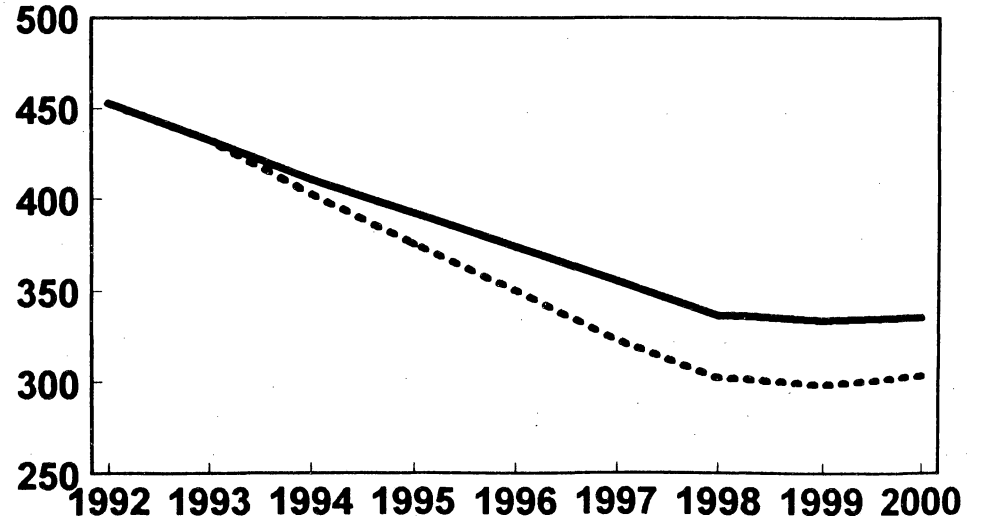
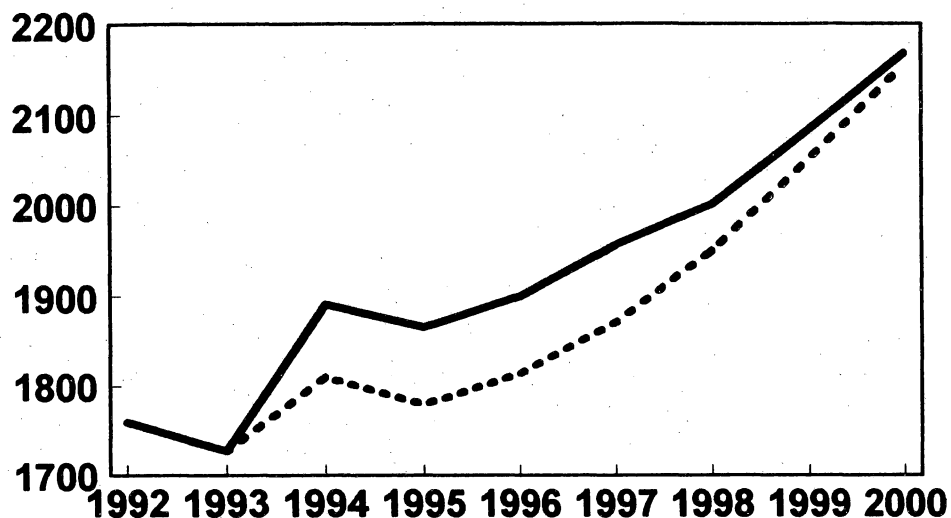
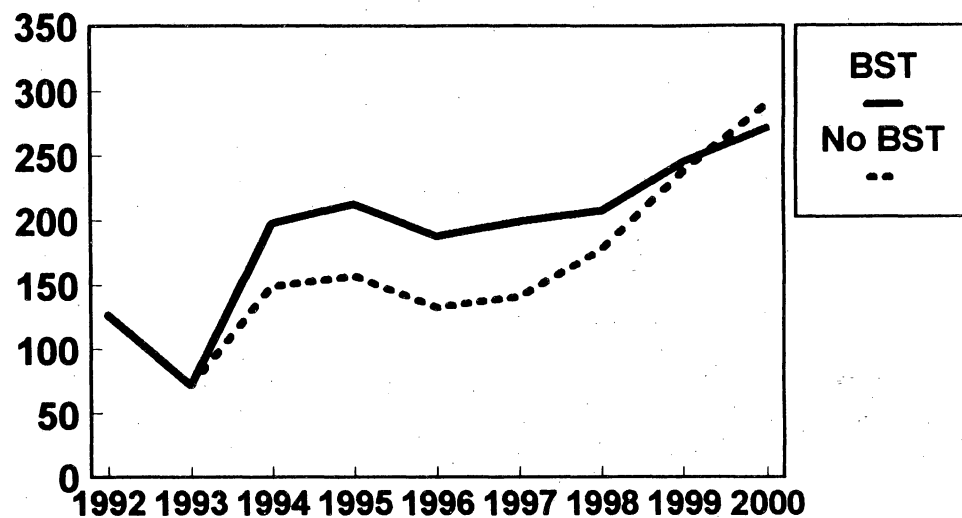


Figure 24. Georgia Large Dairy Farm (GAD600) Assuming FAPRI Jan. 1995 Baseline

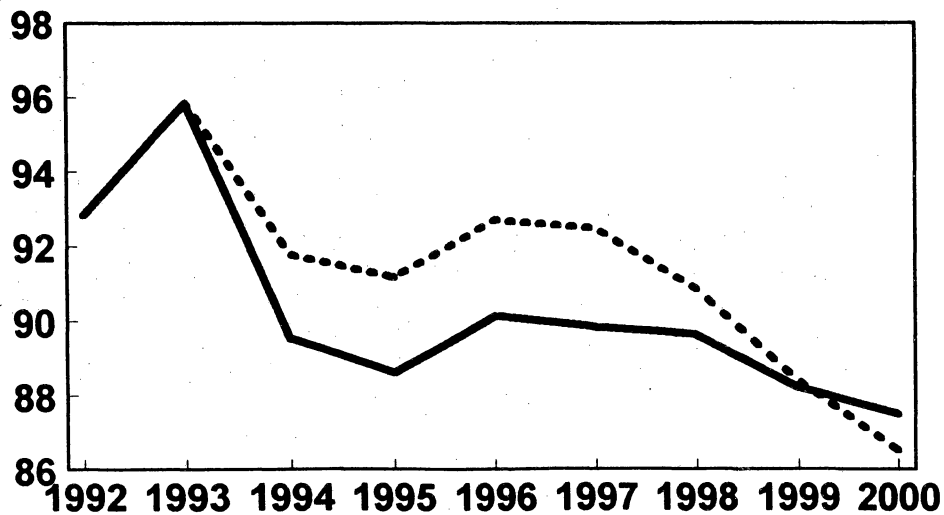
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

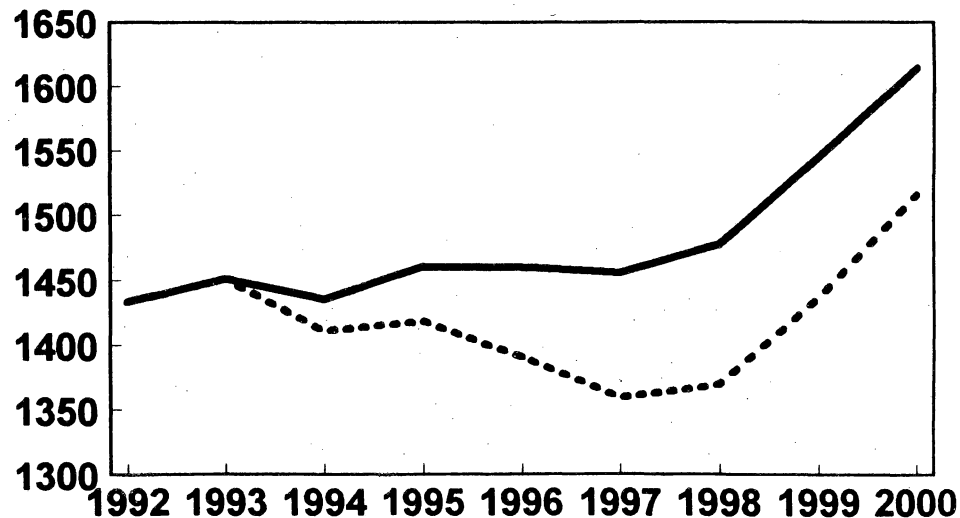
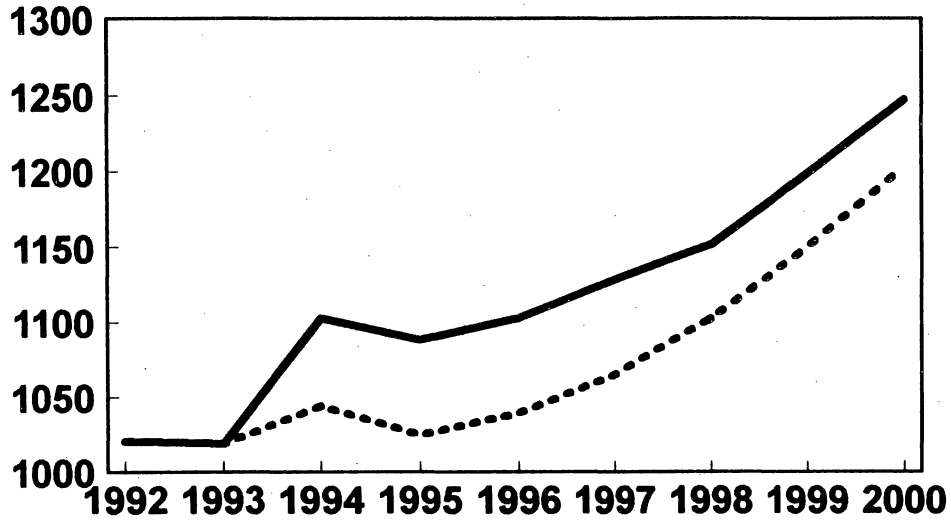
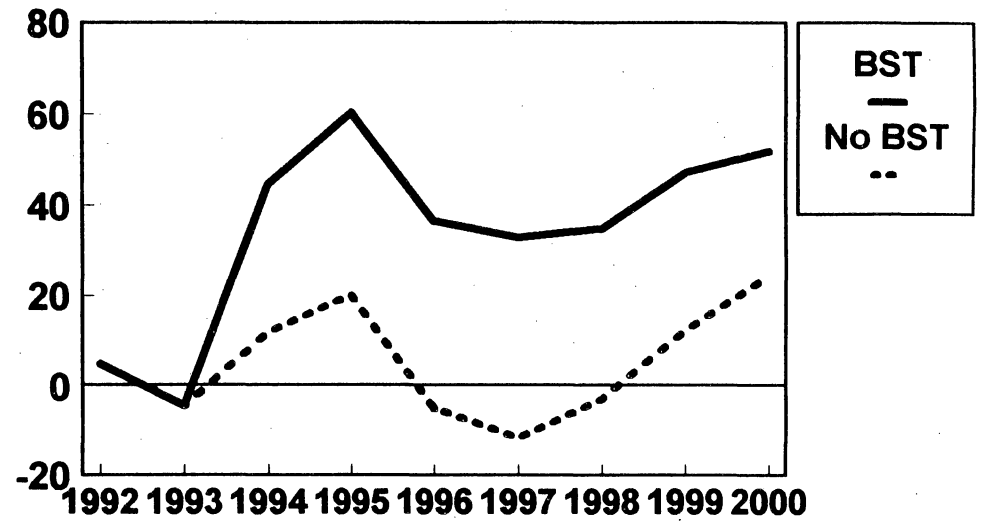


Figure 25. Florida Moderate Dairy Farm (FLD375) Assuming FAPRI Jan. 1995 Baseline

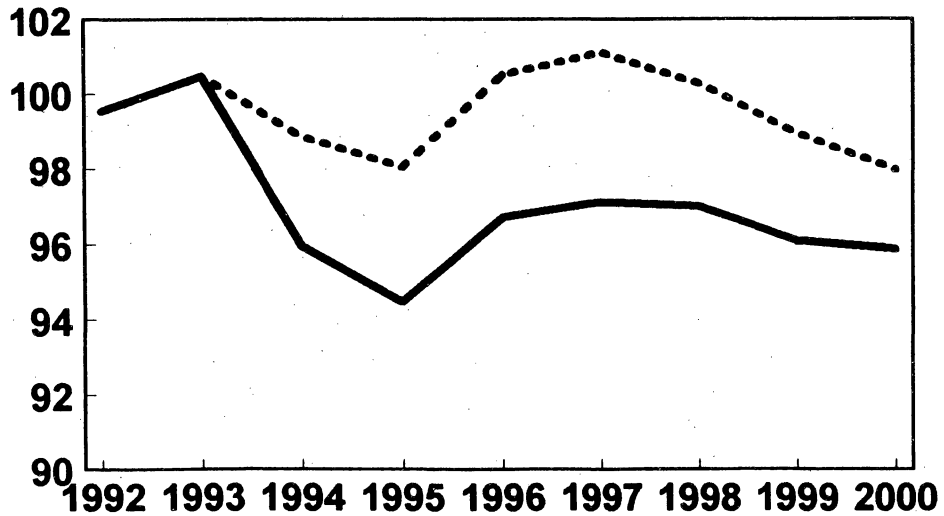
Cash Receipts (\$1,000s)



Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)

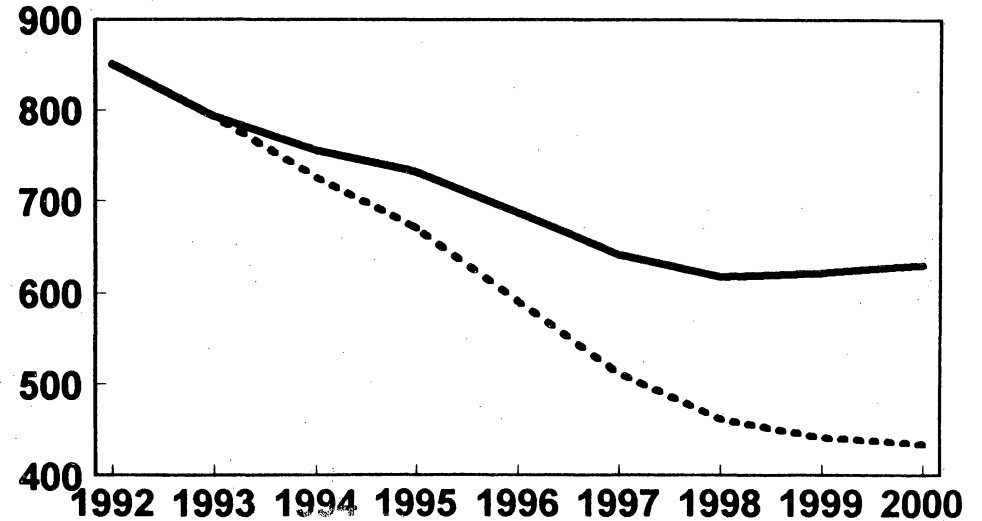
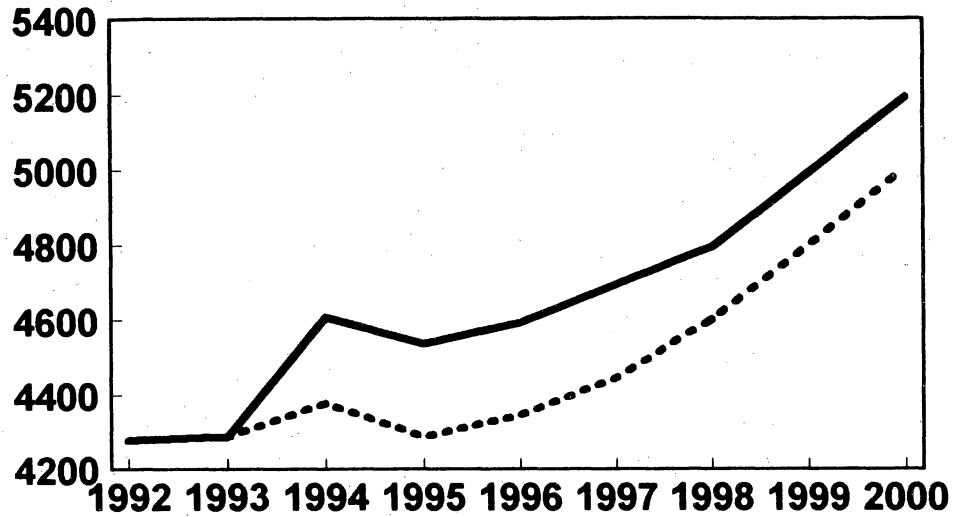
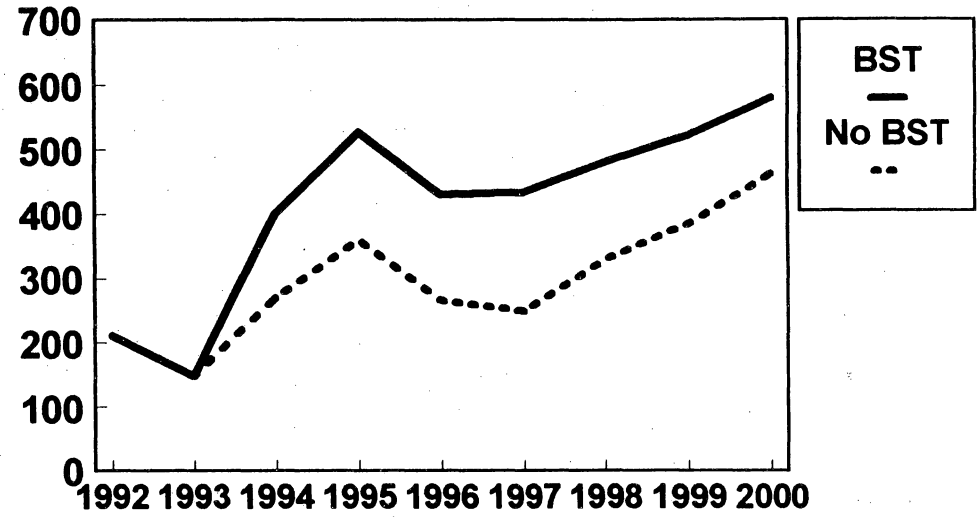


Figure 26. Florida Large Dairy Farm (FLD1500) Assuming FAPRI Jan. 1995 Baseline

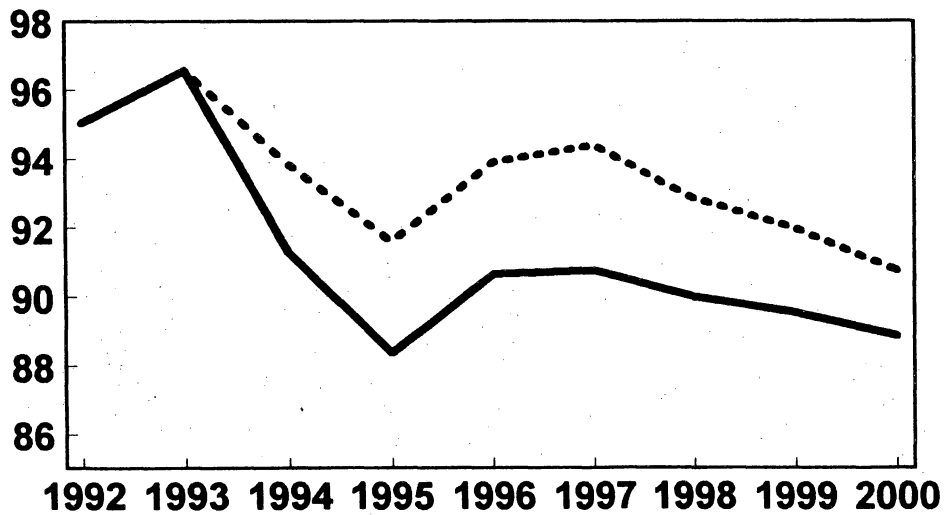
Cash Receipts (\$1,000s)



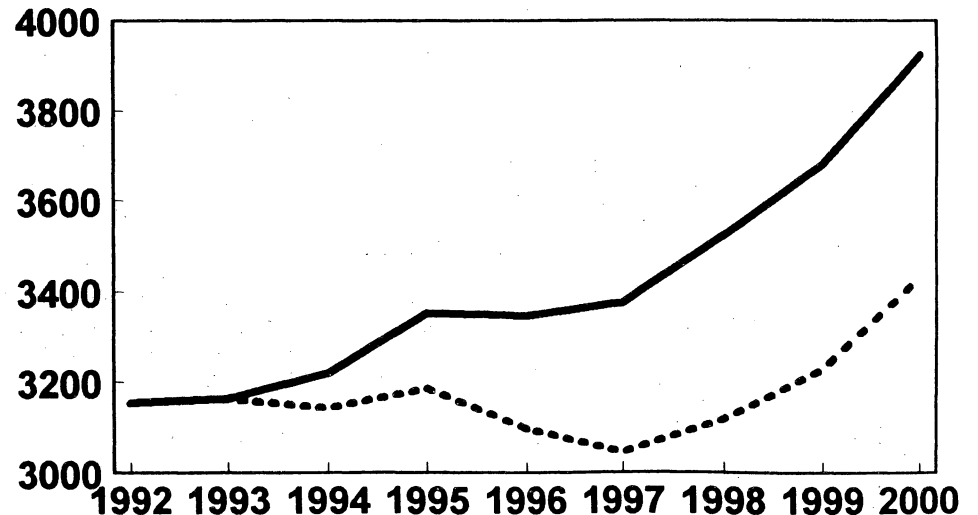
Net Cash Farm Income (\$1,000s)



Ratio of Expenses to Receipts (%)



Real Net Worth (\$1,000s)



Under the no BST assumption, the large Washington, Central New York, and Florida dairies (WAD850, NYCD225, and FLD1500) and the moderate Wisconsin, Vermont, Georgia, and Florida dairies (WID55, VTD70, GAD160, and FLD375) all experienced positive average net cash farm incomes over the entire 1992-00 period ranging from \$6,100 to \$342,200. However, these dairies were not able to cover minimum family living expenses, pay income taxes, and make principal and machinery replacement payments which resulted in losses of real equity over the period ranging from 0.2 percent to 50 percent. The results for these dairies with BST adoption were marginally better with all losing less equity over the period.

Five dairies (WAD175, TXED812, MOD77, MOD220, and GAD600) earn positive average annual net cash farm income over the period from \$59,300 to \$189,500 assuming no BST. Each farm realized increases in net worth over the period of between 0.4 percent and 12.9 percent. With BST use, all five of these dairies realized increases in real net worth over 4.5 percent.

Assuming no BST use the remaining dairies (CAD2150, NMD2000, TXCD720, WID190, NYWD600, and NYWD1000) all had average annual net cash farm income greater than \$100,000 over the period and realized greater than 20 percent increases in real net worth ranging from 26 percent to 115 percent. Again, BST use would increase profitability for all six farms.

Real Change in Net Worth

Pressures to restructure dairy farms are driven by the following four factors:

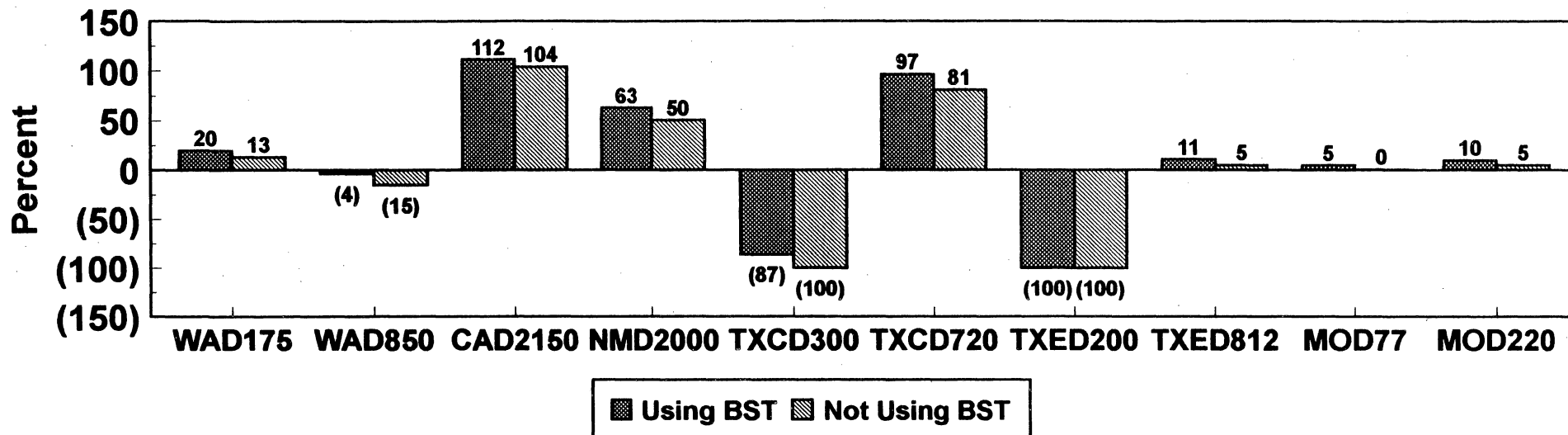
- Diversity in net cash income experience among farms with regional shifts in milk production.
- Requirements that investments be made to control dairy waste.
- Earning potential of larger farms.

■ Expected impacts of BST.

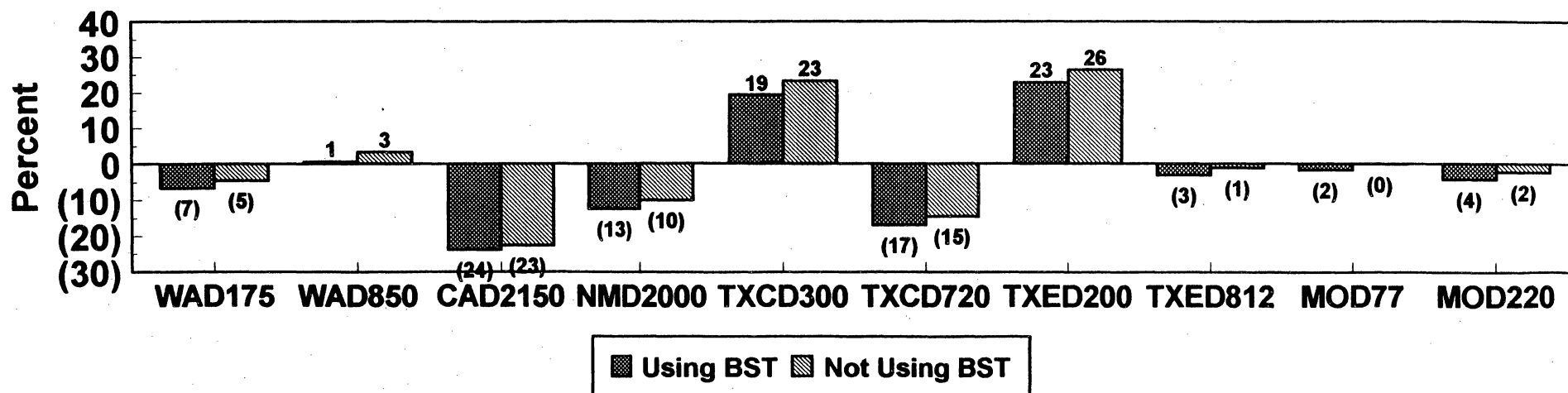
One measure of growth potential is the percent change in real net worth over the 1992-2000 period. Figures 27-30 show these results for the representative dairies with and without BST. This value indicates whether the farm operation is contributing to the owner's capital formation, thus providing the basis for future growth, or drawing on capital; thus suggesting a declining equity situation or a change in farm structure.

About half of the 22 dairy farms analyzed under the no BST assumption ended the period in relatively sound financial condition even with lower milk prices which resulted from BST introduction. All farms would find it advantageous to adopt BST. Eleven of the 22 dairy farms experienced losses in real net worth without BST adoption, while eight experienced losses in real net worth with BST. Large dairies generally ended the planning horizon more favorably. Seven dairies would require over a 10 percent increase in annual receipts to maintain real net worth without BST while 5 would require over a 10 percent increase in annual receipts with BST (Figure 27 and 30).

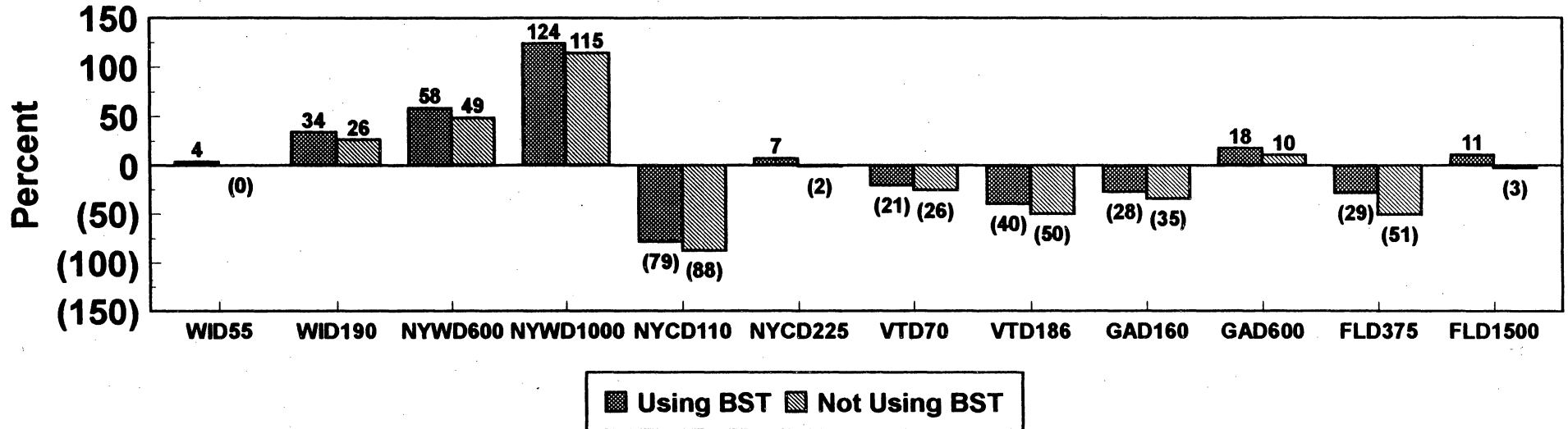
**Figure 27. Change in Real Net Worth
for All Dairy Farms #1, 1992 to 2000**



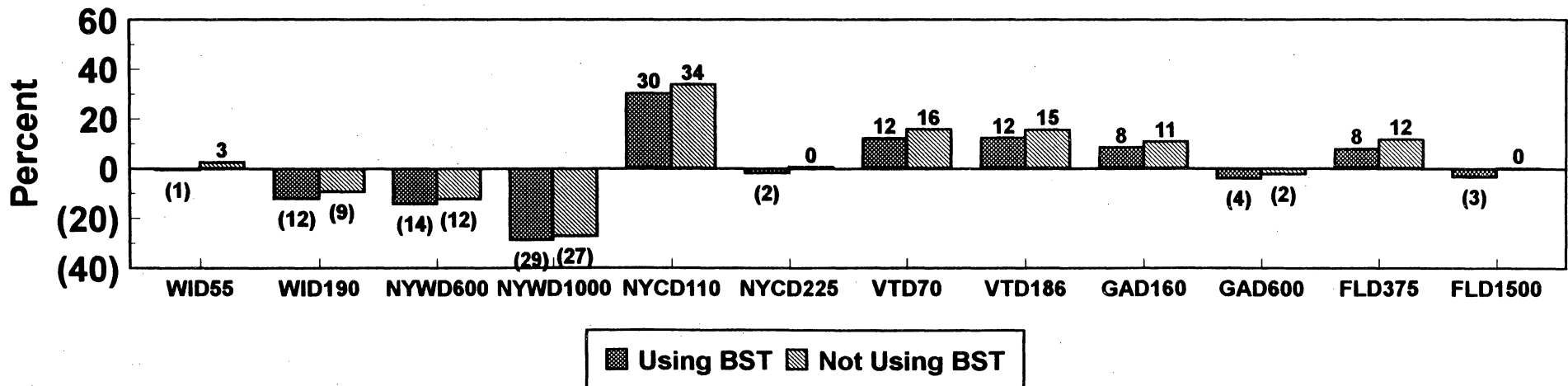
**Figure 28. Annual Percentage Change in Receipts From
1995 to 2000 Needed to Maintain 1992 Real Net Worth;
Dairy Farms, #1**



**Figure 29. Change in Real Net Worth
for All Dairy Farms #2, 1992 to 2000**



**Figure 30. Annual Percentage Change in Receipts From
1995 to 2000 Needed to Maintain 1992 Real Net Worth;
Dairy Farms, #2**



APPENDIX A: DAIRY FARM PANELS

Washington

Facilitator

Mr. David C. Grusenmeyer - Professor and Extension Dairy Specialist,
Washington State University

Panel Participants

Mrs. Star Hovander	Mr. & Mrs. Ron Bronsema	Mr. Keith Boon
Mr. Dave Buys	Mr. Rod DeJong	Mr. Duane Vander Griend
Mr. Dick Bengen	Mr. Jim Heeringa	Mr. Ed Pomeroy
Mr. & Mrs. Pete DeJager	Mr. Greg McKay	Mr. & Mrs. Dale DeVries

California

Facilitator

Mr. Jimmie Prince - Former President, Dairyman's Cooperative Creamery, Tulare, CA

Panel Participants

Mr. Dave Ribeiro	Mr. Joe Pires	Mr. Bill Van Beek
Mr. Bob Wilbur	Mr. John Zonneveld	

New Mexico

Facilitators

Mr. Jim Russell - Zone Manager, Associated Milk Producers, Inc., El Paso, TX
Mr. Butch Latture - Western Division Manager, Associated Milk Producers, Inc., El Paso, TX

Panel Participants

Mr. Brad Bouma	Mr. Joe Segura	Mr. Joe Gonzalez
Mr. Von Hilburn	Mr. Steve Bos	

Texas - Central

Facilitators

Mr. Joe Pope - Erath County Agricultural Extension Agent
Dr. Ashley Lovell - Professor, Tarleton State University
Mr. Jay Hicks - Zone Manager, Associated Milk Producers, Inc., Stephenville, TX

Panel Participants

Mr. Lane Jones	Mr. Robert Ervin	Mr. Leonard Moncrief
Mr. Bob Strona	Mr. Jack Parks	Mr. Jake Van Vliet
Mr. Owen Sieperda		

Texas - Eastern

Facilitators

Dr. Robert Schwart - Professor and Extension Economist, Texas A&M University
Mr. Raymond Haygood - Zone Manager, Associated Milk Producers, Inc., Sulphur Springs, TX

Panel Participants

Mr. E.G. Durgin	Mr. Tim Spiva	Mr. Al Minter
Mr. Hershel Kelsoe	Mr. Tommy Potts	Mr. Douwe Plantinga

Missouri

Facilitator

Mr. Ron Young - Christian County Extension Dairy Specialist, Ozark, MO

Panel Participants

Mr. John Mallonee

Mr. Allen Sulgrove

Mr. & Mrs. Doug Owen

Mr. Dan Clemens

Mr. Chris Young

Mr. & Mrs. Phil Barnhart

Mr. John Atkinson

Mr. Wayne Whitehead

Mr. & Mrs. Freddie Martin

Mr. & Mrs. Ray Schooley

Georgia

Facilitators

Mr. Bill Thomas - Professor and Extension Economist, University of Georgia

Mr. David B. Lowe - Putnam County Agricultural Extension Director

Panel Participants

Mr. Carlton McMichael

Mr. Ray Ward

Mr. Mike Rainey

Mr. Earnest Turk

Mr. Ronny Parham

Florida

Facilitators

Mr Chris Vann - Lafayette County Agricultural Extension Agent

Mr. Art Darling - Dairy Farms, Inc.

Panel Participants

Mr. Robert Enrico

Mr. Brad Hester

Mr. Louis Shiver

Mr. Kevin Jackson

Mr. Bill Shaw

Mr. Boyd Rucks

Mr. Edward Thomas

Mr. Everett Kerby

Mr. Glynn Rutledge

Mr. Ray Melear

Wisconsin

Facilitators

Mr. Jeff Key - Winnebago County Agricultural Extension Agent

Dr. Gary Frank - Extension Farm Management Specialist, University of Wisconsin

Panel Participants

Mr. John Lenz

Mr. Joe Bonlender

Mr. Larry Engel

Mr. Pete Van Wychen

Mr. Ronald Miller

Mr. Doug Hodorff

Mr. Pete Knigge

Mr. Fred Kasten

Mr. Edwin Davis

Mr. Jerome Schmidt

Mr. Dean Hughes

Mr. Terry Madigan

Mr. Jeff Key

New York - Western

Facilitator

Dr. Wayne Knoblauch - Professor, Cornell University

Panel Participants

Mr. Gary Van Slyke

Mr. Dick Popp

Mr. Willard DeGolyer

Mr. Bill Fitch

Mr. George Mueller

Mr. Mark Smith

Mr. Dale Van Erden

New York - Central

Facilitator

Dr. Wayne Knoblauch - Professor, Cornell University

Panel Participants

Mr. Gary Mutchler

Mr. Ron Space, Jr.

Mr. Bill Head

Mr. Mike Learn

Mr. David Shurtleff

Mr. Leonard Kimmich

Mr. & Mrs. Tom Brown

Vermont

Facilitators

Dr. Stu Gibson - Extension Dairy Specialist, University of Vermont

✓ Mr. Dennis Kauppila - Caledonia County Agricultural Extension Agent

Ms. Pat Duffy - Farm Management Association of Vermont and New Hampshire

Panel Participants

Mr. Steve Hurd

Mr. David Conant

Mr. Ray Bisson

Mr. Steven Jones

Mr. Dave Tooley

Mr. Kim Harvey

Mr. Richard Hall

Mr. Stanley Scribner

Mr. Paul Miller

Mr. John Osha

Mr. Albert Neddo

Mr. Tim Bisson

Mr. Paul Gingue