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# Cotton and Wool

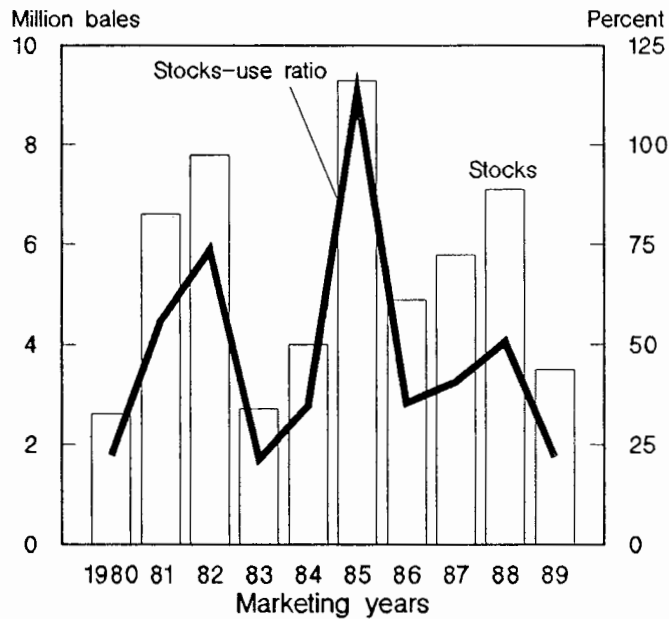
## Situation and Outlook Report

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**U.S. Cotton Stocks and Stocks-Use Ratio  
To Fall Sharply**



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## Summary

The 1989 U.S. cotton crop totaled an estimated 12.2 million bales, with upland production of nearly 11.6 million, and extra-long staple a record 663,000 bales. At 9.5 million acres, harvested area shrank to its lowest level since the 1986/87 crop year. Yields averaged 619 pounds per harvested acre, unchanged from 1988. Cotton ginned before February 1 totaled 11.8 million bales. Final acreage, yield, and production figures for the 1989 crop will be released on May 10.

U.S. mills consumed 7.8 million bales of cotton in 1988/89. This season, strong denim demand and apparel sales are expected to push consumption to 8.2 million bales—the highest in nearly 2 decades. Mill use for the first 6 months of the season averaged about 8.4 million bales on a seasonally adjusted annual rate.

U.S. cotton exports are forecast at 7.7 million bales this season, up 25 percent from the 6.15 million of 1988/89. As of mid-February, outstanding sales and shipments of U.S. cotton totaled nearly 7 million bales, compared with 4.7 million at this time last season.

During the 1989/90 marketing year, both U.S. and world prices for cotton have exceeded those of the past season by substantial margins. The adjusted world price (AWP, the U.S. equivalent of world prices) for August to mid-November averaged 67 cents per pound this season—about 23 cents ahead of the comparable-period average last season. The August to mid-November spot market price averaged 69 cents per pound this season—17 cents ahead of last season. However, the AWP and spot market price subsequently fell by 7-8 cents before rebounding slightly in February. This season's higher prices can be attributed to strong demand and tightening stocks.

The calendar 1989 national average price for upland cotton was 60.3 cents per pound. Upland producers who partici-

pated in the 1989 acreage reduction program received a deficiency payment rate of 13.1 cents (the difference between the established target price and the calendar year average price). Some producers received advance payments of 8.56 cents per pound, and were later paid the 4.54-cent-per-pound balance in cash. Producers who did not request advance payments received full cash payments. Final deficiency payments of \$250 million for 1989 upland cotton were made in February.

World cotton production in 1989/90 is projected to fall 6 percent to 79 million bales. Foreign production is expected to total 67 million bales, down 3 percent from last year.

World cotton consumption is projected to total 85 million bales in 1989/90, and foreign consumption is forecast at 77 million—both up slightly from last season's record high. Foreign consumption is expected to exceed production by 10 million bales, and foreign exports will likely fall by over 2 million.

World ending stocks are projected at 24.7 million bales in 1989/90, down 6.2 million (20 percent) from last season. The world stocks-to-use ratio is estimated at 29 percent, the lowest level since World War II.

U.S. wool consumption in the fourth quarter of 1989 equaled 33 million pounds, clean; the woolen system consumed 10 million; and the worsted system used 20 million. Raw wool consumption totaled 141 million pounds in 1989. The worsted system took 78 million pounds, the largest annual usage since 1972. The woolen system consumed 48 million pounds. Carpet mills used 16 million, the highest annual usage since 1975. Raw wool imports reached 107 million pounds for the year, clean, the largest amount since 1971.

## Textiles and the Economy

In fourth-quarter 1989, real gross national product (GNP) rose a sluggish 0.5 percent (\$5.2 billion) compared with a healthy increase of 3.0 percent (\$30.4 billion) in the third quarter and a 2.7-percent (\$26.7 billion) rise in fourth-quarter 1988. The slow growth in GNP can be primarily attributed to a decline in consumer spending and a continued drop in net exports of goods and services. The composite index of leading economic indicators also advanced 0.2 percent in fourth-quarter 1989, after a 0.1-percent decline in the previous quarter.

In January, the producer price index (PPI) for finished goods moved up 1.9 percent after advancing 0.7 percent in December and declining 0.1 percent in November. The PPI for textile products and apparel rose 0.7 percent between December and January.

Real disposable personal income grew 0.7 percent in fourth-quarter 1989 after a 1.1-percent increase in the previous quarter. Personal savings as a percentage of disposable personal income rose dramatically in 1989 over 1988. Preliminary fourth-quarter 1989 figures indicate personal savings at 5.7 percent, compared with an average 5.4 percent for the first three quarters and a 1988 annual average of 4.2 percent.

In fourth-quarter 1989, real personal consumption expenditures slipped \$0.8 billion from the previous quarter, the first quarterly decline in expenditures in over 2 years. Expenditures on nondurable goods diminished by \$3.3 billion, and those on durables fell by \$14.9 billion; these figures contrast sharply with respective third-quarter increases of \$11.1 billion and \$11.6 billion.

U.S. merchandise exports in calendar year 1989 climbed 13 percent above a year earlier to \$364.3 billion, while imports rose only 7.2 percent to \$472.9 billion, thus improving the overall U.S. trade balance. The merchandise trade deficit was reduced to \$108.6 billion from \$118.5 billion in 1988 and \$152.1 billion in 1987.

Net trade surpluses in agricultural commodities continue to help trim the deficit. In 1989, the value of agricultural commodity exports reached \$40.0 billion, 8 percent above a year earlier, while imports increased 4 percent to \$22.1 billion. Raw cotton exports rose 15 percent in value above 1988; similarly, wheat and corn expanded 21 and 29 percent, respectively.

For 1989, U.S. imports (square meter equivalent basis) of cotton, wool, manmade fiber, silk blends, and noncotton vegetable fiber textiles and apparel exceeded those of a year earlier by 12.7 percent. This increase represented an 11.2-percent gain in textile mill product imports and a 14.2-percent advance in apparel imports. By volume, cotton and

manmade fiber imports rose 15.2 and 10.3 percent, respectively, while wool imports dropped 11.7 percent. By value, cotton, wool, and manmade fiber imports increased 14.8, 0.3, and 14.1 percent, respectively, from a year earlier.

In January 1990, U.S. industrial production dropped 1.2 percent below December figures to 140.9 percent of the 1977 annual average. The decline can be attributed to reduced motor vehicle production and lower utility output demand due to unusually warm weather.

In 1989, clothing production averaged 103 percent (1977=100)—up nearly 2 percent from a year earlier; textile material output rose 4.5 percent to an annual average of 114.9 percent. Similarly, textile mill and apparel product output exceeded 1988 annual levels by 5 and 1.5 percent, respectively.

U.S. industries operated at 83.7 percent of capacity in 1989—up from 83.3 percent a year earlier. Slightly higher utilization levels were also seen in the nondurable manufacturing industries. Among these industries, textile mill products had the second-highest capacity utilization rate in 1989—91.5 percent, and also demonstrated the largest annual increase—nearly 2 percent above 1988.

In January 1990, the seasonally adjusted U.S. unemployment rate for the civilian labor force held steady for the eighth consecutive month at 5.3 percent, the average rate for the previous 18 months. Although the rate for the aggregate labor force did not change, the unemployment rate for the textile mill products industry increased 4.0 percent from December to 9.0 percent, the highest figure in over 4 years. In addition, unemployment in the apparel products sector continued to rise. In January, the seasonally adjusted rate reached 10.3 percent—up 0.5 percent from the previous month and the highest level since September 1988.

## U.S. Cotton Situation and Outlook

### Upland Cotton Situation

#### *High Yields in West Offset the Rest*

The 1989 upland cotton crop totaled an estimated 11.6 million bales, down 23 percent from 1988 but about 375,000 bales above the August projection. Upland cotton ginned prior to February 1 totaled 11.5 million bales. Final acreage, yield, and production figures will be included in the May 10 *World Agricultural Supply and Demand Estimates*.

Total area for harvest amounted to 9.1 million acres, down 22 percent from 1988 and 1 percent below the August estimate. Upland yields averaged 609 pounds per harvested acre, down 6 pounds from the previous season's 615 pounds.

Table A--Estimated 1989 and actual 1988 upland cotton acreage, yield, and production 1/

Region	Planted	Harvested	Yield	Production
	---1,000 acres---		Lbs./acre	1,000 bales
Southeast 2/:				
1988	1,047	988	515	1,061
1989	880	861	598	1,072
Delta 3/:				
1988	3,440	3,282	688	4,707
1989	2,974	2,894	668	4,027
Southwest 4/:				
1988	6,061	5,736	462	5,519
1989	4,982	4,031	367	3,081
West 5/:				
1988	1,777	1,753	1,038	3,791
1989	1,351	1,334	1,220	3,390
Total:				
1988	12,325	11,759	615	15,077
1989	10,187	9,120	609	11,570

1/ Based on January Crop Production Report. 2/ Alabama, Florida, Georgia, North Carolina, South Carolina, and Virginia. 3/ Arkansas, Louisiana, Mississippi, Missouri, and Tennessee. 4/ Kansas, Oklahoma, and Texas. 5/ Arizona, California, and New Mexico.

In the Southwest, 1989 upland production totaled an estimated 3.1 million bales, down 44 percent from the preceding year and 3 percent from the August 1 projection. Poor early-season weather reduced yields to 367 pounds per harvested acre, down almost 100 pounds from last season (table A).

Upland production in the Delta States totaled 4.0 million bales, down 14 percent from the previous season, but up 12 percent from the August 1 projection. A late crop—the result of heavy early-season rains and replanting—developed well and yielded 668 pounds per harvested acre, down 20 pounds from last season but 12 percent above the August estimate.

The Western States harvested 3.4 million bales, down 11 percent from last season but 1 percent above the August estimate. Yield per harvested acre reached 1220 pounds, the second highest on record, trailing the 1987 yield of 1264. California and Arizona recorded their second-highest yielding upland crops. The Southeastern States harvested 1.1 million bales, about unchanged from last season, as higher estimated yields offset lower acreage.

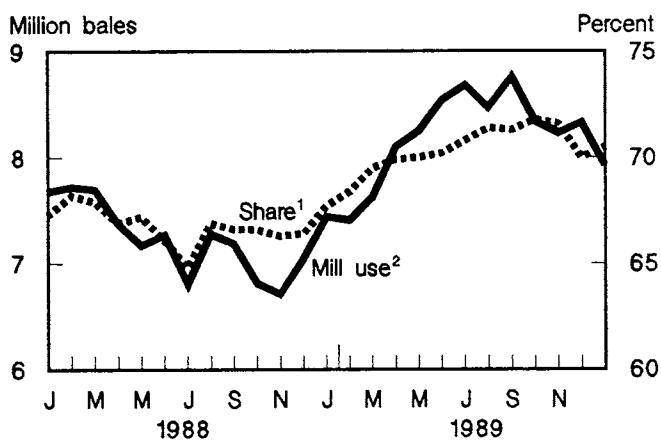
### Higher Mill Use Expected this Season

Domestic mill use of upland cotton in marketing year 1988/89 equaled 7.7 million bales. This season, mill use is expected to reach 8.1 million bales, the highest since 1971. Strong consumer demand for textile products has boosted mill use this season.

Upland consumption on a seasonally adjusted annual rate for August through January averaged 8.3 million bales. Annualized consumption dropped between September and November, rebounded in December, and fell sharply in January (fig. 1). Cotton's share of fibers used on the cotton system peaked at about 72 percent in October, and in December and January stood at about 70 percent.

Figure 1

### Cotton Mill Use and Share Remain Strong



1/ Cotton's share of total fibers used on the cotton system.  
2/ Seasonally adjusted annual rate.

The general decline of cotton versus competing fiber prices during the current season has placed cotton in one of its most competitive positions in recent history. In January the cotton/rayon and cotton/polyester price ratios were 0.63 and 0.84, respectively (fig. 2). With the exception of August 1986, when cotton prices dropped by over one half in 1 month before rebounding, the cotton/rayon price ratio in January was the lowest since at least 1972. In only 4 months since 1972 has the cotton/polyester price ratio dropped below 0.84.

During January, polyester staple prices, on a raw fiber equivalent basis, hit 93 cents per pound, while base-quality cotton delivered to Group B mills averaged 78 cents. For that month the price spreads between cotton and rayon and cotton and polyester widened to 46 and 15 cents per pound, respectively. The strong competitive position of cotton versus rayon and polyester will likely favor continued strong domestic mill use of cotton.

Figure 2  
**Fiber Prices Favor Cotton**

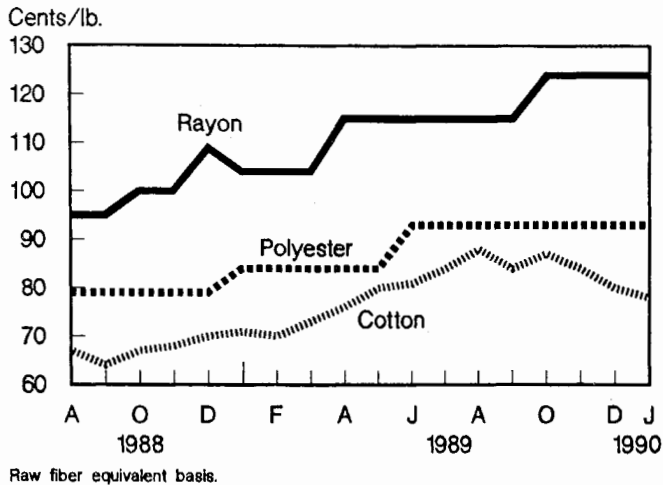
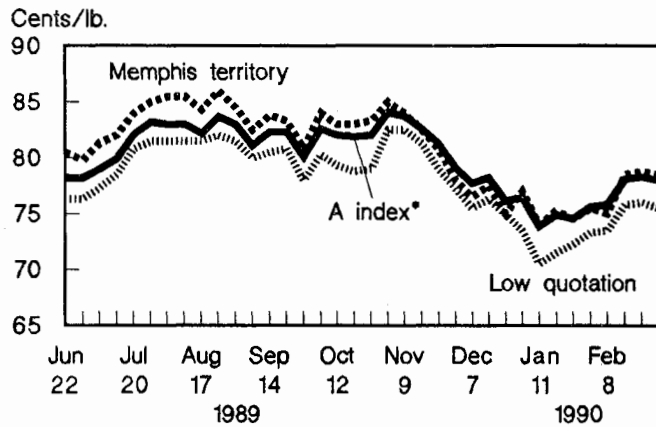
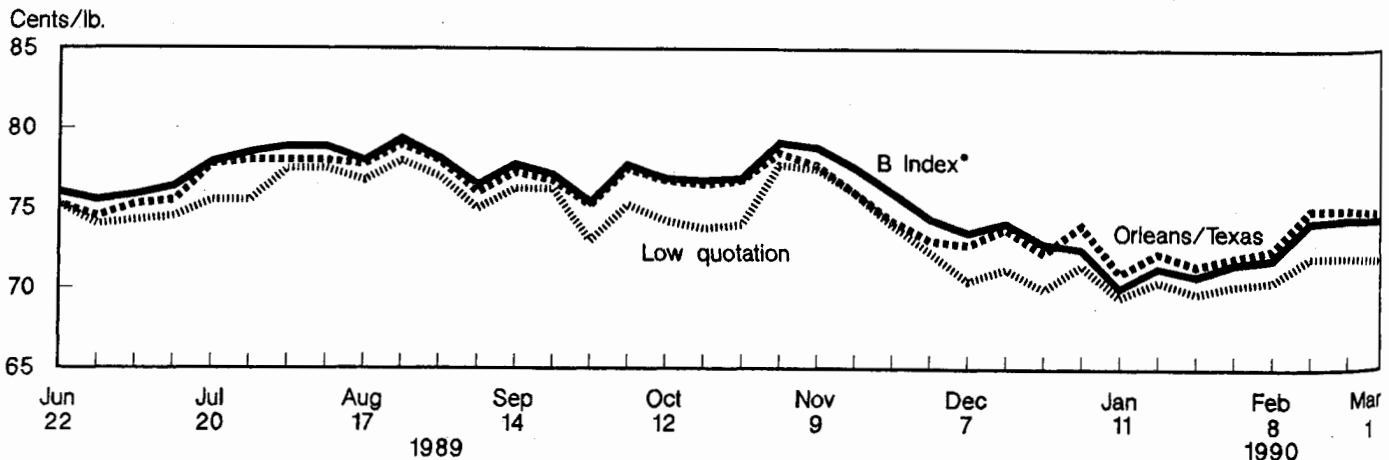


Figure 3  
**U.S. and Foreign Cotton Prices Rebound**



\* Average of the five cheapest types of M 1-3/32 inch staple length offered on the European market.

Figure 4  
**U.S. Quotes Move Above B Index**



\* Average of the three cheapest types of coarse-count cotton offered on the European market.

**Upland Exports Increase**

Exports of upland cotton in 1989/90 are forecast at 7.2 million bales, 23 percent ahead of the past season. Since early November U.S. price quotations have fallen sharply and become more competitive in world markets. Between early November and early January, price quotations for Memphis territory A-type cotton delivered on the Northern European market fell from 85 to 74 cents per pound. Since early January prices have risen slightly and stabilized (fig. 3). For October-November the Memphis territory A quote averaged 61 points above the A Index; since November the quote has averaged 26 points below the A Index.

Coarse-count cotton price quotations have followed a pattern similar to that of A-type cotton. Between early November and early January, price quotations for Orleans/Texas coarse-count cotton dropped from 78.5 to 71 cents per pound. Since early January prices have risen slightly and stabilized (fig. 4). But in contrast to the Memphis territory A quote, the Orleans/Texas quote for October-November averaged 81 points below the B Index; since November the quote has averaged 33 points above the B Index.

Export shares and shipments to major U.S. markets are expected to rise in 1989/90. Export shares will likely increase in all major markets except Indonesia (table B). China is expected to be a net importer of cotton this year, with imports reaching 1.7 million bales, of which the United States is projected to supply about 1 million. As foreign supplies tighten, the U.S. export share of global trade is projected to reach 31 percent, up from 24 percent last season.

Table B--U.S. cotton export shares to selected countries

Country	1986/87	1987/88	1988/89	1989/90 1/
	Percent			
Japan	56	47	40	50
Korea	77	76	64	67
Taiwan	56	57	16	25
Hong Kong	5	7	9	13
Italy	20	27	17	32
France	15	9	1	6
Germany	23	33	26	34
Portugal	11	7	3	6
Indonesia	43	35	28	25
Thailand	24	20	14	25
China	0	0	53	59
World	26	28	24	31

1/ Based on estimates as of February, 1990.

Table C--U.S. cotton prices, 1989/90

Month and day	Average spot market price 1/	Futures price 1/	Adjusted world price 2/
	Cents/lb.		
Aug. 3	70.17	75.88	68.65
10	70.23	76.16	68.25
17	68.81	74.99	67.59
24	70.33	77.04	68.48
31	70.12	74.42	68.57
Sept. 7	67.88	73.71	66.88
14	69.31	74.97	66.81
21	68.03	72.79	67.67
28	67.06	71.78	66.38
Oct. 5	70.01	74.62	67.12
12	69.71	74.30	67.51
19	68.34	72.78	67.31
26	69.27	74.18	66.86
Nov. 2	70.88	75.88	67.89
9	70.78	75.09	68.79
16	68.21	72.27	67.65
23	Holiday	Holiday	66.56
30	65.02	68.10	64.99
Dec. 7	62.61	67.61	63.32
14	63.07	68.15	61.88
21	63.02	68.03	61.87
28	64.65	69.61	62.89
Jan. 4	62.79	67.35	61.60
11	62.18	66.65	59.12
18	62.43	66.50	59.18
25	61.16	65.17	59.47
Feb. 1	63.22	66.91	58.92
8	63.62	67.17	60.31
15	62.26	66.22	61.24
22	66.16	70.47	62.55

1/ Spot and futures prices are for SLM 1-1/16 inch cotton, U.S. base quality. Futures price for nearby contract. 2/ Adjusted world price is the Northern European price adjusted to SLM 1-1/16 inch at average U.S. producing location. Adjusted world prices are applicable for the week following the date shown.

### Cotton Prices Weaker

Despite higher projected domestic mill use and exports, U.S. cotton prices have generally declined this season as a perhaps-larger-than-expected 1989/90 crop was realized. The adjusted world price (AWP, the U.S. equivalent of world prices) dropped nearly 10 cents per pound between early November and the end of January, and then rebounded in February. The U.S. average spot price and March futures have followed a similar pattern (table C).

With cotton prices relatively strong this season compared with last season, Commodity Credit Corporation (CCC) loan entries for the 1989 crop have fallen off sharply from last season's record. Last season the AWP was below the loan rate during August-January, whereas this season the AWP was well above the loan rate, making loan entry less attractive. Consequently, by the end of January only about 3.5 million bales had been placed under Government loan (table D), compared with 8.5 million last season.

The national average price for calendar year 1989 was 60.3 cents per pound. Upland cotton producers who participated in the 1989 acreage reduction program received a deficiency payment rate of 13.1 cents per pound (the difference between the established target price and the calendar year average price). Some producers received advance payments of 8.56 cents per pound, and were later paid the 4.54-cent-per-pound balance in cash; producers who did not request advance payments received the full amount at one time. Final deficiency payments of \$250 million for 1989 upland cotton were made during February.

### Ending Stocks To Fall

In 1988/89 ending stocks of upland cotton totaled 7.0 million bales. In 1989/90 ending stocks are projected to fall by 53 percent to about 3.3 million bales. A number of factors are contributing to the projected sharp drawdown of stocks, including: lower production, burgeoning domestic mill use, and strong export demand. In 1989/90 the acreage reduction requirement was set at the maximum 25 percent, which substantially reduced planting. Adverse weather in some areas further diminished potential production. Increasing world consumption and a downturn in world production this season

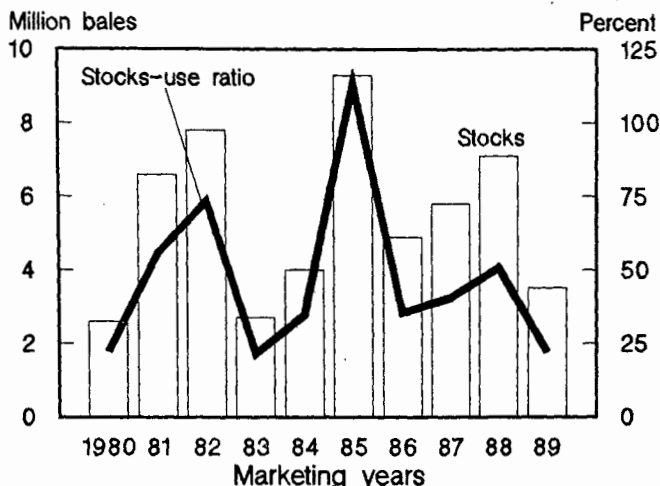
Table D--Cotton loan statistics 1/

Region	Loans made			Loans repaid			Loans outstanding			Loans forfeited		
	1987	1988	1989	1987	1988	1989	1987	1988	1989	1987	1988	1989
	1,000 running bales											
Southeast 2/	281.1	666.0	166.3	268.3	383.1	15.8	.3	42.7	150.6	17.2	1.0	--
Delta 3/	1,811.4	3,995.1	1,550.2	1,793.1	3,692.6	399.8	.7	318.9	1,150.5	17.9	2.4	--
Southern Plains 4/	2,195.9	4,631.4	828.5	2,098.8	4,069.5	167.7	8.9	848.4	660.8	92.0	5.1	--
West 5/	1,073.4	1,938.5	1,034.4	1,069.2	1,755.1	165.5	.5	194.3	868.8	4.0	.4	--
United States	5,361.8	11,230.9	3,579.4	5,229.4	9,900.3	748.8	10.4	1,404.4	2,830.7	131.1	8.9	--

-- = 0.  
1/ Producer and cooperative loans through January 31, 1990. Regional statistics do not reflect a backlog of loan payments for 1988 crop. 2/ Alabama, Florida, Georgia, North Carolina, South Carolina, and Virginia. 3/ Arkansas, Louisiana, Mississippi, Missouri, and Tennessee. 4/ Kansas, Oklahoma, and Texas. 5/ Arizona, California, and New Mexico.

Figure 5

**U.S. Cotton Stocks and Stocks-Use Ratio To Fall Sharply**



boosted export demand substantially, while strong domestic consumer demand buoyed mill use. As a result, total domestic offtake in 1989/90 will likely exceed production by about 3.8 million bales, cutting this season's ending stocks by more than one-half (fig. 5).

Current projections indicate the 1989/90 stocks-to-use ratio could fall to 0.217 from 0.517 last season, its lowest level since 1983. Any additional increase in exports or mill use this season would further cut already tight stocks. These limited stocks will likely dominate the outlook for the remainder of this season and early 1990/91.

**Stocks May Increase Marginally in 1990/91**

The early-season outlook for upland cotton in 1990/91 suggests a modest rebuilding of low stock levels. Principal factors influencing this outlook are prospects for larger production stemming from the lower acreage reduction

requirement in 1990/91, as well as prospects for reduced, albeit still historically large, exports and domestic mill use.

The Secretary of Agriculture has announced that the acreage reduction requirement will be 12.5 percent—one-half of 1989's 25 percent. Enrollment in the 1990 upland program could match 1989's 89-percent participation rate, despite low supplies and high demand. With 15-20 percent more acreage likely to be planted, output could range from 13.5 to 16 million bales. If trend yields are realized, the upland crop may approach 15 million bales, more than 3 million above the current season's production.

**Mill Use and Exports May Fall Slightly**

Demand prospects may weaken somewhat next season from the high levels of the current season. Tight stocks and expectations of higher prices next season could erode the price competitiveness of cotton versus competing fibers and induce increased foreign cotton production. Domestic mill use could fall to 7.5-8.0 million bales in 1990/91, since mills will likely face continued competition from foreign textile imports. Heightened foreign production could also cut upland exports to 6-7 million bales.

This scenario points to production slightly in excess of disappearance by 500,000 bales in 1990/91. This would mean that ending stocks would likely rise, approaching the legislative target of 4 million bales. On the other hand, if production problems arise in the United States or overseas, or offtake increases in the domestic market, 1990/91 ending stocks could fall well below this level.

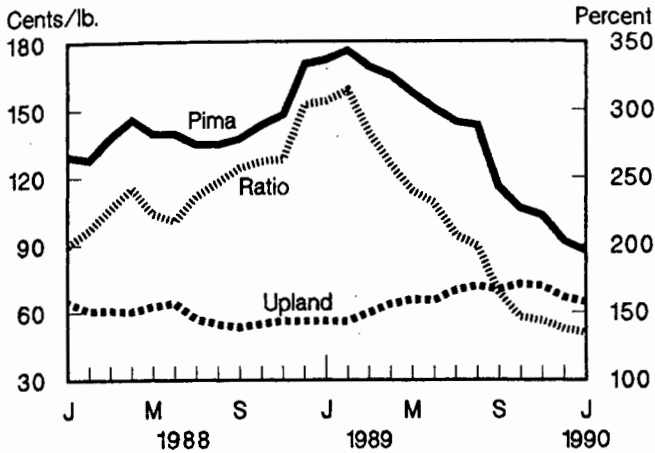
Table E--Estimated 1989 and actual 1988 ELS cotton acreage, yield, and production 1/

State	Planted ---1,000 acres---	Harvested	Yield Lbs./acre	Production 1,000 bales
Arizona:				
1988	128.0	128.0	904	241.0
1989	245.0	244.5	893	455.0
Texas:				
1988	42.0	41.5	769	66.5
1989	80.0	76.0	808	128.0
New Mexico:				
1988	17.8	17.8	634	23.5
1989	30.0	30.0	672	42.0
California:				
1988	1.8	1.8	853	3.2
1989	19.0	19.0	960	38.0
Total:				
1988	189.6	189.1	848	334.2
1989	374.0	369.5	861	663.0

1/ Based on January Crop Production Report.

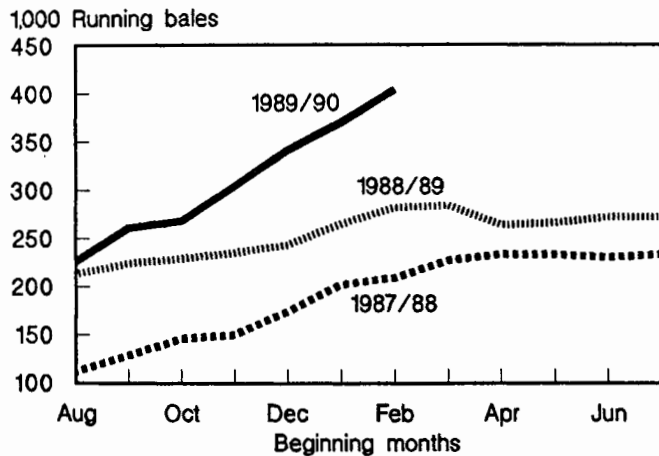


Figure 6  
**U.S. Cotton Prices**



American pima and desert sw spot.

Figure 7  
**ELS Export Commitments Continue Upward**



Shipments plus outstanding sales.

## ELS Cotton Situation

### Record Production and Use Expected this Season

Extra-long staple (ELS) cotton production in 1989/90 totaled an estimated 663,000 bales, nearly twice that of last season. This season's record production can be attributed to greater planted acreage (97 percent above 1988/89) and increased yield. Based on January 1 conditions, this season's average lint yield was estimated at 861 pounds per harvested acre—higher than last season, but below the 883-pound average of the previous five seasons (table E).

Lower ELS cotton prices will likely boost exports and domestic use in 1989/90. After peaking at \$1.76 per pound in February 1989, ELS prices have dropped substantially to 87 cents per pound in January (fig. 6). Based on current estimates, total use could reach a record 555,000 bales this season.

Exports of ELS cotton during the first half of the 1989/90 marketing year climbed to 139,920 bales, a 45-percent increase from the corresponding period a year earlier. As of mid-February, 1989/90 ELS export commitments (shipments plus outstanding sales) were 50 percent ahead of their year-earlier level (fig. 7). Based on this mid-season strength in commitments, 1989/90 exports could reach 475,000 bales, about 80 percent above last season.

After a slow start, domestic mill use of ELS cotton for the first 5 months of 1989/90 rose to 31,990 bales—nearly equaling the 32,876 bales of a year earlier. The comeback is due to recent strength in monthly mill consumption, which could push this season's mill use to 80,000 bales. Despite record total use, ELS ending stocks are projected at 164,000—more than twice last year's level.

The Secretary of Agriculture has announced the 1990 ELS cotton program provisions. In response to increased use in 1989/90, the acreage reduction provision (ARP) remains at 5 percent. The target price for 1990/91 will be 98.1 cents per pound, and the loan rate will be 81.77 cents. The ELS loan rate equals 85 percent of the simple average price received by farmers during 3 of the previous 5 years, with the years of highest and lowest prices excluded. The target price for 1990 is 120 percent of the loan rate.

### U.S. Acreage and Production To Decline Next Season

The early-season outlook for ELS cotton indicates a substantial reduction in acreage and production in 1990/91. Many prospective ELS producers may find it financially advantageous to plant upland in lieu of ELS cotton. While upland prices have remained relatively stable, ELS prices have declined since early 1989; if current price trends continue, upland cotton will be the more attractive crop (fig. 6).

ELS planted area in 1990/91 could decline by 100,000-150,000 acres from this season's 374,000 acres. Assuming trend yields and normal abandonment, production could range from 450,000 to 500,000 bales. With current ending stocks estimated at about 165,000 bales, total ELS supply in 1990/91 could fall 10-15 percent below 1989/90's 729,000 bales.

Strong domestic demand for ELS cotton will likely continue in 1990/91, with mill use perhaps gaining further. Although foreign production will likely rise, U.S. exports should remain at a historically strong level (albeit below this season's expectations). Based on these projections, total disappearance could range between 450,000 and 500,000 bales—leaving ELS ending stocks between 125,000 and 175,000 bales.

Table F--ELS cotton supply and use in foreign producing countries

Year beginning August 1	1985	1986	1987	1988	1989 proj.	1990 proj.
	1,000 bales					
<b>Beginning stocks:</b>						
Egypt, L. Stpl.	232	355	200	144	111	31
India	278	173	89	134	132	224
Israel	5	5	5	5	7	25
Peru	34	25	51	6	9	49
PRC	35	35	30	14	2	2
Sudan	207	224	170	55	34	52
USSR	81	102	117	102	102	102
Other producers	20	22	29	27	27	27
Subtotal	892	941	691	487	424	512
Egypt, ELS	130	119	132	116	87	82
Total	1,022	1,060	823	603	511	594
<b>Production:</b>						
Egypt, L. Stpl.	1,558	1,324	1,218	1,039	920	1,131
India	1,014	1,169	992	1,148	1,312	1,283
Israel	33	73	58	85	142	130
Peru	102	129	49	106	145	102
PRC	69	69	116	115	118	126
Sudan	309	336	195	187	220	235
USSR	984	1,035	1,245	1,380	974	1,303
Other producers	43	47	59	52	54	55
Subtotal	4,112	4,182	3,932	4,112	3,885	4,365
Egypt, ELS	417	502	379	370	330	379
Total	4,529	4,684	4,311	4,482	4,215	4,744
<b>Consumption:</b>						
Egypt, L. Stpl.	1,172	1,062	1,080	966	950	1,000
India	1,108	953	925	1,000	1,025	1,100
Israel	0	0	0	0	0	0
Peru	69	65	59	55	65	55
PRC	49	40	40	35	40	34
Sudan	61	41	11	5	2	5
USSR	1,030	1,008	1,175	1,274	1,053	1,337
Other producers	45	39	41	28	33	40
Subtotal	3,534	3,208	3,331	3,363	3,168	3,571
Egypt, ELS	110	233	163	200	180	185
Total	3,644	3,441	3,494	3,563	3,348	3,756
<b>Exports:</b>						
Egypt, L. Stpl.	346	350	195	106	50	80
India	11	300	0	19	195	175
Israel	33	73	58	83	125	115
Peru	51	38	35	48	40	40
PRC	20	50	100	115	115	115
Sudan	230	349	299	203	200	200
USSR	9	65	160	195	121	55
Other producers	26	31	52	56	53	30
Subtotal	726	1,256	899	825	899	810
Egypt, ELS	316	303	233	200	155	200
Total	1,042	1,559	1,132	1,025	1,054	1,010

Source: International Cotton Advisory Committee, Washington, DC.

### **Lower Foreign Production and Consumption Expected in 1989/90**

According to the International Cotton Advisory Committee (ICAC) estimates for major foreign ELS-producing countries, both production and consumption are expected to weaken in 1989/90 from a year earlier. Foreign ELS production is expected to total 4.2 million bales this season, down 6 percent from 1988/89. Consumption in foreign producing countries is also projected down 6 percent to 3.3 million bales. As a result, 1990/91 beginning stocks could reach 594,000 bales—up slightly (83,000 bales) from the current season's beginning level (table F).

While production and consumption are expanding in many individual foreign countries, two large producer-consumers are expecting declines this season. Production levels in the USSR and Egypt are projected to drop 406,000 and 159,000

bales, respectively; Soviet and Egyptian consumption levels are forecast to decline 221,000 and 31,000 bales, respectively. In 1990/91, however, production and consumption in these countries are expected to rebound to more normal levels.

In 1990/91, foreign ELS production is expected to increase 13 percent to 4.7 million bales. However, consumption among foreign producers is projected to rise 12 percent to 3.8 million bales, and thus will likely offset the rise in production.

Foreign exports of ELS cotton are estimated at 1.1 million bales in 1989/90 and 1 million bales in 1990/91. ICAC data indicate continued strong foreign demand for U.S. cotton, with U.S. exports accounting for about one-third of the global market.

Table G--World cotton supply and use, 1988/89 and 1989/90 1/

Year beginning August 1	United States	Major importers 2/	Major exporters 3/	Other	Total foreign	World
Million 480-lb. bales						
<b>1988/89:</b>						
<b>Supply--</b>						
Beginning stocks	5.8	5.6	12.0	8.8	26.4	32.2
Production	15.4	1.6	46.4	20.9	68.9	84.3
Imports	4/	17.2	2.3	6.0	25.5	25.5
<b>Use--</b>						
Mill use	7.8	17.9	38.0	21.0	76.9	84.7
Exports	6.1	1.2	12.8	5.6	19.6	25.7
Ending stocks	7.1	5.3	9.7	8.8	23.8	30.9
<b>1989/90:</b>						
<b>Supply--</b>						
Beginning stocks	7.1	5.3	9.7	8.8	23.8	30.9
Production	12.2	1.4	44.0	21.7	67.1	79.3
Imports	4/	16.9	2.5	5.9	25.3	25.3
<b>Use--</b>						
Mill use	8.2	17.6	37.9	21.7	77.2	85.4
Exports	7.7	1.1	9.9	6.4	17.4	25.1
Ending stocks	3.5	4.9	8.2	8.1	21.2	24.7

1/ Based on February 9, 1990, World Agricultural Supply and Demand Estimates report, 1989/90 projected. Totals may not add and stocks may not balance because of rounding, a small quantity of cotton destroyed, and unaccounted differences. 2/ Eastern Europe, Japan, Hong Kong, Republic of Korea, and Taiwan. 3/ Australia, China, Central America, Egypt, Mexico, Pakistan, Sudan, Turkey, and the USSR. 4/ Less than 50,000 bales.

## Foreign Cotton Situation and Outlook

### *Tight Supplies and Export Opportunities Characterize 1989/90*

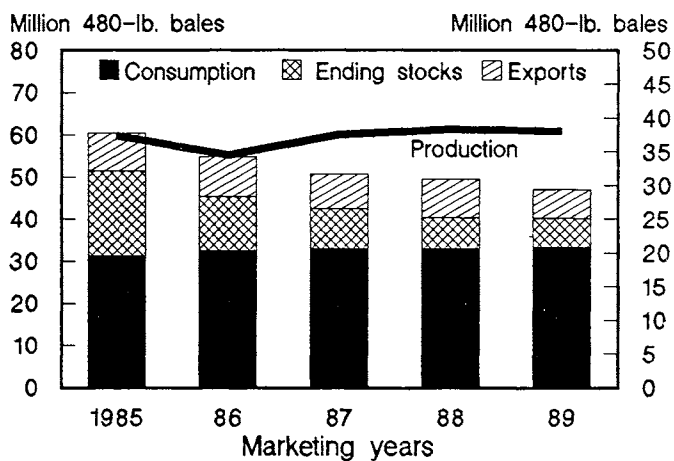
The world stocks-to-use ratio at the end of 1989/90 is still expected to be the lowest since World War II, as strong cotton consumption exceeds falling production for the fourth consecutive year. Foreign stocks are projected down 11 percent from the previous year, with producer's stocks dropping 24 percent (5.8 million bales) but importer's stocks contracting only 7 percent (500,000 bales)(table G).

Already low at the start of the season, stocks of major export competitors—China, the USSR, and Pakistan—are expected to keep falling (fig. 8). Smaller production in China and the USSR and continued rapid expansion in the textile industry in Pakistan are pulling down both stocks and exports.

With demand continuing relatively strong this year, world trade is forecast at 25 million bales, only 2 percent below last year. Foreign exports are projected to decline from 19.6 to 17.4 million bales. Exports from Pakistan and China are estimated down more than 40 percent each, a loss of about 2.3 million bales. Because of its regular commitments to Eastern Europe, exports from the USSR remain unchanged.

The United States is gaining market share because it has the largest exportable supplies. But Australia, Paraguay, Argentina, and the French-speaking countries of West Africa are expanding their exports too.

Figure 8  
**Competitors' Tight Supply Constricting Exports**



China, USSR, and Pakistan.

### **Production Falls**

Although much of the expected 6-percent drop in 1989/90 world production is occurring in the United States, foreign output is also projected down 2.5 percent. Except for Pakistan and India, output was off among major Northern Hemisphere producers. Southern Hemisphere producers expanded area in response to the tight stocks-to-use situation and attractive prices prevailing at planting time.

Among foreign producers, the largest production drop of 1989/90 occurred in China, where the crop is now forecast at 18 million bales, off 1.1 million from last year. Soviet production fell over 400,000 bales to an estimated 12.2 million; similarly output declined by 298,000 bales in Turkey, 590,000 in Mexico, and 255,000 in Egypt from 1988/89.

In contrast, India's projected outturn is currently forecast up at least 725,000 bales to 9 million, the second-highest record in its history. Pakistan's output is estimated at 6.7 million bales, up 2 percent and about matching its previous record. Additional production gains of 100,000-200,000 bales each are currently projected for Australia, Paraguay, Argentina, and Brazil, whose cotton is nearing harvest.

### **Consumption Remains Strong**

Despite relatively high prices, 1989/90 world consumption is forecast up 700,000 bales from a year earlier. Foreign use is projected up only 300,000 bales, so much of the growth can be attributed to the United States.

Consumption continues to expand much more rapidly among producers than importers, particularly in Pakistan and India. This heightened consumption is driven by textile industry expansion in Pakistan, and by population and income gains in India.

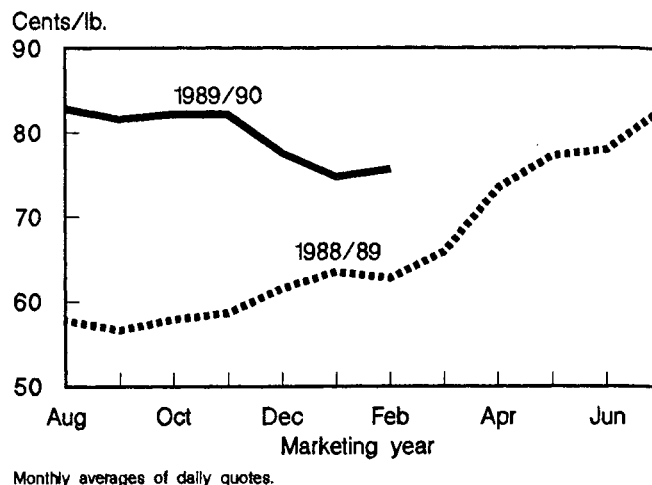
Consumption in China and the USSR is less clear. Although the USSR wants to raise consumption to satisfy domestic demand, it has problems doing so. China, on the other hand, has in recent years unleashed large demand, which it has not yet been able to restrain.

Among developed importers, cotton demand has been slow so far this year. The anticipated larger availability of cotton from the Southern Hemisphere in the spring enables mills to spread their purchases and costs more evenly throughout the year. Textile demand in the European Community (EC) has not been strong so far this season, although it recently improved slightly; overall EC cotton use is projected up marginally. The recently widening gap between cotton and man-made fiber prices in Western Europe may help boost cotton use in the latter part of the year.

Eastern Europe will likely decrease cotton use this year as it focuses on political reform, basic food needs, and economic reorganization. Regional competition and/or stronger currencies that limit their purchasing power are also hampering cotton use in Japan, Taiwan, and Hong Kong.

South Korea, however, appropriated funds to improve textile industry efficiency and is still raising cotton consumption. The recent rapid expansion of textile exports from Thailand, Indonesia, and other developing Southeast Asian cotton importers continues to boost their cotton use.

Figure 9  
**Preplanting World Prices for A Index Cotton Well Above Last Year**



### **Prices Remain Relatively High**

The tight stocks-to-use situation kept world prices, represented by the A Index, relatively high this season (fig. 9). From August through November, the A Index fluctuated between 80 and 85 cents per pound; in December and January, it dropped from 80 to 75 cents. Since the beginning of February, the A Index has hovered between 75 and 80 cents per pound, about 5-10 cents below the seasonal high of early November but still well above the 66-cent average of 1988/89.

Because the Northern Hemisphere accounts for 85-90 percent of production, a seasonal price downturn is normal at this time of year. In addition, since November, supply concerns have been allayed somewhat by a better Soviet crop than initial reports had indicated and by India's larger projected output. European spinners may also be helping lower cotton prices with their continuing reluctance to make forward purchases despite recent slightly higher yarn prices.

Slowing U.S. economic growth is causing concern about the possibility of a recession; the beginning of bankruptcy proceedings for a major U.S. cotton merchant in December heightened this concern. Nevertheless, most forecasts indicate that, although world economic growth may slow somewhat this year, it should still exceed 2 percent.

### **Production To Rise in 1990/91**

With supplies tight and price expectations still relatively high coming out of 1989/90, cotton planted area and production will likely rise in 1990/91, particularly among Northern Hemisphere producers. The response of Southern producers will depend in part on the progress of the Northern crop.

China has already announced a generous producer price increase of 25 percent to boost area by 5 percent in the hope of meeting its surging demand. Soviet plans call for modest area reduction, but yield increases. Because more irrigation could be required to enlarge area, Pakistan also likely will rely on higher yields to replenish its depleted stocks. Mexico has already begun planting on expanded area. India may also boost planted area in 1990/91, and yields could recover in Turkey and Egypt.

#### 1990/91 Consumption Prospects Less Clear

With cotton prices relatively high, consumption might be expected to decline in 1990/91 as mills draw down stocks or substitute comparatively less expensive fibers for cotton. This may be true among the more developed importers, such as the EC, Japan, and Taiwan. However, these nations account for only 14 percent of foreign consumption, probably not enough to cut total use when it is still rising elsewhere.

As the Eastern European economies reorganize, they are expected to increase their textile exports, although it remains unclear whether this expansion will begin in 1990/91. Consumption will likely keep rising in Thailand, Indonesia, and other developing Asian importers as they continue to expand textile exports.

But more important, use among major cotton producers, such as China, the USSR, Pakistan, and India, which account for 54 percent of foreign consumption, is expected to go on rising as long as their production growth supports demand growth. Other big producers, such as Brazil, Turkey, and Mexico, will also likely continue their rapid increases in use.

Given larger production and no major change in consumption, world stocks should begin to recover.

## U.S. Wool Situation and Outlook

### Sheep Numbers Up

Recent data indicate the number of all sheep and lambs on January 1, 1990 equaled almost 11.4 million head, 4.7 percent above a year earlier, and the largest since 1984. The average value per head was \$87.80, up \$5.00 from the previous year, and the second-highest average value on record. Flock size averaged 100 head.

The 11 States that produced 90 percent of the 60's and finer grade wool in 1989 had almost 7.5 million sheep, an increase of almost 4.5 percent over the average of the previous 5 years. The remaining 39 States had more than 3.6 million head, up 10.9 percent from the average of the preceding 5

Table H--U.S. mill consumption of raw wool, scoured basis

Year	Apparel wool	Carpet wool	Total
1,000 lbs.			
Jan.-Dec.:			
1984	128,982	13,088	142,070
1985	106,051	10,562	116,613
1986	126,768	9,960	136,728
1987	129,677	13,092	142,769
1988	117,069	15,633	132,702
1989 1/	125,554	15,872	141,426
Jan.-Mar.:			
1984	36,623	3,438	40,061
1985	26,846	3,000	29,846
1986	32,465	2,583	35,048
1987	33,801	2,828	36,629
1988	30,925	4,479	35,404
1989	35,402	3,673	39,075
Apr.-June:			
1984	36,252	3,940	40,192
1985	27,882	2,537	30,419
1986	33,653	2,387	36,040
1987	34,175	3,333	37,508
1988	30,087	3,819	33,906
1989	31,008	4,474	35,482
July-Sept.:			
1984	29,326	2,721	32,047
1985	25,025	2,887	27,912
1986	30,106	2,739	32,845
1987	30,041	3,748	33,789
1988	27,427	4,414	31,841
1989	29,840	4,421	34,261
Oct.-Dec.:			
1984	26,781	2,989	29,770
1985	26,298	2,138	28,436
1986	30,544	2,251	32,795
1987	31,660	3,183	34,843
1988	28,630	2,921	31,551
1989 1/	29,304	3,304	32,608

1/ Preliminary.

Source: Bureau of the Census.

years. Flock size in the 11 largest finer wool producing States averaged 236 head, ranging from 105 in Kansas to 607 in Arizona. The average flock size in the other 39 States was 46.

In the fourth quarter of 1989, mill consumption of raw wool reached 32.6 million pounds, clean, down nearly 5 percent from the third quarter but up 3.3 percent from a year earlier (table H). Worsteds mill consumption equaled almost 20 million pounds, unchanged from the third quarter but 11 percent more than a year earlier. The woolen system consumed 10 million pounds, almost 5 percent below the third quarter and 11 percent less than a year earlier. Carpet mills used 3.3 million pounds, down 25 percent from the third quarter but 13 percent above a year earlier.

Raw wool mill consumption totaled 141 million pounds, clean, in 1989, up 5.4 percent from the average of the previous 5 years. The worsteds system used 78 million pounds, 23 percent more than the average of the previous 5 years and the system's largest annual raw wool use since 1972. The continued strong demand for high quality worsteds fabric supported this high usage. The share of 60's and finer wools

Table I--Wool supply and disappearance, clean content

Item	1984	1985	1986	1987	1988	1989	1990 1/
Million lbs.							
Stocks, January 1	58.9	51.6	50.6	46.8	45.3	55.9	68
Production	51.1	47.1	45.3	45.3	47.8	48.0	51
Imports	94.2	79.5	97.0	105.1	96.7	106.9	90
Diff. unacc.	-10.0	-9.6	-8.6	-8.1	0	0	0
Total supply	194.2	168.6	184.3	189.1	189.8	210.8	209
Mill use	142.1	116.6	136.7	142.8	132.7	141.4	130
Exports	0.5	1.4	0.8	1.0	1.2	1.2	1
Total use	142.6	118.0	137.5	143.8	133.9	142.6	131
Stocks, December 31	51.6	50.6	46.8	45.3	55.9	68.2	78

1/ Estimated by USDA. All projections are rounded.

Source: USDA and Bureau of the Census.

used in the worsted system dropped to 64 percent in 1989, the lowest amount since 1984 and a reflection of their continuing high prices. The woolen system used 48 million pounds, 18 percent below the average of the previous 5 years, but still higher than the 45 million used in 1988.

The relatively high wool prices have encouraged larger use of manmade fibers. The ratio of manmade fibers in the non-carpet woolen system to raw wool use averaged 2.3 in 1989, the highest in more than 5 years. Other factors depressing the woolen system are continued large imports of wool and manmade fiber sweaters, the popularity of cotton sweaters, and the declining popularity of sportscoats. Carpet mills used almost 16 million pounds of raw wool in 1989, more than 27 percent above the average of the previous 5 years and the largest annual use since 1975. Raw wool mill consumption in 1990 is forecast at 130 million pounds, down 8 percent from last year (table I).

### Wool Imports Increase

In the fourth quarter of 1989, U.S. imports of raw wool reached 25 million pounds, clean, up 21 percent from the third quarter and 15 percent above a year earlier (table J). Dutiable wool imports in the fourth quarter were 19 million pounds, 15 percent more than the previous year. More than 98 percent came from three countries: Australia shipped 91 percent; New Zealand, 5 percent; and Uruguay, 2 percent.

Duty-free imports in the fourth quarter totaled 6.3 million pounds, up 15 percent from the third quarter and more than 13 percent above a year earlier. Almost all of this amount came from three countries: New Zealand supplied 79 percent; the United Kingdom, 14 percent; and Argentina, 6 percent.

Table J--U.S. imports of dutiable and duty-free raw wool for consumption, clean content

Year	Dutiable	Duty-free	Total 1/
1,000 lbs.			
Jan.-Dec.:			
1985	50,164	29,308	79,472
1986	66,090	30,901	96,991
1987	74,054	31,066	105,120
1988	72,323	24,418	96,741
1989	77,003	29,889	106,940
Jan.-Mar.:			
1985	15,169	7,397	22,536
1986	19,749	6,910	26,658
1987	20,434	5,805	26,239
1988	26,763	6,753	33,516
1989	20,166	8,815	28,981
Apr.-June:			
1985	9,661	7,951	17,612
1986	16,744	7,401	24,145
1987	21,829	9,126	30,954
1988	19,150	5,965	25,115
1989	22,507	9,265	31,788
July-Sept:			
1985	11,573	7,158	18,731
1986	12,922	8,235	21,157
1987	13,974	9,761	23,735
1988	9,940	6,141	16,081
1989	15,328	5,500	20,859
Oct.-Dec.:			
1985	13,790	6,803	20,593
1986	16,676	8,355	25,032
1987	17,818	6,374	24,192
1988	16,470	5,558	22,028
1989	19,002	6,309	25,312

1/ 1989 total includes 48,074 pounds of miscellaneous raw wool.

Source: Bureau of the Census.

Raw wool imports reached almost 107 million pounds, clean, in 1989, 13 percent more than the average of the previous 5 years, and the largest quantity since 1971. This quantity represents the wool that might have been produced from 26 million sheep. Dutiable wool imports were more than 77 million pounds, 18 percent above the average for the previous 5 years. Australia supplied 87 percent of these imports; New Zealand, 6 percent; and Uruguay, 2 percent. The quantity of grades finer than 58 was the largest in 20 years.

Table K--Raw wool imports by region 1/

Region	Duty-free				Dutiable				Total			
	1986	1987	1988	1989	1986	1987	1988	1989	1986	1987	1988	1989
	Percent											
New England	34	30	30	23	25	16	13	15	28	20	17	18
Middle Atlantic	33	38	34	39	2	2	1	1	12	12	10	11
South Atlantic and other 2/	33	32	36	38	73	82	86	84	60	67	73	71
Total	100	100	100	100	100	100	100	100	100	100	100	100

1/ Imports entered through customs districts in the respective regions. 2/ Includes customs districts along the Gulf, Mexican border, Pacific Coast, and Canadian border.

Source: Bureau of the Census.

Table L--Average U.S. farm prices per pound for shorn wool, greasy basis 1/

Month	1984	1985	1986	1987	1988	1989 2/	1990 2/
	Cents/lb.						
January	58.4	59.2	52.2	58.7	84.8	107.0	65.8
February	67.1	58.7	54.4	69.1	109.0	123.0	
March	79.3	61.0	61.9	78.7	140.0	130.0	
April	87.9	67.9	70.0	99.7	153.0	135.0	
May	86.5	68.5	73.7	106.0	166.0	139.0	
June	86.6	69.8	75.5	108.0	161.0	139.0	
July	82.3	64.0	67.5	87.0	134.0	120.0	
August	78.5	60.2	65.9	83.1	122.0	105.0	
September	74.3	59.5	57.6	93.6	113.0	97.7	
October	80.2	66.6	69.7	95.5	123.0	100.0	
November	67.5	58.5	64.0	84.1	119.0	100.0	
December	69.4	56.8	59.4	81.4	116.0	80.5	
Average	79.5	63.3	66.8	91.7	138.0		

1/ Weighted market average price. 2/ Preliminary and unweighted prices.

Duty-free raw wool imports in 1989 were almost 30 million pounds, 2 percent more than the average of the previous 5 years. About 98 percent came from three countries: New Zealand supplied 83 percent; the United Kingdom, 11 percent; and Argentina, 4 percent.

The share of raw wool imports entering the United States through the New England and Middle Atlantic customs districts declined from 45 percent in 1985 to 27 percent in 1988, and then rose to 29 percent in 1989. Conversely, the amount entering through the South Atlantic and other customs districts rose from 55 percent in 1985 to 71 percent in 1989 (table K).

The share of duty-free raw wool entering through the New England and Middle Atlantic customs districts exceeded the share of the dutiable, even though the overall share of duty-free wool is declining. In 1989 about 62 percent of the duty-free wool came through the New England and Middle Atlantic regions, compared with 16 percent of the dutiable. In contrast, 84 percent of the dutiable entered through the South Atlantic and other customs districts, compared with 38 percent of the duty-free.

U.S. prices of clean mill-delivered territory raw wool by mid-first quarter 1990 declined 12-17 percent from mid-fourth quarter 1989. The 64's were \$2.88 per pound; the 62's, \$2.38; and the 60's, \$2.03. For the medium grades, the 58's were \$1.75 per pound, and 56's were \$1.65. The simple average price received by farmers in January for raw wool, greasy basis, was \$0.658 per pound, compared with \$0.805 in December and \$1.07 a year earlier (table L).

In mid-February, domestic prices for Australian wool, clean basis, declined about 5 percent from the average of the fourth quarter. The 80's at \$6.73 per pound were down 5.3 percent. The 70's at \$5.38 per pound declined 4.8 percent. Both the 64's at \$3.88 and the 62's at \$3.53 per pound were down almost 5 percent. The medium grades also declined. The 58's at \$2.81 were down 5 percent and the 56's at \$2.47 declined 5.6 percent.

USDA announced that the support price for 1990 marketings will be \$1.82 per pound of shorn wool; the support price in 1989 was \$1.77. Pulled wool will be supported at a level comparable to that for shorn wool to maintain normal marketing practices for pulled wool.

## Foreign Wool Situation and Outlook

### Large Supply, Weak Demand

The latest data indicate world wool availability to be about 4.5 billion pounds, clean, 6.3 percent above the average for the previous 5 years. This increase has occurred primarily in fine apparel (merino) wool which grew almost 16 percent, in contrast to a 1-percent increase for crossbred (medium grades) and carpet types.

The overseas wool market into the third quarter of the 1989/90 season remains unchanged: large supply and weak demand. The major wool-buying countries have either insufficient foreign currency or excessive yarn or fabric inventories. In addition, textile mills tend to purchase only the wool they need for immediate use because of high prices.

Australian wool production for the 1989/90 season is forecast to reach 2.3 billion pounds, greasy (1.5 billion, clean), 9 percent more than a year earlier. This record forecast is based on an inventory of 166 million sheep in March 1989 which is expected to expand to about 170 million by March 1990.

The Australian Wool Corporation (AWC) continued to purchase large quantities of wool to maintain its market indicator (a weighted average price in Australian cents per kg, clean, of 13 wool categories) above the A870-cent floor. The percentage of the offering purchased by the AWC declined to about 49 percent in January from the 56- to 60-percent-range of October-December. The market indicator for January rose to A882 cents from the A879-cent average of the second quarter. By mid-February the market indicator again increased slightly to A885 cents; the AWC purchased

only 34 percent of the offering that month, its lowest of the season. The AWC stockpile by mid-February had risen to a record 2.1 million bales, more than 11 times the level at the end of last season (fig. 10). The previous record of 1.9 million bales was set in November 1975.

New Zealand wool production in the current season is forecast at 72 million pounds, greasy (505 million, clean), down almost 11 percent from last year. Sheep inventory at the end of June stood at 61.5 million head, down nearly 5 percent from a year earlier. Sheep numbers may increase because of improved returns from lamb and a break in the drought.

The New Zealand market indicator reacted to sluggish world demand by declining almost constantly from NZ629 cents in early October to NZ583 cents in January. During this period the New Zealand Wool Board's purchases ranged from 30 to 40 percent of the offering. By mid-February its purchases reached 50 percent, raising the market indicator to NZ593 cents; the stockpile totaled 342,000 bales, its highest level in 8 years and 3.4 times larger than at the end of last season.

South African wool production is expected to be about 214 million pounds, greasy (126 million, clean), virtually unchanged from last year due to poor climatic and pasture conditions. The South African wool market reacted similarly to the other wool markets. During the first half of the season, less than 54 percent of the offering was sold. The market indicator declined almost continuously to SA1765 cents in December, 8 percent below the September seasonal high of SA1909 cents. By mid-February, the market indicator weakened further to SA1717 cents, its lowest level of the season. At the same time, the stockpile rose to 190,000 bales, almost 5 times the end of last season.



Figure 10

# Australian Wool Corporation, Minimum Floor Reserve, and Market Indicator

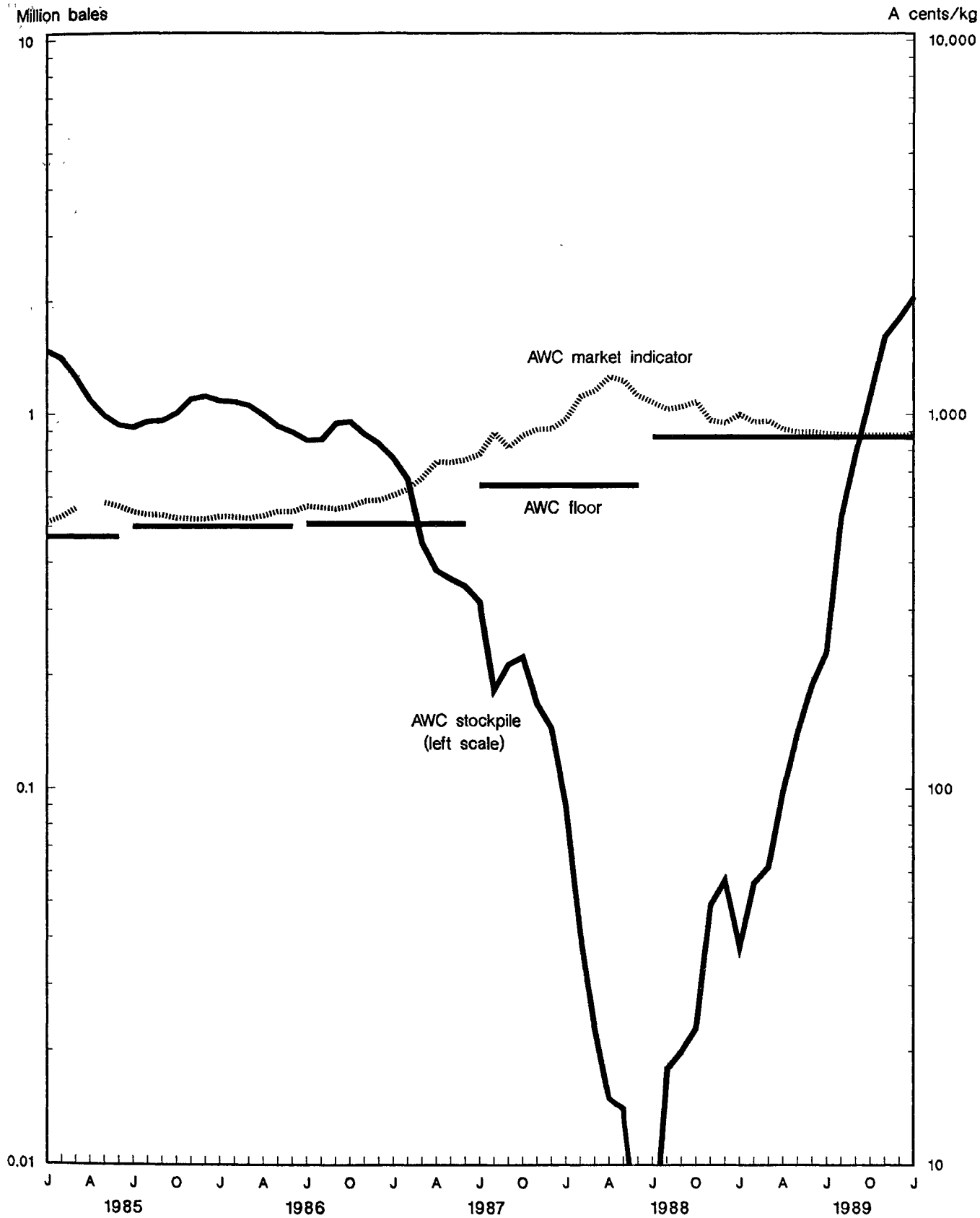


Table M--U.S. mohair supply and disappearance, clean content

Item	1984	1985	1986	1987	1988	1989	1990 1/
Million lbs.							
Stocks, January 1	1,250	1,020	1,304	1,541	1,778	1,404	2,314
Production	9,250	10,990	13,510	13,990	13,170	13,700	13,500
Imports	5	20	13	7	59	10	10
Diff. unacc.	-1,035	-1,035	1,436	352	975	-1,300	0
Total supply	9,470	10,995	16,263	15,890	15,982	13,814	15,824
Mill use	700	700	100	100	200	800	800
Exports	7,750	8,991	14,622	14,012	14,378	10,700	12,500
Total use	8,450	9,691	14,722	14,112	14,578	11,500	13,300
Stocks, December 31	1,020	1,304	1,541	1,778	1,404	2,314	2,524

1/ Estimated by USDA. All projections are rounded.

Source: USDA and Bureau of the Census.

## Mohair

The latest data indicate the inventory of Angora goats stood at 1.9 million head, with a value of \$117.5 million, on January 1, 1990. The average value per head was \$62. The inventory a year earlier totaled 1.92 million head, with a total value of \$108.4 million and an average value per head of \$56.50.

The January 1, 1990 inventory was distributed as follows: Texas had 1,620,000 head; New Mexico, 105,000; Arizona, 98,000; Oklahoma, 65,000; and Michigan, 12,000.

USDA set the 1990 support price for mohair at \$4.532 per pound. Mohair is being supported at 85 percent of the percentage of parity at which shorn wool is supported. The support price in 1989 was \$4.588.

U.S. mohair exports in 1989 reached 10.7 million pounds, clean, 74 percent of a year earlier. These shipments were valued at \$21.2 million, with an average price of \$1.99 per pound, 79 percent of last year's price. About 90 percent of these exports went to five countries: the United Kingdom purchased 65 percent; India, 12 percent; Spain, 5 percent; France, 5 percent; and Italy, 3 percent. Mohair exports in 1990 are expected to total 12.5 million pounds, clean (table M).

Mohair top exports are included in the Harmonized Schedule B category "fine animal hair, carded or combed."<sup>1/</sup> During 1989 about 929,000 pounds in this category were exported at a value of \$3.7 million. The price averaged \$4.02 per pound. Almost 80 percent of these exports went to five countries: Mexico took 24 percent; India, 17 percent; Taiwan, 16 percent; Japan, 12 percent; and the United Kingdom, 9 percent. Domestic prices of mohair have risen from

last fall: kid is \$6.00 per pound, up from \$5.50; young goat is \$2.00, compared with \$1.65; and adult is \$1.20, up from \$1.10.

South African mohair stocks are currently estimated at about 13 million pounds, greasy, about equal to an average 6 months' of South African clip. The South African clip for March-June 1990 is expected to have declined about 10 percent from August 1989 through January 1990, because low mohair prices over the past 2 years have prompted producers to reduce goat herds. South African mohair showed an average clearance of almost 54 percent for the September-December 1989 sales period, compared with about 51 percent in March-July 1989, 57 percent in September 1988-February 1989, and 62 percent in March-July 1988. Also, Turkey and Argentina have little mohair production because of unfavorable economic returns that reflect depressed world demand.

## Manmade Fibers

The manmade fiber industry continued to experience the declining level of activity in the fourth quarter of 1989 that began in the third. At 2.1 billion pounds, fourth-quarter production fell almost 5 percent from the third quarter. Total shipments declined more than 2 percent to 2.1 billion pounds, and mill consumption dropped almost 3 percent. While yearend stocks were 1.3 percent below those at the end of the third quarter, they were more than 18 percent above a year earlier. Fourth-quarter mill consumption of manmade fibers slipped almost 3 percent below the third quarter to 2.19 billion pounds.

While manmade fiber activity was lower in 1989 than the previous year, it did exceed that of 1986 and 1987. Total shipments were almost 9 billion pounds, down slightly more than 2 percent from 1988 but up 0.4 percent from 1987 and 6.6 percent from 1986. Mill consumption equaled 9.16 billion pounds, 0.7 percent below 1988 but 1 percent above 1987 and 5.8 percent more than 1986. Production was

<sup>1/</sup>Harmonized Schedule B, 5105.30.000, fine animal hair, carded or combed, includes hair of alpaca, llama, vicuna, camel, yak, Angora, Tibetan, Kashmir, or similar goats (but not common goats), rabbit (including Angora rabbit), hare, beaver, nutria, or muskrat.

almost 9.12 billion pounds, down 0.3 percent from 1988 but up 2 percent from 1987 and 7.6 percent from 1986.

Producer plants operated at an average capacity of 82 percent in fourth-quarter 1989, compared with an average 89 percent during the first 9 months. This lower level reflected lower fourth-quarter output of polyester filament, acrylic staple, and olefin staple and filament. Operation for 1989 averaged 87 percent of capacity, down 3 percent from the previous year. To obtain a reasonable investment return, producers must operate at 85-90 percent of capacity.

The latest data indicate that total U.S. nonglass manmade fiber producing capacity is planned to expand at an average annual rate of 3.8 percent through 1991 (appendix table 14). The largest expansion rates will occur in the production of olefin filament (11.2 percent) and staple (4.6 percent). The only fiber expected to be produced at a lower capacity is cellulosic staple, which will decline an average 0.6 percent a year.

The carpet industry continues to consume more fiber than any other market, as shown by third-quarter domestic fiber shipments (appendix table 15). About 737 million pounds were used in the third quarter, up almost 2 percent from the second. At 474 million pounds, nylon fibers supplied more than 64 percent of the carpet market. Olefin fibers, at 214 million pounds, made up 29 percent. Preliminary data for the fourth quarter indicate 451 million pounds of nylon went into carpets. This figure was 1.7 percent below the average of the first three quarters, and may reflect the sluggish state of the construction industry in 1989.

Woven textile products remain the second-largest market for manmade fibers, taking 26 percent of the total. This market used about 544 million pounds in the third quarter, down 12 percent from the second quarter, due mostly to lower filament and staple polyester demand. Second-quarter ship-

ments were larger than normal, reflecting some buying ahead of a price increase and reduced production of polyester/cotton bottom weight apparel fabric. Two fibers make up almost three-fourths of the woven market: polyester, with 56 percent; and olefin, with 18 percent.

The knit market took about 356 million pounds of manmade fibers in the third quarter, down 4 percent from the previous quarter. Knit textile products constitute about 17 percent of manmade fiber domestic shipments. Three fibers dominate this market: polyester fibers, at 208 million pounds, made up 58 percent of knit products; nylon, at 65 million pounds, constituted 18 percent; acrylic fibers, at 78 million pounds, made up 22 percent.

Prices of the major raw materials used to make noncellulosic fibers were mixed in November 1989-February 1990 due to slow demand and an unusually cold December (table N). Propylene, a precursor for acrylonitrile and olefin fibers, rose to 15.5 cents per pound. December downtime at refineries caused a price rise that was moderated by slowing acrylic fiber production. The price for ethylene glycol (a raw material for polyester fibers) has held steady at 40-56 cents per pound for several months.

Benzene, a basic ingredient in many chemicals, has experienced a rather volatile market, ranging from \$1.40-1.75 per gallon in November to \$1.20-1.32 in February. Supplies are sometimes tightened by interrupted production; at other times, the demand is dampened by sluggish end use of its derivatives. Para-xylene's price declined from 28.5 to 25.5 cents per pound because of slow polyester fiber production and a desire to keep the polyester polymer price low enough to render its use in containers more competitive with aluminum and glass. The price of acrylonitrile (the raw material for acrylic fibers) held constant at 42 cents for several months, then fell to 35 cents due to weak demand.

Table N--Reported spot prices of raw materials for manmade fibers, 1989/90

Product	Jan.	Feb.	March	April	May	June	July
				1989			
Para-xylene 1/	28	28	28.5	29.5	29.5	29.5	29.5
Propylene 1/	20	20	20	21	20	21	20.5
Ethylene glycol 1/	44-66	44-66	44-66	44-66	44-66	44-66	44-66
Cyclohexane 2/	1.76	1.88	1.63	1.63	1.59-1.63	1.26	1.14
Acrylonitrile 1/	39	36	40	40	40	40	40
Caprolactam 1/	85	85-91	89-91	89-90	89-90	89-91	89-91
Benzene 2/	1.85-1.92	1.50-1.75	1.50	1.50-1.53	1.30-1.50	0.97-1.22	1.00
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
						1990	
Para-xylene 1/	29.5	29.5	28.5	28.5	25.5	25.5	25.5
Propylene 1/	18	18	16.5	15.5	13.5-14.0	15.5	15.5
Ethylene glycol 1/	44-66	40-56	40-56	40-56	40-56	40-56	40-56
Cyclohexane 2/	1.02-1.07	1.09-1.14	1.29-1.34	1.30-1.35	1.50-1.55	1.42-1.47	1.46-1.51
Acrylonitrile 1/	42	42	42	42	42	42	35
Caprolactam 1/	89-91	89-91	89-91	89-91	89-91	89-91	89-91
Benzene 2/	0.90-1.00	1.05-1.24	1.22-1.53	1.40-1.75	1.33-1.55	1.40-1.50	1.20-1.32

1/ Cents per pound. 2/ Dollars per gallon.

Source: Chemical Marketing Reporter.

# The Japanese Textile Industry in Decline

by

Fawzi A. Taha\*

**Abstract:** The Japanese textile industry grew rapidly from the end of World War II until the early 1970's, but currently suffers from high production costs, a strong currency, and keen competition. The appreciation of the yen after 1985 caused a decline in the industry and a sharp deterioration in the textile balance of trade. Present Japanese textile strategies are basically contractionary, implying a decrease in Japanese import demand for raw cotton that will adversely affect U.S. cotton exports.

**Keywords:** Japanese textile industry, textile trade competitiveness, cotton, madeup textile products.

This paper examines the Japanese textile industry and measures the importance of that sector in Japan's world trade. It then discusses the present and future strategies of the Japanese textile industry. It analyzes major changes in the exports and imports of textiles during the last 10 years, and determines the strength of Japan's competitiveness in the world market.

The development of the modern Japanese textile industry can be divided into three main phases: the period from the end of World War II to the late 1960's; the early to late 1970's; and the last 10 years. A full understanding of the present trade situation requires a brief description of the major events that influenced the textile industry during the first two periods.

## *The Japanese Textile Industry Before the 1970's*

The rise of its textile industry after World War II spurred Japan's overall industrial growth. Postwar rehabilitation plans under the Occupation heavily emphasized the labor-intensive textile sector, which offered suitable employment to people thrown out of work by the collapse of Japan's war economy.

In 1950, Japan was free to control its textile industry, after having been restricted to a maximum of 4 million looms (2). This decision contributed drastically to a rapid growth and expansion of the textile and apparel sector. Japanese mills tended to use the most advanced methods of production at every stage in the textile process, enabling the industry to compete with the leading textile powers of the decade, including the United States and Great Britain.

The growth of Japan's trade with the United States was particularly strong in the 1950's. For example, Japan's share of U.S. imports of cotton textiles surged from 17.4 percent in 1951 to 54.5 percent in 1956, engendering deep concern in the U.S. domestic cotton textile industry. Accordingly, in 1956 Japan took its first voluntary restrictive action limiting exports of cotton textile products to the United States initially for 1 year, and later for 5 years. As a result, Japan's market share of U.S. cotton textile imports declined to 29 percent in 1960. Because Japan imported most of its raw cotton from the United States for textile manufacturing, U.S. raw cotton exports to Japan dropped sharply from \$1.1 billion in 1951 to about \$537 million by 1962 (2).

In October 1961, before the voluntary agreement expired, the General Agreement on Tariffs and Trade (GATT) completed a long-term Multilateral Arrangement to restrict Japan's and developing countries' exports of manufactured goods, including textiles. Under the "market disruption" principle, the GATT permits limitation of exports in quantities and prices considered damaging to the importing countries. This agreement was extended several times and is the basis of the current Multi-Fiber Arrangement (MFA).

The Japanese firms were determined to overcome the MFA restrictions on their domestic textile production and exports by improving their competitive position with foreign suppliers worldwide. Their strategy was twofold: a rapid modernization of production and marketing methods, and a rapid expansion in manmade textiles.

Japanese firms pursued capital intensification to improve the vitality of the textile industry and control production costs. The industry encouraged a shift from labor- to capital-intensive production methods by stimulating the development of new technologies. Spinning is the most expensive single process in converting fiber into fabric. Because of the high cost of yarn production, considerable research was directed

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toward increasing the economic efficiency of this operation. In the late 1960's, the Japanese introduced the "jet spinning" method, which significantly reduced labor requirements and greatly increased processing speeds, yarn quality, and end-product performance. Also, the new "knitting process" challenged the traditionally low-cost, mass-production weaving process by enhancing the fabric industry's adaptability to fashion trends.

In addition, the textile industry improved its marketing processes by integrating firms horizontally and vertically. Horizontal integration gave companies advantages in promotion, diversification, and finance which allowed them greater flexibility to meet market demand for final products. On the other hand, vertical integration of textile production and marketing functions through merger and acquisition has somewhat increased the concentration of the industry.

The industry also expanded manmade fiber textile production to compensate for its falling cotton textile exports. Although Japan had made important discoveries in non-cellulosic synthetic fibers before the war, it did not begin producing these fibers commercially until 1950. The industry grew so rapidly that it surpassed those of West Germany and Great Britain to rank second only to the United States. Japan's exports of noncellulosic synthetic fibers, yarn, and fabrics soared compared with its rayon (cellulosic) or cotton exports.

In the mid-1960's, U.S. import demand for such fiber items as polyester (both staple and filament), rayon, and worsted wool suitings was strong. U.S. firms couldn't adapt to the rapidly changing textile markets, and were pushed to comparative disadvantage with Japan (3). Imports of noncotton textiles from Japan rose rapidly, prompting the U.S. Government to propose import restrictions on manmade fiber textiles coming from Japan. In 1971, Japan imposed another voluntary export restriction, this time on its manmade fiber textiles.

#### ***The Japanese Textile Industry in the 1970's***

In the 1970's, the Japanese textile mill industry, facing strong competition from other countries, suffered a setback in the global market. The disruption was precipitated mainly by inflationary hikes in wages and prices for raw materials and energy following the 1973 oil crisis. The yen's appreciation from 360 yen to the U.S. dollar in 1970 to 271.7 yen in 1973 made Japanese textile products more expensive in the world market. In addition, Japan's voluntary restriction of manmade fiber exports to the United States and the import restrictions imposed by some European countries depressed the exports market still further.

These obstacles were partially overcome by increased productivity. Government assistance programs encouraged the industry to invest heavily in technological advances to auto-

mate production, and emphasized research and development on the production and promotion of high-value products. More specifically, the Government initiated the Textile Industry Restructuring Act in June 1974. The main purpose of the Act was to strengthen the sector's competitiveness in the world market by helping it replace obsolete machinery with new, up-to-date equipment. This program raised the industry's machine output by 20 percent and labor productivity by 67 percent from 1975 to 1980 (5).

Japan also began investing vigorously overseas to enlarge profits at home. Investment was especially heavy in synthetic fiber production in neighboring Hong Kong, Taiwan, and South Korea. However, as the industry advanced in these countries, they were able to compete with Japan because of their comparative advantages of cheap labor and low production costs. Early on they made inroads into Japan's share of the lucrative U.S. and European markets, and later in the Japanese market as well.

#### ***The Industry in the 1980's***

The 1980's have been very critical for the Japanese textile industry, and have seen major changes in its viability and competitiveness in the world market. The oil crisis of 1979, combined with wide fluctuation in the value of yen versus the U.S. dollar in 1978 and 1979, exerted severe cost-push pressure on many components of the Japanese textile industry and reduced its competitiveness. After the crisis, the industry faced a series of production price hikes. The wholesale price index for December 1979 was 17 percent above the same month of 1978. Labor costs increased by 7.2 percent in 1979, and the interest rate went from 3.5 percent in March 1978 to 9.0 percent in March 1980. The sharp jump in the petroleum price raised the cost of electric power for the spinners by 54.3 percent effective April 1980 and pushed up the production cost of petroleum-based fibers (4). In addition, cotton prices rose 15-20 cents per pound in 1980 compared with a year earlier due to tight supplies and worldwide inflation (5).

Mills offset higher production costs by conserving energy, adopting labor-saving methods, improving and modernizing equipment, and adopting vertical consolidation. To help restore the depressed industry, the Government also initiated the "Basic Program of Stabilization" in April 1979, recommending that excess spinning equipment be scrapped to lower existing capacity. In June 1979 the Government modified and extended the 1974 Textile Industry Restructuring Act for 5 years to allow the industry to complete structuring and to direct itself to a more price-responsive world market. The extension enabled the industry to strengthen its international competitive position by promoting the production of higher quality textiles.

These strategies resemble those used to adjust the industry after the first oil shock; however, world economic conditions

Table A-1--Japan's textile trade, 1979-88

Year	Billion yen							Percent						
	Total	Fiber	Yarn	Fabric	Madeup goods	Knit fabric	Other	Fiber	Yarn	Fabric	Madeup goods	Knit fabric	Other	Total
<b>Imports:</b>														
1979	1,308	536	129	213	417	13	0	41.0	9.8	16.3	31.9	1.0	0	100.0
1980	1,205	542	101	175	378	10	0	44.9	8.4	14.5	31.4	0.8	0	100.0
1981	1,210	530	100	175	399	7	0	43.8	8.2	14.4	32.9	0.6	0	100.0
1982	1,346	579	134	172	452	9	0	43.0	9.9	12.8	33.6	0.6	0	100.0
1983	1,132	493	114	154	367	5	0	43.5	10.0	13.6	32.4	0.4	0	100.0
1984	1,417	589	183	181	458	6	0	41.6	12.9	12.8	32.3	0.4	0	100.0
1985	1,363	513	170	179	495	5	0	37.7	12.5	13.2	36.3	0.4	0	100.0
1986	1,078	314	110	151	498	6	0	29.1	10.2	14.0	46.2	0.6	0	100.0
1987	1,374	390	141	157	677	9	0	28.4	10.3	11.4	49.3	0.7	0	100.0
1988	1,661	420	159	193	879	10	0	25.3	9.6	11.6	52.9	0.6	0	100.0
<b>Exports:</b>														
1979	1,064	120	150	548	175	45	25	11.3	14.1	51.5	16.5	4.3	2.4	100.0
1980	1,399	150	232	675	247	63	32	10.7	16.6	48.3	17.6	4.5	2.3	100.0
1981	1,540	163	251	779	247	66	34	10.6	16.3	50.6	16.0	4.3	2.2	100.0
1982	1,474	149	230	758	254	52	32	10.1	15.6	51.4	17.2	3.5	2.2	100.0
1983	1,522	146	240	793	262	51	30	9.6	15.7	52.1	17.2	3.3	2.0	100.0
1984	1,546	148	248	781	290	49	31	9.6	16.0	50.5	18.7	3.2	2.0	100.0
1985	1,424	142	213	732	263	53	22	10.0	15.0	51.4	18.4	3.7	1.6	100.0
1986	1,112	111	174	583	189	39	15	10.0	15.7	52.4	17.0	3.5	1.4	100.0
1987	945	97	142	505	153	34	14	10.2	15.0	53.5	16.2	3.6	1.5	100.0
1988	844	102	125	437	135	28	15	12.1	14.8	51.8	16.0	3.4	1.8	100.0

Source: Textile Exports of Japan.

after the second oil crisis were different. Japan and many industrial countries were plagued by world recession. The economic recovery was slow, so domestic and world demand for textiles was slack. Strong competition from emerging low-cost Asian textile producing countries also cut into the smaller market. Japan's measures can best be described as contractionary because they targeted three major objectives: reducing the demand-supply imbalance in the domestic market, limiting production to higher-value products, and diversifying into nontextile businesses (12).

By 1982, Japan's textile exports declined and imports increased in value from the previous year (table A-1). In 1984 the industry failed to meet expanding domestic demand spurred by strong economic recovery and consumer preference for natural fiber clothing. Domestic demand for fashionable items rose, but production remained virtually unchanged from the previous year. Imports of total textiles consequently soared 25 percent in value; yarn, 60 percent; fabrics, 17.5 percent; and madeup (finished) goods, 24.8 percent (table A-1).

Japan's industry could no longer compete with the low-cost exporters, including South Korea, China, Taiwan, Hong Kong, and Pakistan. The industry called on the Government to exercise import restrictions based on the market disruption principle of the MFA. Japan's average textile tariff is much lower than U.S. or European Community (EC) tariffs. These low tariffs and market proximity made it advantageous for many countries to export textiles to Japan. For example, 92 percent of cotton yarn imports were supplied by Pakistan, South Korea, and China; 83 percent of the cotton fabric was supplied by China; and 73.5 percent of madeup goods came from China, South Korea, Taiwan, and Hong Kong. To avoid import restrictions, the South Korean and Pakistani Governments limited the annual growth rate of their cotton

textile exports to Japan in 1985; the Chinese Government adopted other minor restraints (6).

The global competitiveness of Japanese textile mills has been deteriorating since the import surges of 1984. Profit margins have been declining since the end of 1985 (7). The sales and net income of the eight largest producers of cotton yarn dropped 9 and about 25 percent, respectively, in FY 1985 and 1986 (11). Finally, the strong appreciation of the yen vis-a-vis the U.S. dollar since fall 1985 compounded the damage, and made it attractive for many Asian producers to increase textile shipments to Japan.

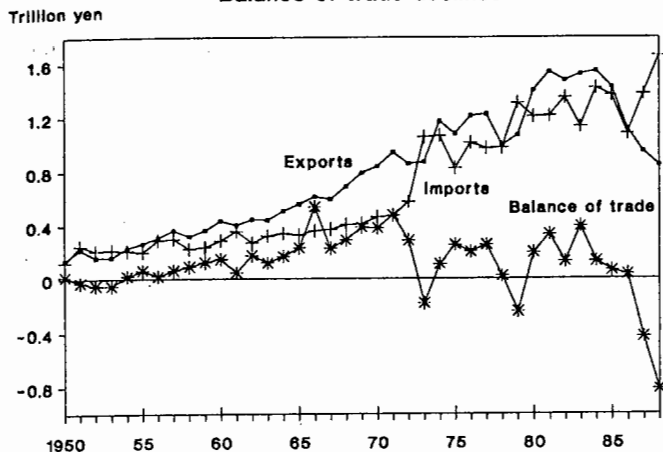
Exports of Japanese textile products also became more expensive to sell abroad, except for high-quality and very specialized items. Rising imports and falling exports reduced the Japanese export surplus from 61 billion yen (US \$258 million) in 1985 to 33 billion yen (US \$198 million) in 1986. As the import surge continued, Japan reached an unprecedented textile trade deficit of 429 billion yen (US \$2.938 billion) in 1987, which increased to 818 billion yen (US \$6.380 billion) in 1988 (fig. A-1). The increasing import penetration and textile trade deficit clearly indicate the weakness of Japan's textile industry, and probably induced an irreversible decline of the industry.

#### **Analysis of Japan's Textile Trade Since 1980**

Textiles' relative share of Japanese trade has been declining over the years, for rapid growth in industrial capacity has accelerated total commodity exports more than textile exports. In 1950 exports of textile goods accounted for 47 percent of Japan's total export value. This figure dropped to 12 percent in 1970, 4.8 percent in 1980, and 2.5 percent in 1988.

Figure A-1

**Japan's Textile Trade**  
Balance of trade declines



In 1980, Japan's textile trade totaled 2.6 trillion yen (US \$11.5 billion), with exports exceeding imports by 16 percent. In 1988, trade stood at 2.5 trillion yen (US \$19.5 billion), but imports outpaced exports by nearly two to one (table A-1 and fig. A-1).

Textile trade can be divided into four main subsectors or commodity groups: textile fibers (raw materials), yarn, woven fabrics, and finished goods. These subsectors account for over 95 percent of total trade; the remaining 5 percent consists of knitted fabrics and products made from linen, hemp, jute, and ramie. Over 80 percent of the finished

goods are clothing. Clothing can be further broken down: 75 percent consists of outerwear (both woven and knitted); 14 percent is underwear; and the rest includes items such as stockings, socks, clothing accessory materials, and so on (tables A-2 through A-5).

From 1980 to 1988, Japan's textile imports shifted from predominantly raw fibers to finished goods. The share of raw fiber imports plunged from 44.9 to 25.3 percent of total textile imports, while finished good imports climbed from 31.4 to 52.9 percent (fig. A-2). Most of the reduction in fiber imports was in raw cotton, whose share of total fiber imports

Figure A-2

**Japan's Textile Imports**  
Move toward finished goods

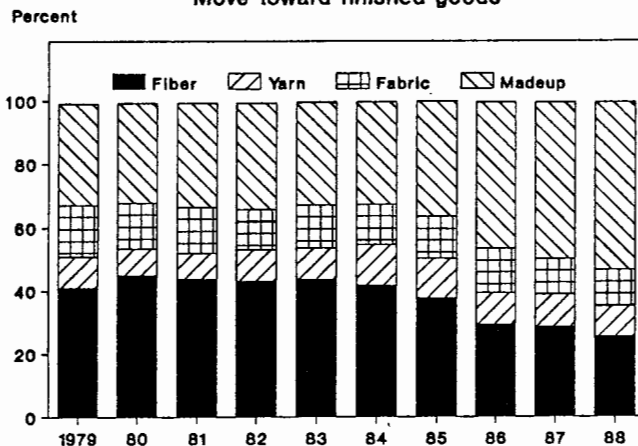


Table A-2--Japan's total textile fiber trade, 1979-88

Year	Exports	Imports	Trade balance	Exports	Imports	Trade balance
Billion yen						
<b>Total:</b>						
1979	120.0	535.7	-415.8	Cotton:	271.6	-271.6
1980	150.2	541.9	-391.7	0.0	301.3	-301.3
1981	163.3	529.5	-366.2	0.0	305.0	-305.0
1982	148.6	578.9	-430.3	0.0	309.6	-309.6
1983	146.0	492.6	-346.6	0.0	272.0	-272.0
1984	148.3	589.3	-441.1	0.0	318.8	-318.8
1985	141.8	513.4	-371.6	0.0	250.2	-250.2
1986	111.4	313.7	-202.2	0.0	137.8	-137.8
1987	96.7	390.4	-293.7	0.0	164.4	-164.4
1988	102.4	420.2	-317.8	0.0	165.7	-165.7
<b>Wool:</b>				<b>Silk:</b>		
1979	3.1	144.0	-140.8	2.1	34.8	-32.7
1980	2.7	142.9	-140.2	0.9	29.2	-28.3
1981	3.0	137.3	-134.3	0.6	8.5	-7.9
1982	3.9	152.9	-149.0	1.0	22.1	-21.1
1983	3.5	133.1	-129.6	2.6	20.8	-18.2
1984	2.8	160.3	-157.5	3.6	11.5	-8.0
1985	3.1	159.7	-156.6	2.1	14.9	-12.8
1986	1.3	104.6	-103.3	0.9	10.4	-9.5
1987	1.0	147.0	-146.1	1.3	6.8	-5.5
1988	2.3	185.4	-183.0	2.1	10.8	-8.7
<b>Rayon:</b>				<b>Synthetic:</b>		
1979	37.4	0.2	37.2	77.3	15.0	62.3
1980	48.8	0.1	48.7	97.8	8.1	89.7
1981	52.0	0.1	51.9	107.7	5.4	102.3
1982	45.6	0.4	45.3	98.1	5.8	92.2
1983	48.4	0.1	48.3	91.6	6.0	85.6
1984	45.1	0.1	45.0	96.8	5.7	91.2
1985	33.8	0.1	33.7	102.8	5.0	97.8
1986	24.1	0.1	24.0	85.1	5.1	80.0
1987	22.4	0.1	22.3	72.0	6.2	65.7
1988	26.4	0.1	26.3	71.6	7.7	64.0

Source: Japanese Textile Exports Statistics.

Table A-3--Japan's textile yarn trade, 1979-88

Year	Exports	Imports	Trade balance	Exports	Imports	Trade balance
Billion yen						
Total:				Cotton:		
1979	150.0	128.0	22.0	2.2	64.9	-62.7
1980	231.7	101.5	130.3	9.7	42.5	-32.9
1981	250.7	99.7	151.1	5.5	44.9	-39.4
1982	229.9	133.9	96.0	6.6	67.0	-60.3
1983	239.6	113.6	126.0	8.5	54.4	-45.9
1984	248.1	182.8	65.3	7.9	104.6	-96.7
1985	213.0	170.3	42.7	6.4	97.1	-90.7
1986	174.2	109.6	64.6	7.2	54.9	-47.7
1987	141.9	141.2	0.7	5.8	76.6	-70.8
1988	125.2	159.2	-34.0	4.6	80.2	-75.7
Wool:				Silk:		
1979	19.4	3.0	16.4	2.5	27.2	-24.7
1980	54.0	2.9	51.1	2.6	22.4	-19.8
1981	46.8	4.7	42.1	2.0	17.0	-15.0
1982	34.5	13.8	20.8	2.5	15.1	-12.7
1983	49.2	11.7	37.5	4.5	13.7	-9.1
1984	55.4	20.4	35.0	4.6	16.4	-11.9
1985	34.8	19.5	15.4	3.2	13.1	-9.9
1986	26.1	9.7	16.4	2.1	13.3	-11.2
1987	23.7	13.8	9.9	2.9	11.8	-8.9
1988	21.5	22.7	-1.2	3.8	13.7	-9.9
Rayon:				Synthetic:		
1979	30.7	2.8	27.9	95.1	25.8	69.3
1980	44.0	3.8	40.3	121.3	25.9	95.4
1981	56.6	3.0	53.6	139.7	26.7	113.0
1982	59.7	4.2	55.6	126.3	26.5	99.8
1983	57.5	3.9	53.7	118.1	20.0	98.0
1984	47.3	4.4	42.9	129.8	24.0	105.8
1985	41.4	4.6	36.8	125.1	23.6	101.5
1986	36.5	4.1	32.4	100.7	16.5	84.3
1987	31.9	3.7	28.3	76.8	19.4	57.4
1988	31.3	3.4	27.8	63.5	27.9	35.6

Source: Japanese Textile Export Statistics.

Table A-4--Japan's textile fabric trade, 1979-88

Year	Exports	Imports	Trade balance	Exports	Imports	Trade balance
Billion yen						
Total:				Cotton:		
1979	548.1	213.1	335.1	73.7	61.9	11.8
1980	675.4	174.6	500.9	109.5	50.3	59.2
1981	779.2	174.7	604.5	132.4	52.5	79.8
1982	757.5	172.5	585.0	138.3	56.7	81.7
1983	793.4	153.9	639.5	153.0	47.9	105.0
1984	781.0	181.3	599.7	167.7	72.4	95.3
1985	731.8	179.3	552.5	157.9	66.6	91.2
1986	583.0	151.2	431.8	123.6	51.6	71.9
1987	505.0	156.6	348.4	119.0	52.1	66.9
1988	437.2	193.2	244.0	103.2	63.6	39.7
Wool:				Silk:		
1979	14.9	32.2	-17.3	10.6	76.7	-66.1
1980	20.0	27.6	-7.6	10.1	57.4	-47.3
1981	21.1	24.3	-3.2	12.8	51.7	-38.9
1982	25.5	29.0	-3.5	12.0	51.6	-39.7
1983	24.2	23.9	0.3	12.9	43.9	-31.0
1984	25.2	26.8	-1.6	14.4	40.8	-26.4
1985	24.7	33.8	-9.2	15.1	39.5	-24.4
1986	19.7	30.2	-10.6	11.4	34.5	-23.1
1987	17.2	37.3	-20.1	9.3	33.1	-23.8
1988	16.6	51.2	-34.6	8.6	39.8	-31.2
Rayon:				Synthetic:		
1979	30.3	7.2	23.1	417.9	27.2	390.7
1980	37.4	5.8	31.6	497.3	26.0	471.4
1981	41.1	6.4	34.8	568.6	33.6	535.0
1982	40.2	4.7	35.6	544.5	21.7	522.9
1983	43.8	3.6	40.2	563.5	26.7	536.8
1984	45.9	3.6	42.4	527.6	25.3	502.2
1985	56.6	4.5	52.1	477.2	23.4	453.8
1986	51.8	4.9	46.9	362.3	20.8	341.5
1987	45.3	4.6	40.7	298.1	20.5	277.6
1988	38.1	5.6	32.5	250.5	25.4	225.1

Source: Japanese Textiles Export Statistics.



Table A-5--Japan's trade of finished goods and knitted fabrics, 1979-88

Year	Exports	Imports	Trade balance	Exports	Imports	Trade balance
Billion yen						
Finished goods:			Knitted fabrics:			
1979	175.5	417.4	-241.9	45.5	13.2	32.2
1980	246.7	378.0	-131.3	63.5	9.6	53.9
1981	246.9	398.6	-151.7	66.0	7.5	58.6
1982	253.8	452.3	-198.5	52.2	8.6	43.6
1983	261.9	367.4	-105.4	50.8	5.0	45.8
1984	289.6	457.8	-168.2	48.7	5.5	43.2
1985	262.7	494.8	-232.1	52.8	5.2	47.6
1986	189.0	497.8	-308.8	38.7	6.2	32.6
1987	152.9	676.8	-523.9	33.8	9.0	24.9
1988	135.1	878.7	-743.7	28.5	9.8	18.7

Source: Japanese Textile Export Statistics.

Table A-6--Japan's imports of textiles and indexes by volume, 1979-88

Year	Fiber	Yarn	Fabric	Finished goods	Fiber	Yarn	Fabric	Finished goods
	Mil. T	1,000 T	Mil. sq. M	1,000 T	-----Indexes (1985=100)-----			
1979	1,195.80	170.15	610.04	158.16	113.2	70.6	78.2	90.9
1980	1,096.48	128.68	533.80	137.92	103.8	53.4	68.4	79.3
1981	1,055.52	130.41	632.53	128.40	99.9	54.1	81.1	73.8
1982	1,160.15	174.75	581.32	132.84	109.8	72.5	74.5	76.4
1983	1,024.69	158.65	629.36	127.09	97.0	65.8	80.7	73.0
1984	1,103.18	233.00	823.64	157.03	104.4	96.6	105.6	90.3
1985	1,056.31	241.15	780.17	173.98	100.0	100.0	100.0	100.0
1986	1,067.32	214.77	891.30	229.89	101.0	89.1	114.2	132.1
1987	1,257.61	264.63	961.30	317.54	119.1	109.7	123.2	182.5
1988	1,045.76	300.03	1,149.84	420.83	99.0	124.4	147.4	241.9

Source: Japan Cotton Textile Industry and Jetro Office.

decreased from 55 to 39 percent. The United States is Japan's largest supplier of raw cotton, shipping 42 percent in 1988 despite competition from China, Australia, and Pakistan.

Japanese imports of total yarn and woven fabric increased substantially—cotton yarn and fabrics surged from 98,400 metric tons in 1980 to 291,000 metric tons in 1988 (fig. A-3). Following the yen appreciation of 1986-88, imports of cotton yarn and woven cotton fabric became more profitable, rising 31 percent in volume and 77 percent in value. The trade balance of both cotton yarn and woven cotton fabric diminished from a surplus of 24 billion yen (US \$144 million) in 1986 to a deficit of nearly 3.9 billion yen (US \$27 million) in 1987, and 36 billion yen (US \$281 million) in 1988 (tables A-3 and A-4).

The decrease in raw cotton imports and the increase in cotton yarn, cotton woven fabrics, and finished goods (table A-6, figs. A-2 through A-4), demonstrate a growing comparative disadvantage for the Japanese spinning, weaving, knitting, and apparel industries. Currently, it is less expensive to import selected intermediate and finished products than to manufacture them locally from imported raw cotton.

In 1980, synthetic and rayon made up over 75 percent of Japan's yarn exports; wool yarn averaged 20 percent; and cotton yarn ranged between 2 and 4 percent. From 1984 to 1988, total yarn exports plummeted 50 percent; cotton yarn, nearly 42 percent; and synthetic yarn, 51 percent (table A-3 and fig. A-5). The yarn trade balance had shown a persistent surplus due to exports of synthetic and rayon yarn, but even this turned to a deficit of 34 billion yen in 1988.

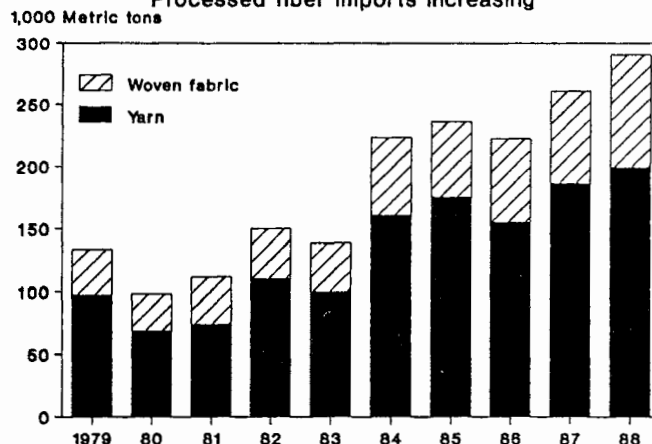
Figure A-3 Japan's Cotton Yarn and Fabric Imports  
Processed fiber imports increasing

Figure A-4 Japan's Finished Goods Trade Imports surge

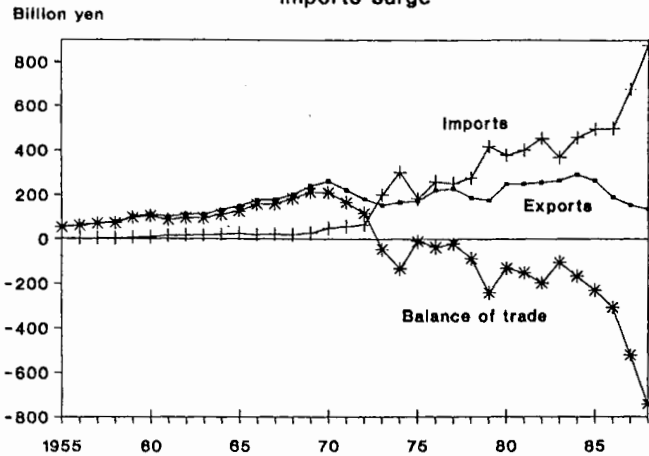
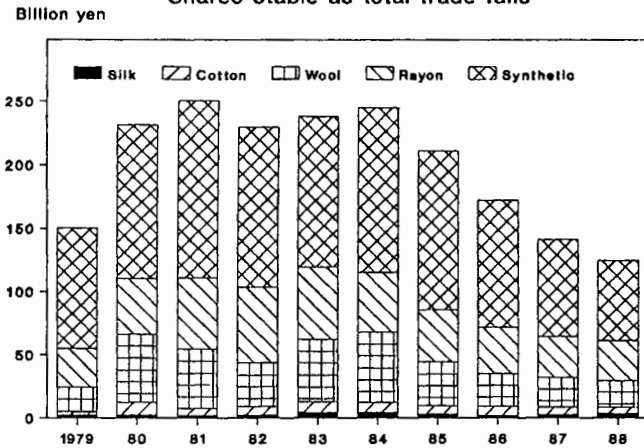


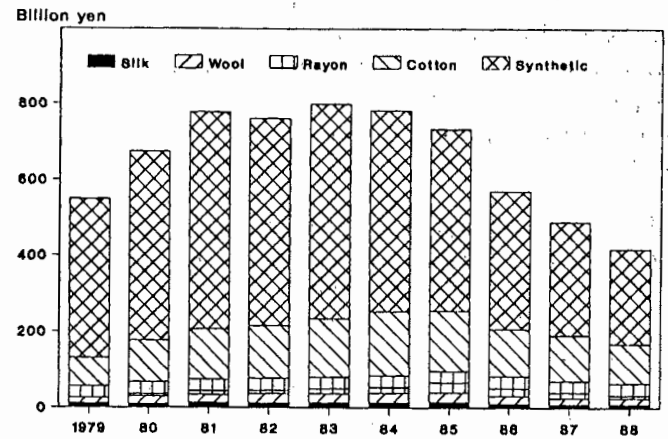
Figure A-5 Japan's Textile Yarn Trade Shares stable as total trade falls



Woven fabrics comprise the major export share of Japan's total textile sales, accounting for 48-53 percent of total value during the last 10 years (table A-1). During that time, the share of synthetic fabric exports declined from nearly 77 to 57 percent of total fabric exports, while the share of woven cotton fabric exports jumped from 13 to 24 percent. The drop in synthetic fabric exports can be attributed to keen competition from South Korea and growing consumer preference for natural fibers. The increase in woven cotton fabric exports was mainly due to consumer preference and Japan's specialization in producing high-quality fabrics. In absolute value, however, cotton fabric exports plummeted by 38 percent from 1984 to 1988 due to the yen's high value and price competition from other exporters (fig. A-6).

Imports of woven fabrics more than doubled to 1.1 billion square meters between 1980 and 1988; those of cotton fabrics soared from 224 million to 689 million square meters. Synthetic fabric imports doubled to 297 million square meters, with about half of the rise occurring since 1985.

Figure A-6 Japan's Woven Fabric Exports Overall exports declining



The share of finished goods exports decreased from 17.6 percent of total textile exports in 1980 to 16 percent in 1988. Since 1973, Japan's imports have exceeded exports, causing a \$1.1-billion deficit in the trade balance of madeup goods. However, the rapid appreciation of the yen since late 1985 widened this gap by a large margin and deepened the deficit to 744 billion yen (US \$5.8 billion) in 1988 (fig. A-4). The deficit caused the overall deficit in Japan's textile trade balance in 1987 and 1988 (fig. A-1).

In 1988, South Korea, China, Taiwan, and Hong King shipped over 75 percent of Japanese imports of finished goods, up from 63 percent in 1980. South Korea has been Japan's major single supplier, exporting 26 percent in 1980 and 33 percent in 1988. China's share rose from 19.5 percent in 1980 to 25 percent in 1988, but Taiwan's share slipped from 12.5 to 11.1 percent. China, the world's largest cotton producer, encourages textile producers to export finished goods rather than raw cotton. China has low labor costs and benefited from the technology adopted from Japan, and took advantage of consumers' shifting preference for natural fiber clothing while Japanese production was declining.

#### **Present and Future Strategies of the Japanese Textile Industry**

By 1988, the Japanese textile industry was characterized by a high level of productivity and specialization in top-quality cotton and manmade fiber products. Many firms are completing job-reduction programs. Since Japanese firms must provide lifetime work for their employees, they have achieved the reductions by transferring employees to non-textile divisions or relocating them to affiliates overseas. They are continuing to diversify into nontextile products, and have applied the technology acquired in textile manufacture to plastics, functional polymers, chemicals, pharmaceuticals, magnetic tapes, and floppy discs (8,10).

The present policy strategies of the Japanese textile and fiber firms have two main goals: to improve the domestic market to enable it to deal with changing consumer preferences, and/or to relocate at least a part of the production overseas to take advantage of lower production costs. After the sharp import surges in finished goods of 1987-88, Japanese producers foresee an expansion of imports to meet domestic demand.

The clothing industry, however, is the most labor-intensive of all textile enterprises, and the shortage of labor and increasing wages make it difficult to attract workers to this sector. In spring 1988, labor costs in the Japanese spinning and weaving industry exceeded their 1980 level by 243 percent. These same labor costs rose 194 percent in South Korea, 133 percent in Taiwan, 15 percent in Hong Kong, 78 percent in Switzerland, and 48 percent in the United States over the same period (12).

Improving productivity at home depends on Japan's support for research and development programs to spur technological innovations. The relationship among fiber properties, yarn quality, and end-product performance is very crucial. Prevailing fashions and new material designs greatly influence the marketability of textile products. Given the dynamic nature of the industry worldwide, any technological advance the Japanese industry could achieve would considerably enhance its economic efficiency. Research efforts were therefore intensified after the sharp rise in the yen's value.

Recent observations indicate that the Japanese modern spinning and weaving plants are highly automated, and personnel are conspicuous by their absence. Japanese engineers regard the development of unmanned machinery as their immediate goal. In a joint venture with the Government, the textile industry began working on the new "automated sewing system." If successfully completed, the new system will signal the first full automation of the clothing sector, but no breakthroughs are expected before the turn of the century (1).

Japan has also developed computerized pattern grading as a link in the chain of modernizing garment manufacturing. Computer grading was relatively successful in speeding up grading of ready-to-wear goods, with a precision higher than that possessed by skilled technicians.

Until the home market finds a satisfactory solution to the problem of labor costs, elevated imports of cotton fabric and yarn will continue. Clothing imports will also increase because they require intensive labor, which is still very costly in Japan. Meanwhile, the Government seeks close association with many Asian countries, especially South Korea, Taiwan, Hong Kong, and Singapore, by granting them access to the Japanese market. Such access indicates Japan's willingness to continue importing from these countries because of its comparative disadvantage. Increasing

imports and decreasing exports of textiles imply that Japanese imports of raw cotton will decline in the future.

The Japanese textile industry is also trying to relocate a portion of the sector to other parts of the world with lower production costs. The industry's immediate objective is to relocate production of certain textile products and the necessary machinery and expertise to other countries. Japan will then concentrate on manufacturing high-value-added specialty products, such as composite polyester filament materials and linen/cotton and polyester/rayon fabrics, which attract high prices. Japanese investment in textile and clothing manufacturing has risen in Thailand, Indonesia, Singapore, Sri Lanka, Brazil, the United States, the EC, and Canada. In 1986, for example, textiles equaled 8.5 percent of Japan's total investment in overseas manufacturing (1).

Japanese companies are investing heavily in U.S. textiles, and using the latest technology to supply the lucrative U.S. market. The stronger yen has attracted such investment, enabling Japanese companies to purchase assets at lower prices, process locally grown cotton, and pay lower labor costs. Investing in U.S. textiles also allows these firms to export unfinished textiles across the border to Mexico and Puerto Rico, where they are manufactured into garments at lower labor costs, and then shipped back to the United States without any quota or import duties.

Relocating some types of cotton textile production to lower cost regions will decrease Japanese demand for raw cotton imports. To cope with increasing production costs at home, the industry will likely increase imports of intermediate products (yarn and fabric) after manufacturing them overseas to specifications designed to suit the Japanese apparel industry.

## Conclusions

Faced with the strong value of their currency and high labor costs, Japan's textile industry has been battling increased textile imports since 1984 and has lost its competitive edge. It was forced to reduce employment and diversify into other products at home, and began relocating some of its operations overseas to lower production costs. The present trend of rising imports of cotton yarn and cotton fabric will continue, and these materials will be substituted for imports of raw cotton. Japan's import demand for raw cotton will therefore decline, cutting U.S. exports to Japan.

Japan's future competitiveness will depend on the industry's ability to develop advanced techniques for specialty-item production. Such advances would greatly enhance the efficiency and quality of products and significantly reduce labor requirements. Japan will specialize in high-quality fabrics, manufacturing them locally or overseas at reduced cost and

converting them to expensive garments and finished goods. However, since clothing manufacturing is very labor-intensive, the Japanese textile industry is unlikely to improve its

market share until it perfects new production methods or makes a significant breakthrough in the "automated sewing system."

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# Costs of U.S. Cotton Production

by

Harold Stults\*

**Abstract:** Cotton cost of production data are used throughout the industry. The Economic Research Service (ERS) publishes one set of these data. Various uses of the ERS cost of production data are illustrated, and new information on the distribution of cotton costs of production among producers and between regions is presented.

**Keywords:** Cotton, costs of production, variable costs, cash flow, returns, profit.

## Introduction

Estimates of costs of producing cotton are valuable, widely used data. Farmers use them in managing their operations. Researchers, analysts, and policymakers use cost of production estimates in evaluating alternatives, establishing policy, and devising rules and regulations to carry out policy. Production costs are considered in setting target prices and loan rates. Because of their importance, Congress requires USDA's Economic Research Service (ERS) to annually estimate costs of production for cotton and several other commodities. ERS has been estimating production costs since 1974 and publishes State, regional, and national cotton production costs.

Different users of cost of production data may need the same data reported in different forms. For example, economists like to deal with such concepts as variable costs, fixed costs, and opportunity costs, while accountants usually need data on receipts, expenditures, assets, and liabilities. Sometimes the same data can satisfy both groups, but often it must be organized and presented differently.

The National Agricultural Statistics Service (NASS) collects the raw data from producers. In 1985, NASS adopted a full probability, multiframe sample procedure. In the past ERS calculated State-level averages from farm survey data, and estimated costs of production from these averages; more recently, it has used a farm-level budget generator. Now, a one-to-one correspondence between production costs and other farm survey data provides information that makes it possible to analyze economies of size and cost distributions.

Rather than ask producers about their costs, the Farm Costs and Returns Survey collects data on inputs and operations. Prices and other data combine with survey data to provide

crop, or enterprise, budgets. Costs can be categorized in one of two ways: cash expenses or economic (full ownership) costs (table B-1). Cash expenses are out-of-pocket costs incurred during the production process and can be used to estimate the producers' cash flow. Economic costs include variable cash expenses, general farm overhead, taxes and insurance, capital replacement, and returns to owned inputs (land, labor, machinery, and invested capital). Returns to owned inputs are calculated by various formulas.

When total economic costs are subtracted from total value of production, the residual equals returns to management and risk. These returns do not include direct Government payments and reflect a full ownership situation. For convenience, residual returns to management and risk, excluding direct Government payments, are labeled "profit" in this article.

## Costs and Returns, 1975-87

From 1980 through 1986, the farm value of cotton was insufficient to cover all production costs (fig. B-1). The year 1986 had large negative profit because both yields and harvest price dropped to their lowest levels since 1980. Both prices and yields rebounded in 1987, making it the first profitable year since 1979 based on farm value alone, without any Government payments. With Government payments, cotton producers were able to earn a profit after paying all costs in every year since 1975 except 1980, when they took a small loss.

When profits exist over time, returns to land tend to increase. Even though U.S. farmland values generally dropped dramatically from 1980 through 1987, net cotton land rents for that period exceeded those of the late 1970's. These high rents reflect the relatively high returns for cotton during this period.

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Table B-1--U.S. cotton production costs and returns per planted acre,  
1986-88 1/

Item	1986	1987	1988
Dollars			
Gross value of production: 2/			
Primary crop	225.95	442.64	323.32
Secondary crop	29.73	46.61	57.99
Total	255.68	489.25	381.31
Cash expenses			
Seed	6.23	8.16	8.03
Fertilizer	23.16	22.21	25.98
Lime and gypsum	.44	.41	.40
Chemicals	44.23	44.44	45.69
Custom operations	10.32	11.87	11.89
Fuel, lube, and electricity	22.60	26.91	27.92
Repairs	19.74	20.27	21.44
Hired labor	37.69	40.16	40.99
Ginning	43.37	65.26	55.93
Technical services	1.59	1.56	1.54
Total, variable cash expenses	217.84	250.74	249.36
General farm overhead	21.29	21.59	22.97
Taxes and insurance	12.66	13.76	13.99
Interest on operating loans	21.84	15.54	13.81
Interest on real estate	22.17	18.68	17.27
Total, fixed cash expenses	77.96	69.57	68.04
Total, cash expenses	295.80	320.31	317.40
Net cash returns 3/	-40.12	168.94	63.91
Capital replacement	50.35	51.65	54.59
Net cash returns less capital replacement	-90.47	117.29	9.32
Economic (full ownership) costs:			
Variable cash expenses	217.84	250.74	249.36
General farm overhead	21.29	21.59	22.97
Taxes and insurance	12.66	13.76	13.99
Capital replacement	50.35	51.65	54.59
Allocated returns to owned inputs:			
Return to operating capital 4/	5.09	5.98	6.94
Return to nonland capital 5/	8.76	9.99	12.03
Net return to land 6/	51.44	83.48	72.51
Unpaid labor	20.65	21.36	21.67
Total, economic costs	388.08	458.55	454.06
Residual returns to mgt. and risk 7/	-132.40	30.70	72.75
Harvest-month price (dollars per pound)	0.49	0.65	0.54
Yield (pounds per planted acre)	462.97	683.29	594.94

1/ Sum of operators' and landlords' costs and returns. 2/ Excludes direct Government payments. 3/ Gross value of production (excluding direct Government payments) less total cash expenses. 4/ Variable expenses multiplied by time between use and harvest and by 6-month U.S. Treasury bill rate. 5/ Value of machinery and equipment multiplied by long-run real rate of return to production assets in the farm sector. 6/ Rental value of land based on composite of share and cash rent. 7/ Gross value of production (excluding direct Government payments) less total economic (full ownership) costs.

Figure B-1 U.S. Cotton Costs and Returns  
Gov't payments make cotton profitable

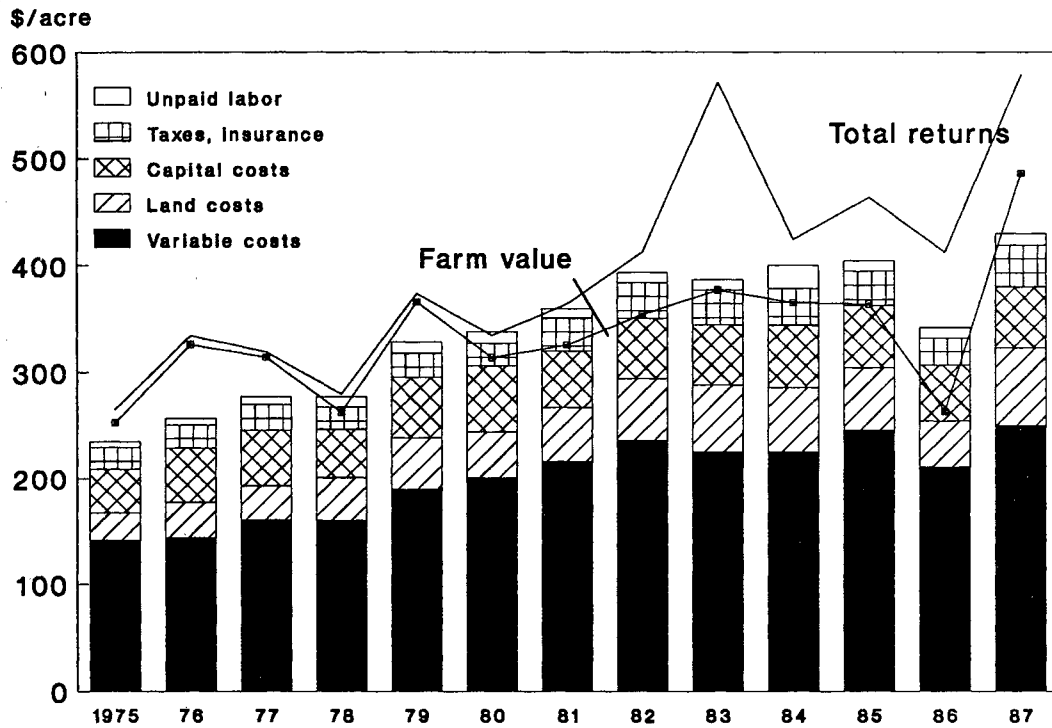


Figure B-2 Cotton Costs and Returns, 1987  
Profit unrelated to total costs

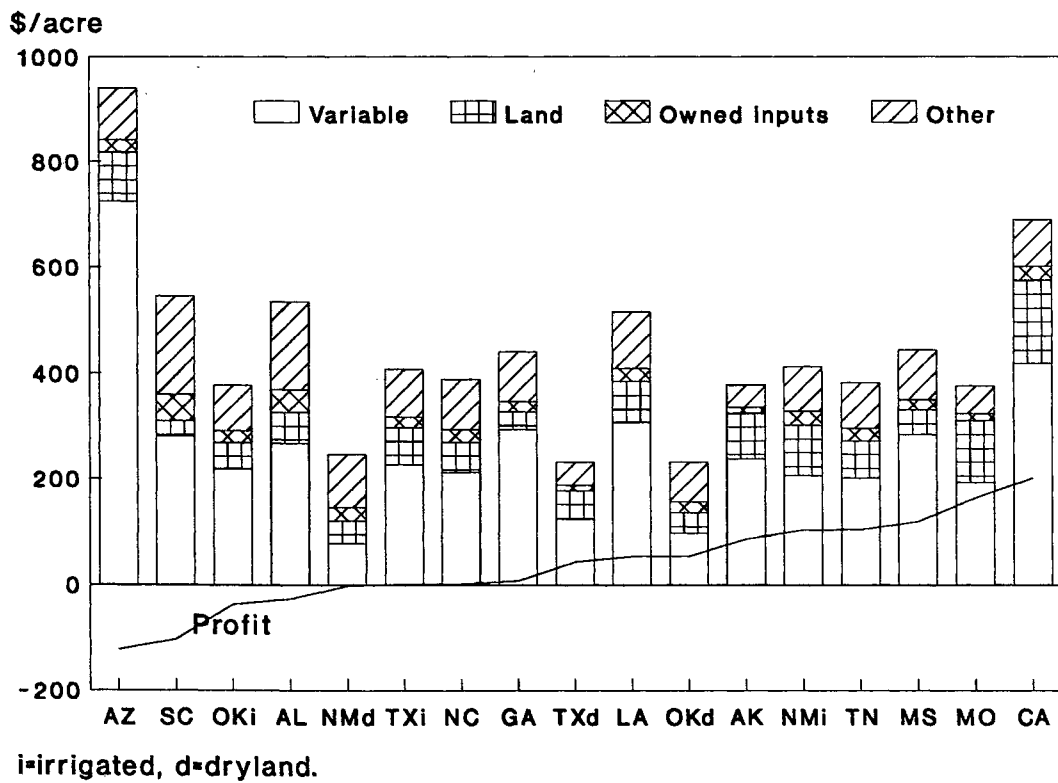
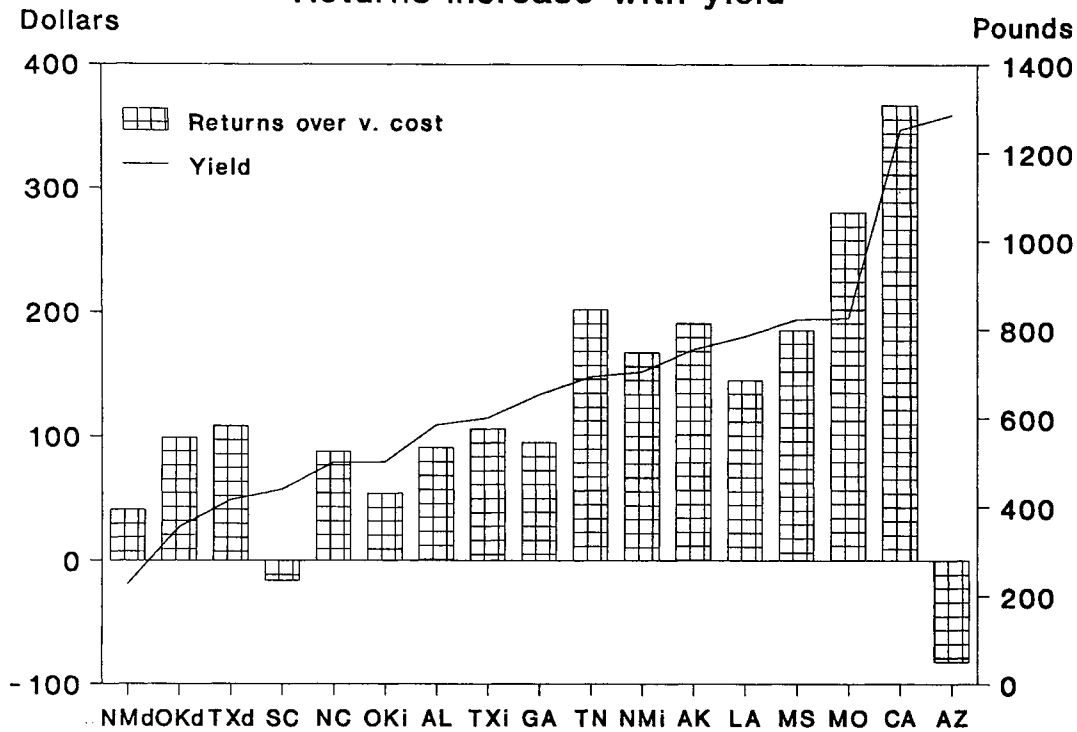


Figure B-3 Yields, Costs and Returns, 1987  
Returns increase with yield



i=irrigated, d=dryland.

### State Costs and Returns, 1987

The latest data on cotton costs and returns comes from 1987. When States are arrayed by profit (residual returns to risk and management excluding direct Government payments), no clear pattern relates costs and profits (fig. B-2). For example, Arizona had the highest total costs and the lowest profit; California had the second highest costs and the highest profit. Variable costs for Arizona were much higher than those of other States in 1987, mainly in the categories of chemicals, custom operations, and fuel, lube, and electricity. Costs for spraying bollworms were very high. Although profit and yield usually correspond, Arizona is a major exception to the norm (fig. B-3).

### Distribution of Variable Cash Expenses

Variable cash expenses are those incurred only if production takes place in any given year. They include seed, fertilizer, repairs, hired labor, ginning, and technical services. In economic jargon, total costs are composed of variable and fixed costs. Variable costs are equivalent to variable cash expenses. Economic costs are similar to total costs, except that in addition to total economic costs, ERS estimates include residual returns to management and risk.

In a purely competitive economy, producers must cover variable costs to survive in the short run and both variable and fixed costs in the long run. Almost all cotton was produced with variable costs below market price in 1987 (fig. B-4), when nearly 90 percent of the farms and farmers incurred variable costs below the market price.

### Distribution of Total Cash Expenses

Adding general farm overhead, taxes and insurance, and interest expenses to variable cash expenses gives total cash expenses (fig. B-5), a measure of cash flow. In 1987 about 85 percent of the cotton was produced with total cash expenses below market price. About 70 percent of the farms and 73 percent of the acres had total cash expenses below the market price. Of course, these statistics do not indicate cotton producers' actual cash flow, because Government payments added considerably to their income for that year.

### Distribution of Total Economic Costs

Total economic costs are calculated by adding general farm overhead, taxes and insurance, and capital replacement to variable cash expenses. Then, allocated returns to capital, land, and unpaid labor are added. These items are allocated because they are not actually paid; economic analyses are used to estimate them.



Figure B-4

### Total Variable Costs Most variable costs below price

Cents/lb.

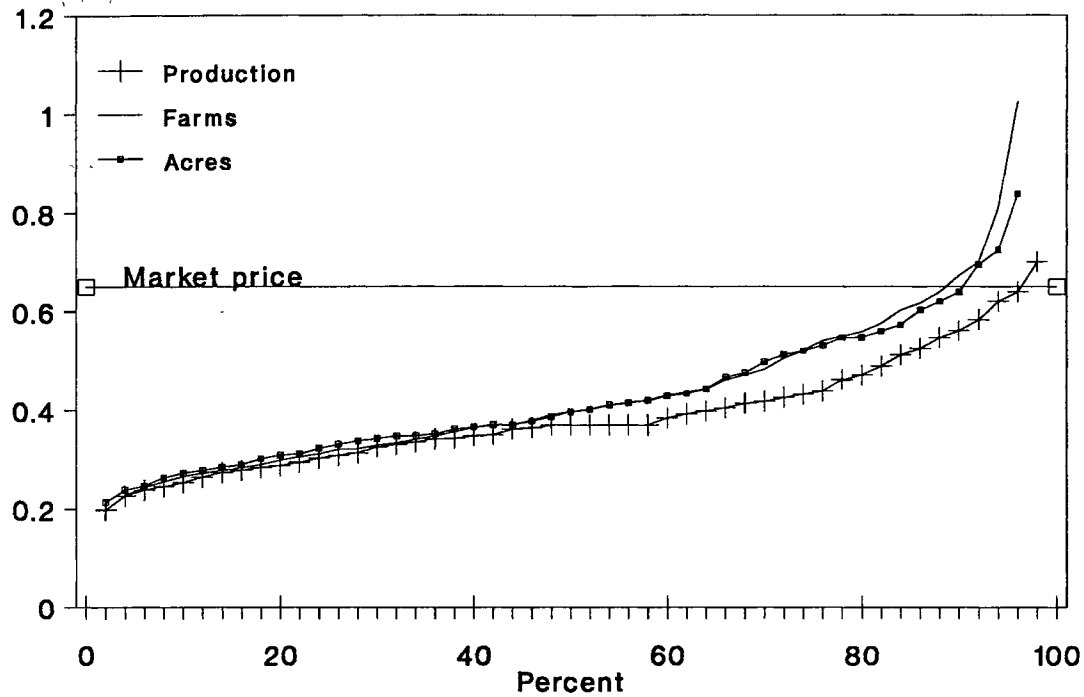
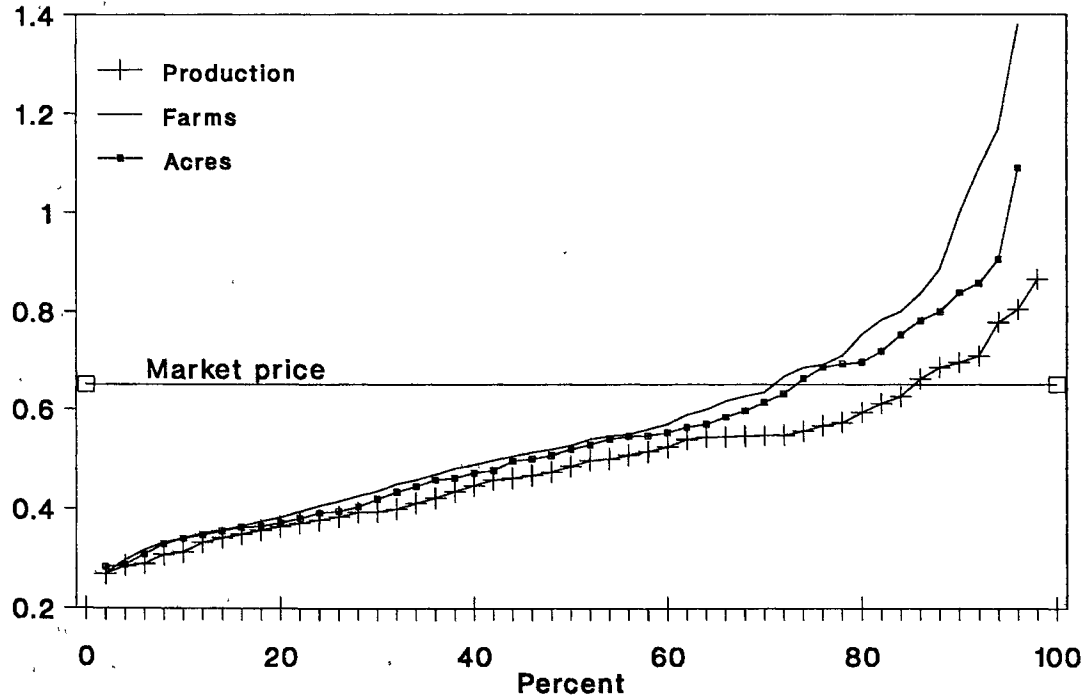


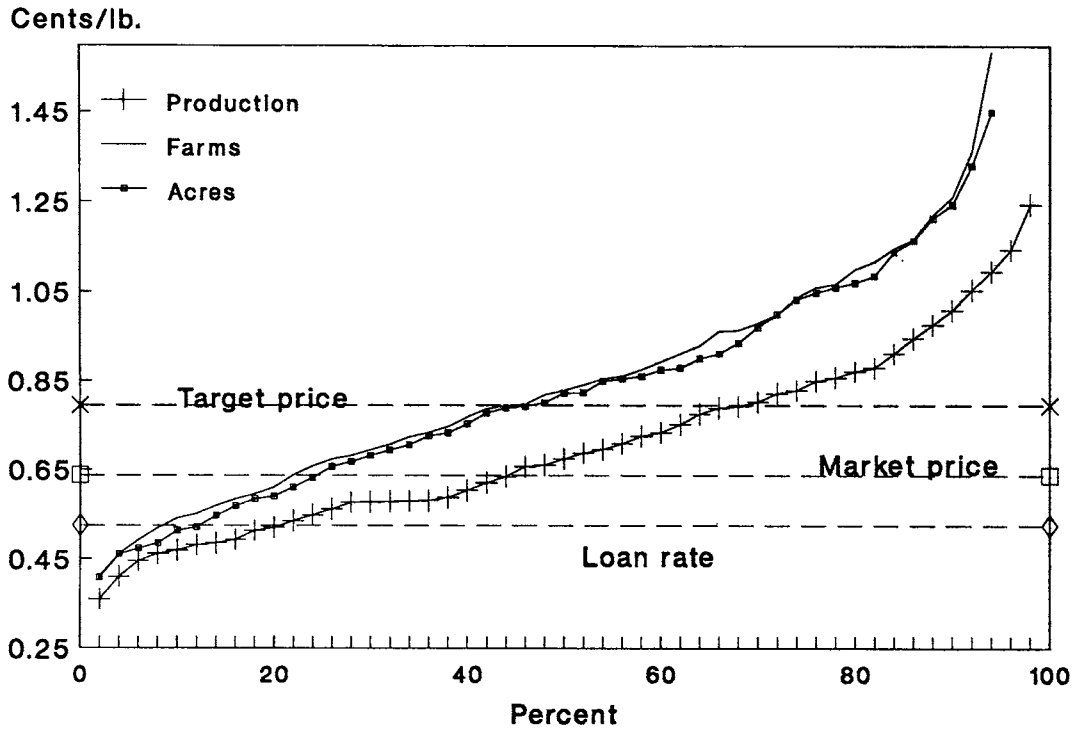
Figure B-5

### Total Cash Cost Most farms have positive cash flow

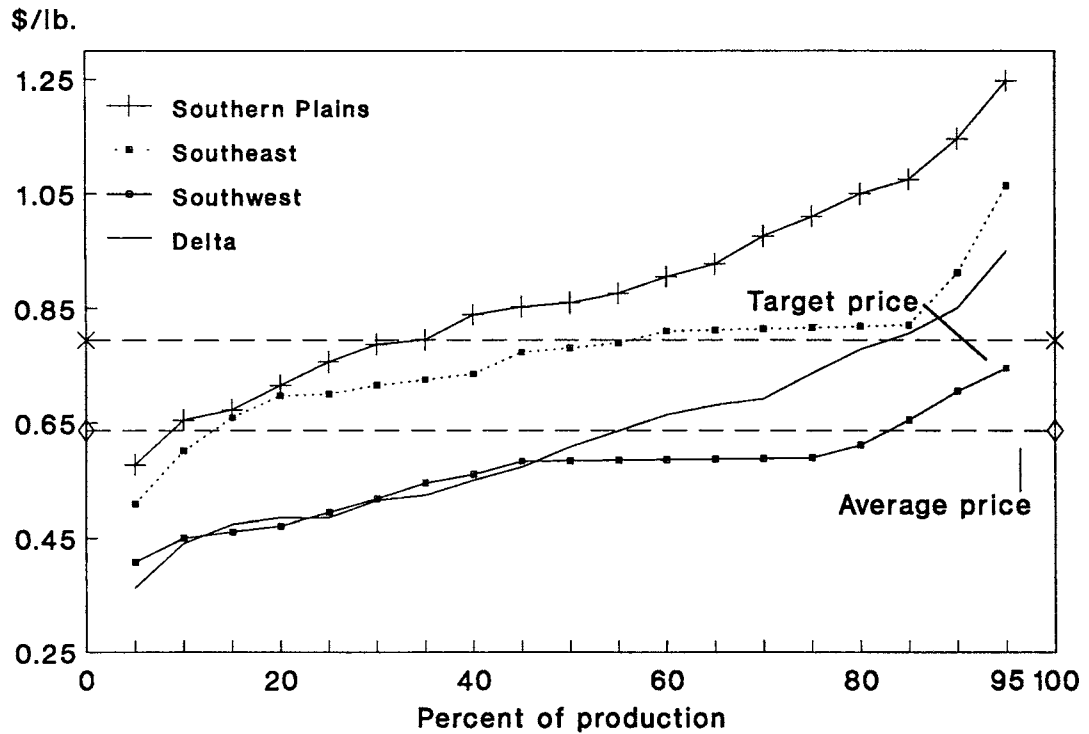
Cents/lb.



**Figure B-6 U.S. Total Economic Costs, 1987**  
**Costs exceed price for half of crop**



**Figure B-7 Total Economic Costs, 1987**  
**Southwest has lowest costs**



Based on the 1987 cotton survey, farmers produced half of the U.S. cotton at a total economic cost of \$0.674 a pound or less (fig. B-6). About 26 percent of the farms produced cotton at or below \$0.674 on 29 percent of the acres planted to cotton. Farmers raised 25 percent of the cotton for less than \$0.556 per pound, and 75 percent for \$0.84 or less.

Farmers produced about 43 percent of the cotton crop at or below the average market price of \$0.637 per pound. Two-thirds of the cotton was produced at a total economic cost less than the target price of \$0.794 per pound. Again, these estimates are not measures of actual profitability because Government payments have not been included.

### Total Economic Costs By Region

In 1987, the total economic costs of producing cotton were highest in the Southern Plains and lowest in the Southwest (fig. B-7). The Delta and the Southwest had similar production costs for the first half of their production; however, costs in the Southwest remained flat for about 45-75 percent of production, while those in the Delta climbed \$0.20 per pound for the same range. Farmers in the Southern Plains produced half their cotton crop for \$0.86 per pound or less, compared with \$0.78 in the Southeast, \$0.61 in the Delta, and \$0.58 in the Southwest. In addition, more than 95 percent of the crop was produced below the target price in the Southwest, compared with about 80 percent in the Delta. Total economic costs of production were below the target price for about one-third of the Southern Plains crop and half the Southeast crop.

### Conclusions

Cost of production data are useful for economic analysis at the producer, State, regional, national, and international level. Congress requires ERS to annually estimate costs of production for cotton and several other crops, which they do with the cooperation of NASS. New survey procedures adopted by NASS in 1985 enable ERS to relate producers' cash and economic costs to other survey data. This makes it possible, for the first time, to use ERS cost of production data to analyze cost distributions and other economy-of-size relationships.

Since 1975, the farm value of cotton has not provided enough income to pay all production costs. Government payments have added enough income so that producers have generally paid all costs and experienced significant profits. About 90 percent of the cotton crop was produced with variable costs below the market price in 1987. About 45 percent of the crop showed a profit after all costs were paid, including a return to inputs provided by the operator and the landlord.

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Appendix table 1--Cotton acreage, production, and yield, by State

State	Planted acres				Harvested acres				Lint yield per harvested acre				Production			
	Average 1984-88	1987	1988	1989 1/	Average 1984-88	1987	1988	1989 1/	Average 1984-88	1987	1988	1989 1/	Average 1984-88	1987	1988	1989 1/
	1,000 acres								Pounds				1,000 480-lb. bales 2/			
Alabama	336	335	390	360	331	333	375	340	612	572	486	551	420	397	380	390
Arizona 3/	336	290	350	240	335	289	349	239	1,274	1,410	1,190	1,326	883	849	865	660
Arkansas	535	555	695	610	522	550	675	595	706	786	742	686	772	901	1,044	850
California 3/	1,248	1,150	1,350	1,050	1,237	1,140	1,335	1,040	1,099	1,259	1,015	1,223	2,817	2,989	2,824	2,650
Florida	25	30	33	26	23	29	29	25	692	646	566	653	33	39	34	34
Georgia	251	250	350	270	234	245	315	265	638	662	564	634	309	338	370	350
Kansas	1	1	1	2	1	1	1	1	359	480	373	400	1	1	1	1
Louisiana	642	605	735	645	618	600	645	620	681	782	705	677	879	977	948	875
Mississippi	1,073	1,020	1,230	1,050	1,054	1,010	1,190	1,020	733	829	736	734	1,613	1,745	1,825	1,560
Missouri	188	200	245	214	183	199	242	209	640	796	607	618	245	330	306	269
New Mexico 3/	71	66	77	61	61	62	69	55	646	689	710	698	82	89	102	80
North Carolina	98	96	126	112	97	95	124	110	580	495	515	611	115	98	133	140
Oklahoma	411	400	460	380	381	385	435	330	333	431	334	262	265	346	303	180
South Carolina	122	120	145	120	120	119	142	118	553	428	473	631	137	106	140	155
Tennessee	399	440	535	455	392	435	530	450	579	700	529	505	474	634	584	473
Texas 3/	5,100	4,700	5,600	4,600	4,500	4,400	5,300	3,700	422	506	472	376	3,995	4,635	5,215	2,900
Virginia	2	2	3	3	2	2	3	3	482	373	510	609	2	1	3	3
Total:																
Upland	10,837	10,259	12,325	10,187	10,091	9,894	11,759	9,120	618	702	615	609	13,041	14,475	15,077	11,570
American-Pima	121	138	190	374	120	137	189	370	883	1,000	848	861	222	285	334	663
United States	10,957	10,397	12,515	10,561	10,211	10,030	11,948	9,489	621	706	619	619	13,263	14,760	15,412	12,233

1/ Crop Production Report, January 11, 1990. 2/ Net weight. 3/ Upland only.

Appendix table 2--U.S. Cotton supply and use, 1980/81-1989/90

Crop year	Area			Supply				Disappearance				Farm price 5/	
	Planted	Harvested	Yield	Begin- ning stocks 1/	Produc- tion 2/	Imports	Total	Mill use 3/	Exports	Total	Unac- counted 4/		Ending stocks
	--1,000 acres--		Lbs./ acre	-----1,000 480-lb. bales-----									Cents/ lb.
All kinds:													
1980	14,534	13,215	404	3,000	11,122	27	14,149	5,891	5,926	11,817	336	2,668	74.7
1981	14,330	13,841	542	2,668	15,646	26	18,340	5,264	6,567	11,831	123	6,632	54.3
1982	11,345	9,734	590	6,632	11,963	20	18,615	5,512	5,207	10,719	41	7,937	59.4
1983	7,926	7,348	508	7,937	7,771	12	15,721	5,928	6,786	12,714	-232	2,775	66.4
1984	11,145	10,380	600	2,775	12,982	24	15,781	5,540	6,215	11,755	76	4,102	57.8
1985	10,685	10,229	630	4,102	13,432	33	17,567	6,399	1,960	8,359	140	9,348	56.3
1986	10,045	8,468	552	9,348	9,731	3	19,082	7,452	6,684	14,136	80	5,026	52.4
1987	10,397	10,030	706	5,026	14,760	2	19,788	7,617	6,582	14,199	182	5,771	64.3
1988	12,515	11,948	619	5,771	15,412	5	21,187	7,792	6,147	13,939	-155	7,093	56.6
1989 6/10	9,561	9,489	619	7,093	12,233	2	19,328	8,200	7,700	15,900	72	3,500	7/
Upland:													
1980	14,461	13,143	402	2,962	11,018	26	14,006	5,828	5,893	11,721	329	2,614	74.4
1981	14,272	13,783	542	2,614	15,566	18	18,198	5,216	6,555	11,771	140	6,567	54.0
1982	11,274	9,663	589	6,567	11,864	12	18,443	5,457	5,194	10,651	52	7,844	59.1
1983	7,863	7,285	506	7,844	7,676	8	15,529	5,861	6,750	12,611	-225	2,693	66.0
1984	11,065	10,299	599	2,693	12,852	21	15,566	5,491	6,125	11,616	74	4,024	57.5
1985	10,601	10,145	628	4,024	13,277	33	17,334	6,338	1,855	8,193	148	9,289	56.1
1986	9,933	8,357	547	9,289	9,525	3	18,817	7,385	6,570	13,955	80	4,942	51.5
1987	10,259	9,894	702	4,942	14,475	2	19,419	7,565	6,345	13,910	209	5,718	63.7
1988	12,325	11,759	615	5,718	15,077	5	20,800	7,721	5,882	13,603	-170	7,027	55.6
1989 6/10	9,187	9,120	609	7,027	11,570	2	18,599	8,120	7,225	15,345	82	3,336	7/
Extra-long staple:													
1980	72.5	71.7	698	38	104.2	1	143	63	33	96	7	54	108.0
1981	58.6	58.0	659	54	79.6	8	142	48	12	60	-17	65	96.9
1982	70.9	70.5	672	65	98.7	8	172	56	13	69	-10	93	101.0
1983	63.0	62.7	725	93	94.7	4	192	67	36	103	-7	82	107.0
1984	80.1	79.6	786	82	130.4	3	215	49	90	139	2	78	92.8
1985	84.0	83.6	891	78	155.1	0	233	61	105	166	-8	59	91.8
1986	111.5	111.1	890	59	205.9	0	265	67	114	175	0	84	89.9
1987	137.9	136.6	1,000	84	284.6	0	369	52	237	289	-27	53	104.0
1988	189.6	189.1	848	53	334.2	0	387	71	265	336	15	66	118.0
1989 6/10	374.0	369.5	861	66	663.0	0	729	80	475	555	-10	164	7/

1/ Compiled from Bureau of the Census data and adjusted to an August 1 480-lb. net weight basis. Excludes preseason ginnings.  
2/ Includes preseason ginnings. 3/ Adjusted to August 1-July 31 marketing year. 4/ Difference between ending stocks based on Census data and preceding season's supply less disappearance. 5/ Season average, including allowance for unredeemed loans. 6/ Projected. 7/ USDA is prohibited by law from publishing cotton price forecasts.

Appendix table 3--U.S. cotton supply and disappearance of all kinds, by months, 1987/88-1989/90 1/

Date	Supply				Disappearance							
	At mills	Public storage 3/	Other 4/	Total	Ginnings 5/	Imports	Total supply	Mill use 6/	Exports	Total use	Unac-counted	Ending stocks 7/
-----Beginning stocks 2/-----												
1,000 480-lb. net weight bales												
1987/88:												
Aug	713	4,000	313	5,026	440	0	5,466	666	420	1,086		4,380
Sep	678	3,388	314	4,380	2,842	0	7,222	694	315	1,009		6,213
Oct	607	5,104	502	6,213	4,452	0	10,665	713	367	1,080		9,585
Nov	557	7,766	1,262	9,585	3,642	0	13,227	666	615	1,281		11,946
Dec	569	9,911	1,466	11,946	2,255	1	14,202	582	721	1,366		12,899
Jan	664	11,023	1,212	12,899	925	0	13,824	621	663	1,284		12,540
Feb	750	10,616	1,174	12,540	204	0	12,744	649	740	1,389		11,355
Mar	811	9,540	1,004	11,355		0	11,355	706	779	1,485		9,870
Apr	827	8,385	658	9,870		0	9,870	610	571	1,181		8,689
May	825	7,277	587	8,689		0	8,689	630	517	1,147		7,542
Jun	790	6,239	513	7,542		1	7,543	603	554	1,157		6,386
Jul	748	5,281	357	6,386		0	6,386	477	320	797	182	5,771
Season	713	4,000	313	5,026	14,760	2	19,788	7,617	6,582	14,199	182	5,771
1988/89:												
Aug	737	4,863	171	5,771	826	0	6,597	694	265	959		5,638
Sep	677	4,614	347	5,638	1,513	0	7,151	634	265	899		6,252
Oct	607	5,235	410	6,252	4,736	0	10,988	603	235	838		10,150
Nov	589	8,569	992	10,150	4,940	0	15,090	596	398	994		14,096
Dec	580	12,241	1,275	14,096	2,647	0	16,743	509	670	1,179		15,564
Jan	596	14,072	896	15,564	647	1	16,212	645	483	1,128		15,084
Feb	614	13,675	795	15,084	102	0	15,186	611	738	1,349		13,837
Mar	654	12,490	693	13,827		1	13,838	724	629	1,353		12,485
Apr	636	11,028	821	12,485		0	12,485	653	627	1,280		11,205
May	652	9,744	809	11,205		1	11,206	775	682	1,457		9,749
Jun	671	8,500	578	9,749		1	9,750	735	317	1,052		8,698
Jul	631	7,084	983	8,698			8,699	613	902	1,515	-91	7,093
Season	737	4,863	171	5,771	15,411	5	21,187	7,792	6,211	14,003		7,093
1989/90:												
Aug	632	6,179	282	7,093	393	0	7,486	800	507	1,307		6,179
Sep	626	5,190	363	6,179	615	0	6,794	725	492	1,217		5,577
Oct	616	4,658	303	5,577	4,956	0	10,533	763	522	1,285		9,248
Nov	575	7,694	979	9,248	4,674	0	13,922	702	520	1,222		12,700
Dec	566	10,997	1,137	12,700	1,233	0	13,933	557	683	1,240		12,693

1/ Compiled from Bureau of the Census data and adjusted to 480-lb. net weight bales. 2/ August stocks adjusted to an August 1 basis, excluding preseason ginnings. 3/ Adjusted to 480-lb. bales by use of monthly conversion factors for mill stocks. 4/ Primarily cotton on farms and in transit. Estimated by subtracting public storage and mill stocks from total stocks. 5/ August data include preseason ginnings. 6/ Adjusted to a calendar month. 7/ Supply less disappearance. End-of-season stocks adjusted by Bureau of the Census data. Differences primarily reflect varying bale weights. Monthly data are rounded. 8/ Preliminary and estimated.

Appendix table 4--Index of prices of selected cotton growth and qualities, and price per pound of U.S. cotton, c.i.f. Northern Europe, 1984-89 1/

Year beginning August 1	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
Cents/lb.													
<b>A index 2/:</b>													
1984	75.52	73.16	73.63	72.64	71.98	71.40	69.21	67.34	66.26	65.07	62.85	61.10	69.18
1985	56.97	53.43	49.01	48.04	48.25	51.82	54.52	52.35	48.50	45.42	41.04	37.44	48.90
1986	37.16	43.50	51.23	52.81	59.17	65.68	65.85	63.09	66.21	76.60	79.30	83.24	61.99
1987	86.60	83.61	76.19	75.83	75.29	72.19	67.49	66.34	65.75	65.58	68.78	63.43	72.26
1988	57.74	56.75	57.64	58.61	61.26	63.13	62.96	66.02	73.75	77.34	78.82	83.01	66.42
1989	82.97	81.45	82.10	82.13	77.30	74.92							
<b>Memphis 3/:</b>													
1984	75.85	74.00	74.69	73.25	74.00	74.75	72.94	73.70	75.94	74.80	72.44	70.38	73.90
1985	68.20	67.94	68.56	68.45	67.67	69.15	70.07	71.75	72.88	73.55	41.25	38.05	64.79
1986	37.75	44.69	52.35	54.25	62.08	65.31	64.75	62.56	65.30	75.06	76.19	81.75	61.84
1987	87.38	83.06	76.75	76.44	74.95	72.75	69.81	70.75	72.38	75.31	79.95	76.56	76.34
1988	60.75	60.45	62.13	63.94	65.81	67.19	68.06	69.95	74.06	76.88	77.85	82.75	69.15
1989	85.15	82.56	83.31	82.10	76.34	75.19							
<b>Calif./Ariz. 3/:</b>													
1984	75.90	74.38	75.19	74.00	74.08	74.25	72.13	72.94	75.81	73.70	71.94	70.63	73.75
1985	68.55	67.38	68.25	68.15	67.17	68.45	69.19	70.75	72.25	73.25	40.25	35.95	64.13
1986	36.69	45.44	54.55	57.00	65.75	69.25	68.44	64.69	67.65	78.75	80.63	86.65	64.62
1987	91.81	87.81	80.95	79.19	78.25	76.25	73.50	74.80	76.13	78.63	81.80	76.75	79.66
1988	64.19	64.10	65.94	66.13	67.31	69.13	69.94	72.10	76.56	80.50	82.40	86.19	72.04
1989	87.00	84.38	85.31	84.10	79.42	79.50							
<b>B index 4/:</b>													
1984	69.26	66.11	65.18	64.50	63.48	61.96	58.58	54.55	54.78	54.98	52.21	48.98	59.55
1985	47.03	45.35	43.61	41.42	40.83	43.15	45.14	43.19	40.88	38.70	33.03	28.77	40.93
1986	27.46	32.55	40.19	43.95	52.32	60.88	61.41	58.00	61.33	71.40	72.90	76.96	54.95
1987	81.55	78.44	70.77	71.73	71.08	68.15	64.21	62.69	61.30	59.50	62.73	57.88	67.50
1988	52.76	51.75	53.24	53.28	56.18	58.45	57.55	61.64	67.56	71.89	74.56	77.15	61.33
1989	78.64	76.70	77.08	77.19	73.49	71.20							
<b>Orleans/Texas 5/:</b>													
1984	68.65	66.44	66.25	65.40	65.08	65.94	63.88	62.15	62.69	62.40	61.13	60.50	64.21
1985	60.90	61.00	61.69	61.65	61.58	61.50	61.75	62.07	62.13	63.85	31.32	27.80	56.44
1986	27.44	32.56	41.55	44.81	53.17	59.13	60.81	57.50	60.10	68.94	70.56	75.40	54.33
1987	80.94	77.44	71.40	70.69	69.65	68.19	65.56	66.95	67.38	69.88	72.30	66.25	70.55
1988	54.56	53.30	54.50	55.56	57.88	59.94	60.81	62.40	67.19	71.31	73.35	76.63	62.29
1989	79.15	76.31	76.88	75.90	72.92	72.19							

1/ All prices are based on Thursday quotes. 2/ The A index is an average of the five cheapest types of SLM 1-3/32" staple length cotton offered on the European market. 3/ The Memphis and California/Arizona territories are based on middling 1-3/32". 4/ The B index is based on coarse grades of cotton varying in staple length from 1" to 1-3/32". 5/ Based on SLM 1" cotton.

Source: Cotton Outlook, Liverpool Cotton Services, Ltd.



Appendix table 5--C.i.f. Northern Europe price quotations for principal growth of A type cotton, weekly,  
August 1989 to date

Month & week	California/ Arizona	Memphis territory	USSR	China	Africa	Central America	Australia	Turkey	Paraguay	Mexico	Pakistan 1/	A index 2/
U.S. cents/lb.												
1989:												
Aug. 3	87.50	85.50	84.50	88.00	81.50	83.25	NQ	NQ	NQ	83.25	82.00	83.00
10	87.50	85.50	84.50	88.00	81.50	83.25	NQ	NQ	NQ	83.25	82.50	83.00
17	85.75	84.25	81.50	88.50	81.50	82.50	NQ	NQ	NQ	82.00	81.75	82.15
24	87.75	86.00	84.50	89.25	82.00	84.50	NQ	NQ	NQ	84.50	83.00	83.70
31	86.50	84.50	84.00	88.00	81.50	83.75	NQ	87.00	NQ	83.75	82.00	83.00
Sept. 7	84.00	82.50	82.00	88.00	80.00	81.75	NQ	87.00	NQ	81.75	80.00	81.10
14	85.50	83.75	83.25	89.00	80.50	83.25	NQ	88.25	NQ	83.25	81.25	82.30
21	85.25	83.25	83.50	88.75	80.75	83.00	NQ	87.50	NQ	83.25	81.25	82.30
28	82.75	80.75	81.50	88.00	79.00	81.25	NQ	87.00	NQ	81.50	78.00	80.10
Oct. 5	86.00	84.00	83.50	89.00	81.25	84.00	NQ	90.00	NQ	84.25	80.25	82.60
12	85.00	83.00	82.75	89.00	81.25	83.50	NQ	91.50	NQ	83.75	79.25	81.95
19	85.00	83.00	83.00	89.00	80.75	83.75	NQ	93.00	NQ	84.00	78.75	81.85
26	85.25	83.25	83.00	89.00	80.75	84.00	NQ	93.00	NQ	84.25	79.00	82.00
Nov. 2	87.00	85.00	84.25	90.00	82.50	85.75	NQ	93.50	NQ	86.00	82.75	84.05
9	86.25	84.25	84.25	90.00	82.50	85.00	NQ	93.50	NQ	85.50	82.50	83.70
16	84.50	82.50	83.50	89.00	82.50	83.25	NQ	93.50	NQ	83.75	81.25	82.60
23	82.75	80.75	82.75	88.50	81.50	82.35	NQ	94.00	NQ	82.75	79.00	81.25
30	80.00	78.00	80.75	86.00	79.50	81.00	NQ	93.50	NQ	80.50	77.25	79.05
Dec. 7	79.50	76.50	80.25	85.00	77.50	80.25	NQ	91.50	NQ	79.50	75.50	77.70
14	80.50	77.50	80.25	85.00	78.00	79.00	NQ	90.50	NQ	80.00	76.50	78.15
21	78.25	75.00	79.25	84.00	77.25	76.00	NQ	89.50	NQ	77.00	75.00	76.05
28	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ
1990:												
Jan. 4	81.00	77.00	80.00	85.00	77.75	77.25	80.75	89.50	73.50	79.25	76.50	76.40
11	78.50	74.00	77.50	84.00	75.00	74.00	76.50	88.50	70.50	NQ	75.75	73.85
18	79.75	75.25	78.00	82.00	75.50	75.25	77.00	89.00	71.50	NQ	77.25	74.90
25	79.75	74.50	78.00	81.00	75.00	74.75	76.25	89.00	75.25	NQ	77.25	74.55
Feb. 1	79.50	75.50	79.00	82.00	75.75	76.00	77.50	89.00	73.25	NQ	78.50	75.60
8	79.75	75.75	79.00	81.00	76.25	76.25	77.25	89.00	73.50	NQ	78.75	75.80
15	82.50	78.50	82.00	82.25	77.50	78.75	79.75	89.50	75.75	NQ	81.50	78.05

NQ = No quotes.

1/ Since August 1, 1987 Pakistan type 1505 has been included in the A index selection.

2/ The A index is an average of the five cheapest types of SLM 1-3/32" staple cotton offered on the European market.

Source: Cotton Outlook, Liverpool Cotton Services, Ltd.

Appendix table 6--C.i.f. Northern Europe price quotation for principal growth of coarse count cotton, weekly, August 1989 to date

Month & week	Orleans/ Texas	Pakistan	China	USSR	Turkey	Southern Brazil	Argentina	B index 1/
U.S. cents/lb.								
1989:								
Aug. 3	78.00	77.50	NQ	81.00	NQ	NQ	NQ	78.85
10	78.00	77.50	NQ	81.00	NQ	NQ	NQ	78.85
17	77.75	76.75	NQ	79.50	NQ	NQ	NQ	78.00
24	79.00	78.00	NQ	81.00	82.00	NQ	NQ	79.35
31	78.00	77.00	NQ	80.50	79.50	NQ	NQ	78.15
Sept. 7	76.00	75.00	NQ	78.50	78.50	NQ	NQ	76.50
14	77.25	76.25	NQ	79.75	79.75	NQ	NQ	77.75
21	76.75	76.25	NQ	80.00	78.50	NQ	NQ	77.15
28	75.25	73.00	NQ	78.50	78.00	NQ	NQ	75.40
Oct. 5	77.50	75.25	NQ	80.50	81.00	NQ	NQ	77.75
12	76.75	74.25	NQ	79.75	81.50	NQ	NQ	76.90
19	76.50	73.75	NQ	80.00	81.50	NQ	NQ	76.75
26	76.75	74.00	NQ	80.00	81.50	NQ	NQ	76.90
Nov. 2	78.50	77.75	NQ	81.25	82.00	NQ	NQ	79.15
9	77.75	77.50	NQ	81.25	82.00	NQ	NQ	78.85
16	76.00	76.25	NQ	80.50	82.00	NQ	NQ	77.60
23	74.25	74.00	NQ	79.75	82.50	NQ	NQ	76.00
30	73.00	72.25	NQ	77.75	82.00	NQ	NQ	74.35
Dec. 7	72.75	70.50	NQ	77.25	80.00	NQ	NQ	73.50
14	73.75	71.25	NQ	77.25	79.50	NQ	NQ	74.10
21	72.25	70.00	NQ	76.25	79.00	NQ	NQ	72.85
28	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ
1990:								
Jan. 4	74.00	71.50	NQ	77.00	79.00	NQ	72.00	72.50
11	71.00	69.75	NQ	74.50	78.00	NQ	69.50	70.10
18	72.25	71.25	NQ	75.00	79.00	NQ	70.50	71.35
25	71.50	71.25	NQ	75.00	79.00	NQ	69.75	70.85
Feb. 1	72.00	72.50	NQ	76.00	79.00	NQ	70.25	71.60
8	72.50	72.75	NQ	76.00	78.50	NQ	70.50	71.90
15	75.00	75.50	NQ	79.00	79.00	NQ	72.00	74.15

NQ = No quotes.

1/ The B index is based on coarse grades of cotton varying in staple length from 1" to 1-3/32". It is an average of the three cheapest types of seven styles, so marked.

Source: Cotton Outlook, Liverpool Cotton Services, Ltd.

Appendix table 7--Strict low middling spot prices in designated U.S. markets, loan rates, and prices received by farmers for upland cotton, 1984/85-1989/90

Year beginning August 1	Average spot market prices per pound (net weight) 1/						Price received by farmers (net weight) 2/
	15/16 inch	1 inch	1-1/32 inch	1-1/16 inch	1-3/32 inch	1-1/8 inch	
	Cents/lb.						
1984/85	52.39	55.98	58.30	60.51	60.29	60.49	3/ 58.7
1985/86	52.16	55.81	57.87	60.01	59.62	59.77	3/ 56.8
1986/87	44.80	47.77	50.78	53.16	53.81	55.89	3/ 51.5
1987/88	57.38	59.33	60.81	63.13	63.63	64.45	3/ 63.7
1988/89:							
August	49.97	51.58	52.61	55.20	55.69	56.43	52.6
September	41.53	45.30	47.40	51.25	51.80	52.96	51.8
October	41.60	45.83	48.17	52.20	52.66	54.38	54.2
November	43.05	47.41	49.46	53.40	53.80	54.86	56.5
December	44.89	48.75	50.84	54.80	55.20	56.18	55.3
January	47.41	50.17	51.88	55.67	56.07	57.25	53.9
February	46.89	50.02	51.69	55.37	55.77	57.31	52.9
March	48.83	52.21	53.79	57.59	58.04	59.58	56.3
April	53.91	56.63	57.84	61.43	61.94	63.31	58.9
May	55.43	58.65	59.98	63.70	64.21	65.94	58.8
June	56.16	59.06	60.43	64.06	64.57	66.17	58.8
July	58.57	62.21	63.79	67.39	67.92	69.72	60.6
Season	49.02	52.32	53.99	57.67	58.14	59.51	3/ 55.9
Loan rate 4/	45.30	48.15	49.65	51.80	52.30	52.45	
1989/90:							
August	61.03	64.79	66.63	69.88	70.42	72.27	61.1
September	60.56	63.79	65.37	68.46	69.00	70.29	63.8
October	61.11	64.85	66.28	69.40	69.89	70.94	66.0
November	61.54	64.33	65.34	68.33	68.75	68.85	65.8
December	57.37	59.82	60.54	63.56	63.99	64.08	61.4
January	55.19	58.24	59.20	62.21	62.63	62.72	5/ 60.2
Loan rate 4/	43.10	45.75	47.45	50.00	50.45	50.60	

1/ Spot market loan rates and prices are for cotton with micronaire readings of 3.5 through 4.9.  
 2/ Prices do not include an allowance for loans outstanding and Government purchases. 3/ Weighted market average. U.S. prices based on U.S. monthly prices weighted by monthly marketings from August through the following July. 4/ SLM 1-1/16" average location. 5/ Mid-month price.

Sources: Agricultural Stabilization and Conservation Service, Agricultural Marketing Service, and National Agricultural Statistics Service.

Appendix table 8--Fiber prices: Landed Group B mill points, cotton prices, and manmade staple fiber prices, f.o.b. producing plants, actual and estimated raw fiber equivalent, 1984-1989

Calendar year	Cotton 1/		Rayon 2/		Polyester 3/		Price ratios 4/	
	Actual	Raw fiber equivalent 5/	Actual	Raw fiber equivalent 5/	Actual	Raw fiber equivalent 5/	Cotton/rayon	Cotton/polyester
							Cents/lb.	
							Percent	
1984	76	84	84	88	79	82	.95	1.02
1985	66	73	79	82	66	69	.89	1.06
1986	61	68	76	79	62	65	.86	1.04
1987	73	81	81	84	66	69	.96	1.18
1988:								
January	69	77	83	86	69	72	.90	1.07
February	66	73	83	86	69	72	.85	1.01
March	67	74	87	91	72	75	.81	.99
April	68	76	87	91	72	75	.84	1.01
May	69	77	89	93	74	77	.85	1.00
June	71	79	89	93	74	77	.85	1.03
July	66	73	91	95	76	79	.77	.92
August	60	67	91	95	76	79	.71	.85
September	58	64	91	95	76	79	.67	.81
October	60	67	96	100	76	79	.67	.85
November	61	68	96	100	76	79	.68	.86
December	63	70	105	109	76	79	.64	.89
Average	65	72	91	94	74	77	.77	.94
1989:								
January	64	71	100	104	81	84	.68	.84
February	63	70	100	104	81	84	.67	.83
March	66	73	100	104	81	84	.70	.87
April	69	77	110	115	81	84	.67	.91
May	72	80	110	115	81	84	.70	.95
June	73	81	110	115	89	93	.71	.87
July	76	84	110	115	89	93	.74	.91
August	79	88	110	115	89	93	.77	.95
September	76	84	110	115	89	93	.74	.91
October	78	87	119	124	89	93	.70	.93
November	76	84	119	124	89	93	.68	.91
December	72	80	119	124	89	93	.65	.86
Average	72	80	110	114	86	89	.70	.89
1990:								
January	70	78	119	124	89	93	.63	.84

1/ SLM 1-1/16" at Group B mill points, net weight. 2/ 1.5 and 3.0 denier, regular rayon staple. 3/ Reported average market price for 1.5-denier polyester staple for cotton blending. 4/ Raw fiber equivalent. 5/ Actual prices converted to estimated raw fiber equivalent as follows: cotton, divided by 0.90; rayon and polyester, divided by 0.96.

Appendix table 9--Upland cotton and manmade staple fibers: Mill consumption on cotton-system spinning spindles

Year beginning August 1	Cotton	Manmade		Total	Total fibers	Cotton's share of total
		Rayon and acetate	Non-cellulosic			
						Percent
						1,000 lbs.
1984/85	2,618,685	231,197	1,336,595	1,567,792	4,186,477	62.6
1985/86	3,086,842	253,459	1,465,228	1,718,687	4,805,529	64.2
1986/87	3,544,852	256,711	1,481,822	1,738,593	5,283,445	67.1
1987/88	3,631,397	268,813	1,481,923	1,750,736	5,382,133	67.5
1988/89:						
August	278,411	22,571	117,117	139,688	418,099	66.6
September	334,445	28,218	141,771	169,989	504,434	66.3
October	266,339	23,050	111,980	135,030	401,369	66.4
November	251,815	22,207	106,930	129,137	380,952	66.1
December	273,513	24,663	115,420	140,083	413,596	66.1
January	273,501	22,982	108,589	131,571	405,072	67.5
February	282,007	22,202	109,025	131,227	413,234	68.2
March	364,299	29,325	132,190	161,515	525,814	69.3
April	302,419	22,173	109,382	131,555	433,974	69.7
May	312,495	22,663	112,265	134,928	447,423	69.8
June	387,695	28,320	137,438	165,758	553,453	70.0
July	270,753	17,368	95,327	112,695	383,448	70.6
Season	3,597,692	285,742	1,397,434	1,683,176	5,280,868	68.1
1989/90:						
August	328,560	22,314	110,610	132,924	461,484	71.2
September	410,706	27,016	139,980	166,996	577,700	71.1
October	330,133	22,158	108,625	130,783	460,916	71.6
November	305,813	21,230	100,920	122,150	427,963	71.5
December 1/	325,343	24,345	119,176	143,521	468,864	69.4

1/ Preliminary.

Source: Bureau of the Census.

Appendix table 10--Cotton and manmade fibers: Daily rate of mill consumption on cotton-system spinning spindles, unadjusted and seasonally adjusted

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
480-lb. bales												
UPLAND COTTON												
Unadjusted--												
1985/86	23,765	23,334	25,556	24,752	20,186	24,724	25,851	25,570	25,775	25,689	25,371	21,644
1986/87	27,748	27,200	28,357	27,444	23,949	28,338	29,043	30,381	29,676	30,331	29,501	28,038
1987/88	31,498	31,307	32,246	31,735	25,358	29,516	30,618	30,514	28,827	28,532	27,394	22,319
1988/89	29,001	27,870	27,743	26,231	22,793	28,490	29,376	30,359	31,503	32,551	32,308	28,204
1989/90	34,225	34,226	34,388	31,855	27,112	1/						
Adjusted--												
1985/86	22,873	23,102	23,684	24,458	23,554	24,650	24,714	24,681	25,196	24,513	25,627	25,197
1986/87	26,604	26,931	26,232	26,905	28,208	28,197	27,819	29,439	29,010	29,053	29,773	32,717
1987/88	29,998	30,844	30,109	31,235	29,486	29,282	29,441	29,426	28,206	27,461	27,811	26,043
1988/89	27,620	27,297	25,953	25,566	26,815	28,377	28,273	29,108	30,884	31,481	32,568	33,103
1989/90	32,318	33,391	32,626	31,354	31,972	1/						
1,000 lbs.												
MANMADE STAPLE												
Rayon and acetate:												
Unadjusted--												
1985/86	957	931	1,078	1,028	819	974	978	900	948	1,003	974	931
1986/87	1,073	1,024	1,089	1,121	844	1,041	951	997	961	948	952	867
1987/88	1,038	1,020	1,061	1,066	975	987	1,053	1,057	1,092	1,023	1,106	903
1988/89	1,129	1,129	1,153	1,110	987	1,149	1,110	1,173	1,109	1,133	1,133	868
1989/90	1,116	1,081	1,108	1,062	973	1/						
Adjusted--												
1985/86	946	927	1,017	971	957	976	945	853	940	948	936	1,141
1986/87	1,051	1,019	1,008	1,074	987	1,046	914	963	955	902	923	1,035
1987/88	1,010	1,015	984	1,003	1,144	977	1,033	1,026	1,090	998	1,110	1,011
1988/89	1,098	1,109	1,061	1,042	1,165	1,141	1,109	1,159	1,100	1,127	1,121	972
1989/90	1,053	1,051	1,026	997	1,118	1/						
Noncellulosic 2/:												
Unadjusted--												
1985/86	5,369	5,498	5,915	5,868	4,805	5,565	5,951	5,719	5,679	5,721	5,582	4,962
1986/87	5,817	5,849	5,948	5,835	4,990	5,552	5,770	5,919	5,845	5,818	5,706	5,400
1987/88	5,907	5,815	6,254	6,006	4,861	5,953	5,849	5,897	5,789	5,699	5,667	4,961
1988/89	5,856	5,671	5,599	5,347	4,617	5,430	5,451	5,288	5,469	5,613	5,498	4,766
1989/90	5,530	5,599	5,431	5,046	4,767	1/						
Adjusted--												
1985/86	5,208	5,444	5,580	5,933	5,613	5,494	5,567	5,483	5,557	5,554	5,500	5,743
1986/87	5,664	5,763	5,569	5,847	5,809	5,508	5,418	5,724	5,742	5,654	5,655	6,200
1987/88	5,757	5,690	5,878	5,935	5,626	5,983	5,508	5,725	5,457	5,555	5,644	5,644
1988/89	5,708	5,554	5,218	5,186	5,375	5,457	5,216	5,104	5,346	5,487	5,471	5,510
1989/90	5,333	5,468	5,119	4,957	5,505	1/						

1/ Preliminary. 2/ Includes nylon, acrylic and modacrylic, polyester, and other manmade fibers.

Source: Bureau of the Census.

Appendix table 11--Cotton spindles in place and active, and hours operated

Date	Spindles		Percentage of active spindles used on			Daily average spindle hours operated		Total fiber spun per spindle hour
	In place	Active	100-percent cotton	100-percent manmade	Other fibers and blends	Actual	Seasonally adjusted	
	-1,000-		-Percent-			-Millions-		
<b>1987:</b>								
January	13,044	11,880	39.8	13.7	46.5	321	316	.063
February	13,068	11,880	39.8	13.8	46.4	342	320	.061
March	12,914	11,936	39.8	13.8	46.4	343	332	.063
April	12,858	11,832	40.2	13.6	46.2	331	323	.064
May	12,892	11,867	40.4	13.8	45.7	323	310	.066
June	12,814	11,671	39.7	13.9	46.3	310	311	.067
July	12,819	11,723	39.3	13.4	47.3	292	341	.068
August	12,749	11,760	40.0	13.3	46.6	322	314	.069
September	12,831	11,776	40.9	13.1	46.0	318	317	.069
October	12,792	11,696	40.3	13.5	46.2	335	316	.068
November	12,804	11,648	39.9	13.4	46.7	328	326	.068
December	12,636	11,638	39.7	13.4	46.9	272	316	.067
<b>1988:</b>								
January	12,712	11,607	39.6	13.7	46.7	308	305	.069
February	12,621	11,515	39.8	13.8	46.4	319	298	.068
March	12,708	11,733	40.0	14.0	46.0	321	307	.068
April	12,684	11,741	39.9	13.8	46.3	334	325	.062
May	12,566	11,724	39.7	14.4	45.9	324	314	.063
June	12,508	11,674	39.5	14.6	45.9	313	315	.064
July	12,578	11,737	38.9	14.9	46.2	252	291	.066
August	12,286	11,635	39.5	14.1	46.4	299	292	.070
September	12,287	11,599	39.4	13.8	46.8	301	300	.068
October	12,190	11,478	37.9	14.0	48.1	299	283	.068
November	12,216	11,406	38.1	13.5	48.4	300	298	.064
December	12,402	11,537	38.2	13.3	48.5	251	290	.066
<b>1989:</b>								
January	12,077	11,267	38.4	13.8	47.8	288	286	.071
February	11,963	11,183	37.9	14.0	48.1	293	275	.071
March	11,925	11,102	38.5	14.0	47.5	289	276	.073
April	11,940	11,114	39.0	13.6	47.3	296	287	.074
May	11,866	11,072	39.3	13.6	47.1	300	289	.075
June	11,812	11,211	38.7	13.4	48.0	299	300	.075
July	11,669	10,794	39.7	14.0	46.2	301	257	.064
August	11,554	10,750	39.5	13.9	46.6	313	310	.074
September	11,468	10,735	39.4	13.8	46.8	317	314	.073
October	11,507	10,705	39.0	13.6	47.4	279	268	.083
November	11,509	10,676	39.4	14.1	46.5	290	281	.074
December 1/	11,549	10,699	39.1	14.3	46.6	261	301	.072

1/ Preliminary.

Source: Bureau of the Census.

Appendix table 12--Mill consumption of cotton, wool, and manmade fibers, quarterly, 1985-89

Year	Cotton	Wool	Cellulosic	Noncellulosic	Total manmade	Total fibers	Cotton's share of total
							Percent
-----Million lbs.-----							
1985	1Q	662.3	29.9	127.0	1,818.7	1,945.7	25.1
	2Q	695.3	30.4	132.5	1,934.4	2,066.9	24.9
	3Q	711.4	27.9	138.2	1,956.7	2,094.9	25.1
	4Q	744.1	28.4	147.9	1,970.1	2,118.0	25.1
Total	2,813.4	116.6	545.6	7,679.9	8,225.5	11,155.5	25.2
1986	1Q	786.3	35.0	150.8	1,944.4	2,095.2	27.0
	2Q	810.6	36.0	153.5	1,976.1	2,129.6	27.2
	3Q	808.0	32.9	153.6	2,049.1	2,202.7	26.5
	4Q	849.8	32.8	150.4	2,074.1	2,224.5	27.3
Total	3,254.6	136.7	608.3	8,043.7	8,652.0	12,043.3	27.0
1987	1Q	904.4	36.6	140.2	2,090.8	2,231.0	28.5
	2Q	939.8	37.5	143.2	2,147.7	2,290.9	28.8
	3Q	967.5	33.8	146.2	2,129.8	2,276.0	29.5
	4Q	941.5	34.9	156.0	2,094.0	2,250.0	29.2
Total	3,753.2	142.8	585.6	8,462.3	9,047.9	12,943.9	29.0
1988	1Q	948.2	35.4	152.3	2,102.7	2,255.0	29.3
	2Q	885.0	33.9	159.0	2,154.5	2,313.5	27.4
	3Q	849.8	31.8	151.7	2,110.9	2,262.6	27.0
	4Q	799.3	31.6	149.9	2,236.2	2,386.1	24.8
Total	3,482.3	132.7	612.9	8,604.3	9,217.2	12,832.2	27.1
1989	1Q	926.2	39.1	168.6	2,160.5	2,329.1	28.1
	2Q	1,010.9	35.5	162.6	2,213.7	2,376.3	29.5
	3Q	1,018.6	34.2	143.0	2,112.0	2,255.0	30.8
	4Q	970.4	32.6	139.7	2,055.1	2,194.8	30.3
Total	3,926.1	141.4	613.9	8,541.3	9,155.2	13,222.7	29.7

Source: Bureau of the Census, and Fiber Organon.

Appendix table 13--U.S. fiber consumption: Total and per capita, by type of fiber

Fiber and year	U.S. mill use	Percent of fibers	Textile trade 1/		Total domestic consumption 2/	Percent of fibers	Per capita 3/	
			Exports	Imports			Mill use	Domestic consumption
			Million lbs.				-Lbs.-	
Cotton:								
1986	3,256.3	27.0	274.8	1,910.5	4,892.0	31.0	13.5	20.2
1987	3,783.7	29.2	298.0	2,335.7	5,821.4	33.9	15.5	23.9
1988	3,482.3	27.1	325.3	2,121.7	5,278.3	31.9	14.1	21.4
1989	3,926.1	29.7	NA	NA	NA	NA	15.8	NA
Wool:								
1986	136.7	1.2	16.0	275.6	396.3	2.5	0.6	1.6
1987	142.8	1.1	23.5	276.1	395.4	2.3	0.6	1.6
1988	132.7	1.1	30.7	248.7	362.2	2.2	0.6	1.5
1989	141.4	1.1	NA	NA	NA	NA	0.6	NA
Manmade fibers:								
1986	8,652.0	71.8	519.3	1,703.0	9,835.7	62.4	35.8	40.7
1987	9,047.9	69.7	591.9	1,805.4	10,261.4	59.7	37.1	42.1
1988	9,217.2	71.7	681.6	1,758.9	10,292.2	62.2	37.4	41.8
1989	9,155.2	69.2	NA	NA	NA	NA	36.8	NA
Flax and silk:								
1986	4.8	4/	NA	632.2	637.0	4.1	4/	2.6
1987	4.7	4/	NA	702.7	707.4	4.1	4/	2.9
1988	5.0	4/	NA	607.5	612.7	3.7	4/	2.5
1989	6.0	4/	NA	NA	NA	NA	4/	NA
All fibers 6/:								
1986	12,049.8	100.0	810.1	4,521.3	15,761.0	100.0	49.9	65.3
1987	12,979.1	100.0	913.4	5,119.9	17,185.6	100.0	53.2	70.5
1988	12,846.2	100.0	1,037.6	4,736.8	16,545.4	100.0	52.2	67.2
1989	13,228.7	100.0	NA	NA	NA	NA	53.2	NA

NA = Not available.

1/ Raw fiber equivalent of imports and exports of textile products. 2/ Total domestic consumption is U.S. mill consumption plus net textile product trade balance. 3/ July 1 population for 1984=237.0 million, 1985=239.3 million, 1986=241.6 million, 1987=243.9 million, 1988=246.3 million, and 1989=248.8 million. 4/ Less than 0.05 pounds, or 0.1 percent. 5/ Estimated. 6/ Includes flax and silk.

Source: Bureau of the Census.



Appendix table 14--Manmade fiber production and capacity, 1988-91 1/

Fiber	1988					1989					1990					Average planned 1991 capacity	Annual change 1989-91
	1q	2q	3q	4q	Year	1q	2q	3q	4q	Year	1q	2q	3q	4q	Year		
	-----Million lbs.-----																
Grand total, all fibers 2/:																	
Capacity	2,528	2,534	2,560	2,585	10,207	2,596	2,610	2,606	2,607	10,419	2,650	2,691	2,719	2,751	10,811	11,228	+3.8
Production	2,241	2,323	2,242	2,333	9,140	2,322	2,394	2,252	2,147	9,115							
Percent	89	92	88	90	90	89	92	86	82	87							
Total staple--																	
Capacity	1,315	1,315	1,323	1,330	5,283	1,336	1,343	1,326	1,312	5,317	1,331	1,346	1,354	1,361	5,392	5,549	+2.1
Production	1,168	1,202	1,157	1,218	4,746	1,204	1,233	1,136	1,073	4,646							
Percent	89	91	87	92	90	90	92	86	82	87							
Total filament 2/--																	
Capacity	1,213	1,219	1,237	1,255	4,924	1,260	1,267	1,280	1,295	5,102	1,319	1,345	1,365	1,390	5,419	5,679	+5.5
Production	1,073	1,121	1,085	1,115	4,394	1,118	1,161	1,115	1,074	4,468							
Percent	88	92	88	89	89	89	92	87	83	88							
Polyester total:																	
Capacity	965	967	978	990	3,900	994	999	972	946	3,911	966	984	997	1,010	3,957	4,148	+3.0
Production	872	933	909	967	3,681	923	974	897	798	3,592							
Percent	91	96	94	99	95	94	97	90	84	92							
Staple--																	
Capacity	633	636	641	646	2,556	650	655	635	616	2,556	630	643	649	654	2,576	2,712	+3.0
Production	587	620	604	641	2,452	609	649	591	535	2,384							
Percent	93	97	94	99	96	94	99	93	87	93							
Filament--																	
Capacity	332	331	337	344	1,344	344	344	337	330	1,355	336	341	348	356	1,381	1,436	+3.0
Production	285	313	305	326	1,229	314	325	306	263	1,208							
Percent	86	95	91	95	91	91	94	91	80	89							
Nylon total:																	
Capacity	743	744	752	758	2,997	764	770	781	792	3,107	797	801	805	809	3,212	3,262	+2.5
Production	663	676	656	675	2,670	690	690	676	685	2,741							
Percent	89	91	87	89	89	90	90	87	87	88							
Staple--																	
Capacity	284	283	284	284	1,135	285	286	287	288	1,146	289	289	289	289	1,156	1,161	+0.6
Production	231	236	227	248	942	253	242	241	245	981							
Percent	82	83	80	87	83	89	85	84	85	86							
Filament--																	
Capacity	459	461	468	474	1,862	479	484	494	504	1,961	508	512	516	520	2,056	2,101	+3.5
Production	432	440	429	427	1,728	437	448	435	440	1,760							
Percent	94	95	92	90	93	91	93	88	87	90							
Olefin total:																	
Capacity	474	478	485	490	1,927	491	492	505	520	2,008	538	556	568	581	2,243	2,413	+9.6
Production	396	404	378	391	1,569	411	420	402	407	1,641							
Percent	83	85	78	80	81	83	86	80	78	82							
Staple--																	
Capacity	120	120	121	122	483	122	122	123	125	492	128	130	132	133	523	538	+4.6
Production	94	95	86	89	364	97	95	92	95	379							
Percent	78	79	71	73	75	91	78	75	76	77							
Filament--																	
Capacity	354	358	364	368	1,444	369	370	382	395	1,516	410	426	436	448	1,720	1,875	+11.2
Production	308	314	297	306	1,224	314	325	310	312	1,261							
Percent	87	88	82	83	85	85	88	81	79	83							

See footnotes at end of table.

continued--

Appendix table 14--Manmade fiber production and capacity, 1988-91 1/--continued

Fiber	1988					1989					1990					Average planned 1991 capacity	Annual change 1989-91
	1q	2q	3q	4q	Year	1q	2q	3q	4q	Year	1q	2q	3q	4q	Year		
	-----Million lbs.-----															Percent	
Other fibers 3/:																	
Capacity	7	8	7	8	30	7	8	7	8	30	7	8	7	8	30	30	0.0
Production	7	7	7	7	28	7	7	7	7	28							
Percent	100	88	100	88	93	100	88	100	88	93							
Acrylic staple:																	
Capacity	161	159	160	161	641	161	161	160	160	642	161	161	161	162	645	646	0.0
Production	149	151	141	147	588	144	146	129	123	542							
Percent	93	95	88	91	92	89	78	81	77	84							
Percent	100	88	100	88	93	100	88	100	88	93							
Noncellulosic total 2/:																	
Capacity	2,350	2,356	2,382	2,407	9,495	2,417	2,430	2,425	2,426	9,698	2,469	2,510	2,538	2,570	10,087	10,499	+4.0
Production	2,085	2,169	2,088	2,184	8,526	2,168	2,229	2,105	2,012	8,514							
Percent	89	92	88	91	90	90	92	87	83	88							
Staple--																	
Capacity	1,198	1,198	1,206	1,213	4,815	1,218	1,224	1,205	1,189	4,836	1,208	1,223	1,231	1,238	4,900	5,057	+2.2
Production	1,061	1,102	1,058	1,125	4,346	1,103	1,132	1,053	998	4,286							
Percent	88	92	88	93	90	91	92	87	84	89							
Filament--																	
Capacity	1,152	1,158	1,176	1,194	4,680	1,199	1,206	1,220	1,237	4,862	1,261	1,287	1,307	1,332	5,187	5,442	+5.8
Production	1,024	1,067	1,030	1,059	4,180	1,065	1,097	1,052	1,014	4,228							
Percent	89	92	88	89	89	89	91	86	82	87							
Cellulosic staple:																	
Capacity	117	117	117	117	468	118	119	121	123	481	123	123	123	123	492	492	+1.1
Production	107	101	99	93	400	101	101	83	75	360							
Percent	91	86	84	78	85	86	85	69	61	75							
Cellulosic filament:																	
Capacity	61	61	61	61	244	61	61	60	58	240	58	58	58	58	232	237	-0.6
Production	49	54	55	56	214	53	56	57	52	218							
Percent	80	89	90	92	88	87	92	95	90	91							

1/ Capacity data as of December 1989. 2/ Glass fibers are not included. 3/ Includes saran and spandex. USDA estimates.

Source: Fiber Organon.

Appendix table 15--Domestic shipments of manmade fibers by major category, 1985-89 1/

Fiber type	1985				1986				1987				1988				1989				
	1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q	
Million lbs.																					
Woven products:																					
Total	498.4	513.5	519.5	542.3	534.4	533.6	536.7	535.4	524.7	563.2	559.1	586.3	559.8	569.7	564.9	630.2	586.5	618.1	544.2	NA	
Polyester	320.7	326.9	327.3	335.0	326.2	319.0	319.8	312.7	314.4	334.0	316.2	329.8	317.5	328.7	319.1	377.4	322.6	359.7	302.0	NA	
Rayon	39.0	39.4	44.6	51.9	53.9	53.2	55.1	55.8	52.9	55.2	59.9	62.7	58.7	60.5	63.5	60.3	69.1	59.7	50.6	NA	
Olefin	64.8	71.0	65.5	66.5	66.9	76.2	78.6	85.3	77.8	85.4	90.4	102.0	94.2	92.3	90.5	95.7	98.8	98.0	97.9	NA	
Nylon	36.1	32.2	34.8	36.8	38.2	38.0	35.1	35.8	37.1	39.0	43.1	41.0	40.1	36.7	38.1	40.6	38.7	40.6	39.0	NA	
Acetate	22.9	27.0	29.3	33.6	32.8	32.1	32.0	31.4	26.7	32.1	31.8	34.4	32.5	36.3	36.9	40.6	37.3	39.3	38.8	NA	
Acrylic	14.9	17.0	18.0	18.5	16.4	15.1	16.1	14.4	15.8	17.5	17.7	16.4	16.8	15.2	16.8	15.6	20.0	20.8	15.9	NA	
Knit products:																					
Total	296.6	330.1	338.1	331.0	345.8	364.3	357.2	355.4	368.6	375.0	339.8	331.3	327.1	343.4	326.7	366.8	374.6	371.3	355.5	NA	
Polyester	137.9	163.1	171.5	165.8	167.8	165.5	171.5	183.0	181.5	196.2	182.5	190.9	173.2	183.8	175.0	219.6	214.2	211.9	207.7	NA	
Nylon	65.2	62.2	64.4	65.7	68.3	65.1	60.0	59.4	63.7	63.5	63.5	60.9	61.8	64.7	64.1	70.8	68.9	68.4	64.9	NA	
Acrylic	76.1	87.2	86.6	86.4	95.9	117.7	111.6	99.9	112.7	105.2	87.5	72.1	85.3	86.3	80.6	70.0	84.1	82.2	77.9	NA	
Acetate	15.9	15.8	12.8	11.1	12.0	14.3	12.3	11.2	9.1	8.4	5.2	6.3	5.9	7.9	5.9	5.2	6.3	7.6	3.8	NA	
Rayon	1.5	1.8	2.8	2.0	1.8	1.7	1.8	2.0	1.6	1.7	1.1	1.1	0.9	0.7	1.1	1.2	1.1	1.2	1.2	NA	
Carpets:																					
Total	525.0	606.7	626.0	623.0	582.7	623.9	694.7	700.3	686.3	722.0	732.8	675.0	722.1	729.0	733.4	732.6	724.9	723.7	736.5	NA	
Nylon	340.4	397.5	423.0	428.4	387.1	406.4	476.4	449.3	458.7	474.7	476.7	411.0	452.5	443.6	467.6	460.0	451.8	450.4	474.0	2/ 451.2	
Olefin	153.8	175.2	172.6	162.5	164.2	178.9	181.9	212.5	180.8	196.6	204.7	203.9	203.3	216.3	203.5	208.7	212.9	221.8	213.7	NA	
Polyester	30.7	33.9	30.3	31.9	31.3	38.4	36.9	38.4	46.8	50.7	51.4	60.1	66.1	69.0	62.3	63.8	60.1	51.3	48.6	52.1	
Rayon	0.1	0.1	0.1	0.2	0.1	0.2	NA	0.1	NA	NA	NA	NA	0.2	0.1	NA	0.1	0.1	0.2	0.2	NA	

NA = Not available.

1/ Filament plus staple. 2/ Estimated.

Source: Fiber Organon.

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