
FRBSF WEEKLY LETTER

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Western Manufacturing: Bucking the National Trend?

Since 1983, the current economic expansion has increased manufacturing employment in the U.S. by 6.4 percent. At the same time, in the nine western states that constitute the Twelfth Federal Reserve District the number of manufacturing jobs grew by a much stronger 14.2 percent, or 392 thousand.

Based on the trend rate of growth in manufacturing employment nationwide, the West would have added only 177 thousand manufacturing jobs since 1983. What accounts for the extra 215 thousand jobs not explained by the national trend? In this *Letter*, we examine some of the factors that may have led to the more rapid growth in western manufacturing.

Favorable industry mix

One factor may have been the West's industry mix. Because the West has a higher-than-average proportion of fast-growing manufacturing sectors, it is not surprising that western manufacturing employment rose faster than the national pace. For example, because the lumber and wood products industry is relatively more important in the West, the 17 percent increase in this industry's jobs nationwide from 1983 to 1989 would be expected to boost the West's total manufacturing employment relatively more than in the rest of the country.

Similarly, because primary metals and leather products are a smaller share of manufacturing employment in the West, declines in these industries nationally would have had a smaller impact here during this period than in parts of the country that are more dependent on these industries. The West's favorable industry mix, however, would explain only 28 thousand of the 215 thousand additional jobs.

Labor force growth

Faster labor force growth also could be responsible for some of the West's relatively stronger performance. Rapid labor force growth makes a region attractive to manufacturing firms because it provides adequate labor supply. Moreover, since labor force growth tends to be associated with population growth, a region with a more rapidly growing labor force also provides a growing market for manufactured products. The West's labor force grew 50 percent faster than the national labor force did during the 1983-89 period. This increase in the labor pool suggests manufacturing jobs in the West would have increased by 119 thousand even if the industry mix in the West were identical to that of the nation.

Industry-specific factors

After accounting for industry mix and labor force growth, 68 thousand of the West's added manufacturing jobs remain unexplained. These gains arose because some manufacturing sectors, such as transportation equipment and instruments, grew more rapidly in the West than did their counterparts nationally. One reason for the differential performance is that the industry categories used in this analysis are limited by the availability of consistent state-level data, and often fail to distinguish important differences within manufacturing sectors.

For example, "transportation equipment" manufacturing is dominated by auto production at the national level. In the West, however, most of the transportation equipment produced is aircraft, missiles, and space vehicles. Consequently, it is not surprising that the strong growth in contract defense spending as well as the rapid growth in commercial aircraft orders during the 1983-89 period led to an increase in employment

THE WESTERN ECONOMY

The Western Economy is a quarterly review of economic conditions in the Twelfth Federal Reserve District. It is published in the *Weekly Letter* on the third Friday of February, May, August and November.

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in transportation equipment of 28 percent in the Twelfth District, compared with a significantly smaller 18 percent increase nationally.

Similarly, although primary metals provide fewer jobs in the West than is the case nationwide, strong growth in nonferrous metals in Arizona and in aluminum production in Oregon boosted primary metals employment by eight percent in the District. This gain contrasts sharply with the six percent decline in primary metals nationally (tied to weakness in steel production).

Differences between the performance of specific industries in the West and the nation are not limited to problems with overly broad definitions of manufacturing sectors. For example, employment in the District's textile and apparel industries grew 28 and 18 percent, respectively, but in the nation as a whole fell two and six percent, respectively. These discrepancies are due to a number of factors, including the presence of a large, skilled immigrant population in the West, the emergence of western design centers (especially Los Angeles), and a trend toward the more casual clothing manufactured in the West.

In addition to textiles and apparel, several other industries in the West had much stronger growth than did their counterparts elsewhere in the country. The District reported 11 percent employment growth in the paper products sector—double the national average—because of growth rates ranging from 11 to 17 percent in California, Idaho, and Washington. Chemical industry employment growth of 16 and 21 percent in California and Washington, respectively, brought the District's growth in chemicals employment to 17 percent during the 1983 to 1989 period, well above the increase of five percent nationally. Moreover, strong construction activity in the West boosted stone, clay, and glass employment 18 percent, compared to only six percent nationally.

Employment in instruments manufacturing exhibited the most dramatic gains in the West, with employment doubling during the period. Nearly all of these 139 thousand new jobs were added in California and Washington, where employment rose 131 and 59 percent, respectively. In contrast, instruments employment outside the District actually declined by 54 thousand jobs.

Electronics: an exception

At the same time, however, a few sectors saw considerably worse conditions in the West than

nationally. The electrical equipment industry, which includes semiconductors and other electronic components, lost 83 thousand jobs in the West between 1983 and 1989. In fact, the number of electronic component jobs fell by 96 thousand in California during this period, a loss that was only partially offset by job gains in other western states, notably Oregon (4.9 thousand) and Idaho (2.8 thousand). Outside the District, this industry gained 108 thousand jobs. The rising cost of doing business in California may account for this contrast. Other lower-cost locations for assembling electronic components, both in the U.S. and abroad, appear to be eating into California's traditional leading role in this industry.

A repeat performance?

In summary, then, a number of factors contributed to the West's superior performance. Rapid labor force growth, the West's favorable industry mix, and the better-than-average performance of several key sectors, including textiles, apparel, paper, transportation equipment, instruments, and stone, clay and glass, provided the impetus for strong manufacturing employment growth.

Some of the factors that led to this growth in western industries during the 1983-89 period are expected to persist. For example, population and labor force projections continue to suggest faster growth in the West than nationally, thereby stimulating continued growth in western construction activity. Increased trade with the Pacific Rim and rising foreign investment in the West remain positive factors in the outlook. Moreover, large backlogs in the orders for commercial aircraft should keep that sector strong.

However, continued strength in the region's manufacturing sector is not assured. Western manufacturers face strong competition from producers in other countries and other parts of the U.S. Defense cutbacks will force many companies to change products and seek new markets. Restrictions on timber cutting in the Northwest can be expected to slow the region's forest products industries. And growing urban problems in several parts of the West, including environmental restrictions, congestion, and rising housing costs, may challenge the region's competitive edge.

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DISTRICT INDICATORS
(Seasonally Adjusted)

	90Q1	89Q4	89Q3	89Q2	89Q1	88Q4	88Q3	88Q2	% CHANGE 89Q4	FROM: 89Q1
AGRICULTURE										
U.S. CROP PRICES, 1985=100	120.0	115.6	113.2	114.5	116.5	112.7	111.7	104.9	3.81	2.99
DISTRICT CROP PRICES, 1985=100	132.0	117.2	115.0	120.5	119.7	112.4	111.7	92.5	12.64	10.23
FARM CASH RECEIPTS, MILLION \$	N/A	2488.6	2488.4	2448.9	2427.0	2330.9	2308.9	2218.3	N/A	N/A
CATTLE ON FEED, 1985=100	90.5	90.5	92.9	90.1	93.4	96.2	95.9	96.6	0.06	-3.08
CATTLE PRICES, CALIFORNIA, \$/CWT.	63.4	62.4	62.7	61.8	61.7	60.1	61.4	63.4	1.60	2.65
FORESTRY										
LUMBER PRODUCTION, MILLIONS BOARD FEET	1695.3	1788.3	1810.8	1668.8	1603.2	1768.7	1588.6	1664.3	-5.20	5.74
NORTHWEST LUMBER INVENTORY, MIL. BOARD FEET	2623.3	2519.4	2541.7	2450.6	2417.6	2568.5	2461.4	2507.5	4.12	8.51
U.S. LUMBER PRICES, 1986=100	130.3	128.1	123.8	119.5	123.4	122.4	120.0	124.3	1.78	5.61
ENERGY										
SPOT PRICE OF OIL, \$/BARREL	21.8	20.3	19.3	20.5	18.5	14.8	15.2	17.3	7.05	17.61
U.S. RIG COUNT	909.5	1017.6	904.7	807.1	753.4	912.3	941.5	942.8	-10.63	20.72
DISTRICT RIG COUNT	56.2	70.3	75.6	66.7	62.0	72.8	92.7	89.9	-20.06	-9.31
FUEL MINING EMPLOYMENT, 1985=100	79.3	79.2	81.1	79.7	77.6	79.1	82.7	83.0	0.03	2.15
U.S. SEISMIC CREW COUNT	126.1	128.0	131.3	129.9	137.3	152.9	180.7	197.6	-1.47	-8.13
MINING										
MINERAL PRICES, 1986=100	123.3	125.5	131.8	134.3	147.4	147.7	138.2	136.3	-1.75	-16.35
METAL MINING EMPLOYMENT, 1985=100	201.3	191.0	187.9	182.7	176.1	169.4	162.4	154.3	5.39	14.28
CONSTRUCTION										
NONRESIDENTIAL AWARDS	1790.4	1427.4	1677.2	1533.3	1432.5	1334.0	1571.0	1345.2	25.43	24.98
RESIDENTIAL PERMITS	32741	33475	30509	31304	31065	35414	32858	31526	-2.19	5.40
WESTERN HOUSING STARTS, THOUSANDS	29.8	29.3	35.2	37.7	29.6	33.0	36.3	36.8	1.99	0.73
CONSTRUCTION EMPLOYMENT, THOUSANDS	1053.4	1026.0	1011.0	1001.0	982.2	967.4	950.6	934.4	2.68	7.25
MANUFACTURING										
WAGES, CALIFORNIA, \$/HOUR	11.3	11.3	11.2	11.1	11.0	11.0	10.9	10.8	0.21	2.57
EMPLOYMENT, THOUSANDS	3164.5	3151.8	3152.7	3153.5	3148.5	3134.7	3108.2	3102.5	0.40	0.51
DURABLES, 1985=100	104.1	103.6	104.0	104.1	104.1	103.5	102.8	102.6	0.50	0.03
CONSTRUCTION DURABLES, 1985=100	115.1	111.6	112.1	111.4	112.3	112.1	110.1	111.2	3.18	2.54
AEROSPACE, 1985=100	116.7	116.2	115.8	115.3	113.8	115.1	114.0	113.6	0.46	2.59
ELECTRONICS, 1985=100	95.3	94.7	94.7	95.3	95.7	99.7	98.7	97.9	0.59	-0.43
SEMICONDUCTOR ORDERS, MILLIONS \$, NOT S.A.	1214.0	1197.9	1166.3	1300.0	1300.0	1066.0	1222.0	1269.0	1.35	-6.62
WHLS/RETAIL TRADE EMPLOYMENT, THOUSANDS										
RETAIL SALES, PACIFIC DISTRICT, MIL. \$	4812.2	4751.6	4715.2	4678.9	4653.0	4570.5	4537.3	4487.2	1.28	3.42
	24656	23961	23815	23417	22730	22000	21076	20793	2.90	8.47
SERVICES EMPLOYMENT, THOUSANDS										
HEALTH CARE, 1985=100	5233.2	5184.6	5119.3	5059.1	5009.7	4886.4	4818.1	4758.3	0.94	4.46
BUSINESS SERVICES, 1985=100	122.7	120.5	119.0	117.7	116.9	115.7	114.4	113.5	1.80	4.96
BUSINESS SERVICES, 1985=100	113.2	110.0	109.8	109.4	109.0	123.6	123.2	122.7	2.91	3.86
HOTEL, 1985=100	133.3	131.6	129.0	127.4	126.1	125.0	122.1	120.7	1.29	5.71
RECREATION, 1985=100	126.7	128.3	125.9	125.8	125.5	108.9	105.3	105.4	-1.24	0.98
FINANCE, INSUR. AND REAL ESTATE EMPLOYMENT										
	1265.0	1256.7	1245.2	1233.4	1228.1	1221.0	1214.3	1209.8	0.66	3.01
GOVERNMENT EMPLOYMENT, THOUSANDS										
FEDERAL GOVERNMENT	626.0	622.5	618.5	624.6	624.3	620.7	615.7	612.7	0.56	0.28
STATE AND LOCAL	2756.4	2731.8	2700.3	2663.6	2644.8	2619.1	2595.0	2573.9	0.90	4.22

Data are weighted aggregates of available 12th District state data and are expressed as monthly rates unless otherwise noted. District Indicator data are constructed by FRBSF research staff from public and industry sources.

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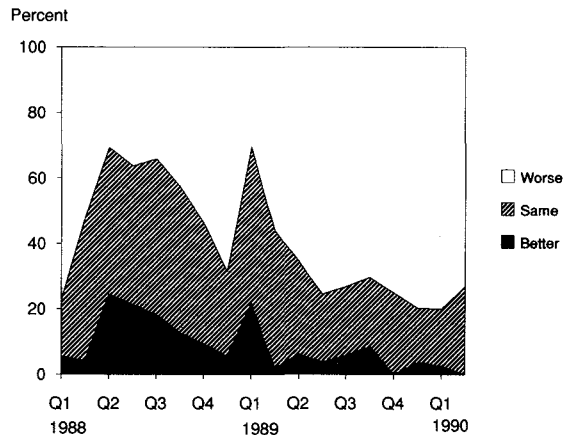
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PERSONAL INCOME ANNUALIZED PERCENT GROWTH RATES

	89Q4	89Q3	89Q2	89Q1	88Q4
ALASKA	-8.8	14.5	27.8	13.1	6.5
ARIZONA	11.8	4.8	6.8	11.6	5.7
CALIFORNIA	4.2	8.7	7.8	7.6	7.9
HAWAII	9.0	12.0	12.7	9.6	11.7
IDAHO	20.4	-3.5	6.2	19.2	13.3
NEVADA	13.9	10.1	12.0	16.5	11.9
OREGON	8.4	3.3	10.2	6.5	11.9
UTAH	10.7	5.2	10.5	6.8	8.9
WASHINGTON	11.3	7.7	8.7	14.0	9.1
12TH DISTRICT	6.2	7.9	8.4	8.9	8.4
U.S.	8.4	4.7	7.0	9.2	8.3

ANNUAL GROWTH		
1989	1988	1987
10.8	4.4	0.0
8.7	5.5	10.3
7.1	7.7	9.3
10.8	9.1	9.0
10.1	9.2	4.3
13.1	11.8	12.0
7.1	9.1	7.7
8.3	6.5	7.1
10.4	7.4	6.7
7.9	7.7	8.8
7.3	6.7	8.8

Twelfth District Business Sentiment Index* GNP



* The index is constructed from a survey of approximately 75 business leaders in the 12th Federal Reserve District.

NON-AGRICULTURAL EMPLOYMENT ANNUALIZED PERCENT GROWTH RATES

	90Q1	89Q4	89Q3	89Q2	89Q1
ALASKA	3.0	-3.1	7.0	13.3	5.4
ARIZONA	4.6	5.2	2.3	0.5	4.0
CALIFORNIA	2.5	3.1	2.1	1.8	6.6
HAWAII	13.0	3.4	3.5	2.6	3.9
IDAHO	9.3	7.0	5.9	6.2	4.8
NEVADA	9.9	8.9	8.9	8.6	6.5
OREGON	6.6	2.4	3.2	4.3	3.8
UTAH	3.9	4.0	3.7	6.8	4.0
WASHINGTON	6.0	6.0	5.0	5.7	6.4
12TH DISTRICT	3.9	3.7	2.9	2.9	6.0
U.S.	3.0	1.8	2.1	2.4	3.3

ANNUAL GROWTH		
1990*	1989	1988
3.0	5.7	3.2
4.6	3.0	1.6
2.5	3.4	3.2
13.0	3.4	3.0
9.3	6.1	5.1
9.9	8.5	7.9
6.6	3.5	3.2
3.9	4.7	3.9
6.0	5.9	4.3
3.9	3.9	3.5
3.0	2.4	3.2

UNEMPLOYMENT RATES AVERAGE QUARTERLY DATA

	90Q1	89Q4	89Q3	89Q2	89Q1
ALASKA	7.1	6.7	6.4	6.3	7.4
ARIZONA	4.8	4.6	5.4	5.1	5.6
CALIFORNIA	5.1	5.1	5.0	5.4	4.9
HAWAII	3.1	2.8	2.0	3.1	3.5
IDAHO	5.0	5.0	5.1	5.1	5.2
NEVADA	4.5	4.8	5.3	4.8	5.1
OREGON	5.2	5.5	5.7	5.7	5.8
UTAH	4.3	4.1	4.0	4.4	4.4
WASHINGTON	5.5	6.2	6.3	6.1	6.1
12TH DISTRICT	5.1	5.1	5.1	5.3	5.1
U.S.	5.3	5.3	5.3	5.3	5.2

ANNUAL AVERAGE		
1990*	1989	1988
7.1	6.7	9.2
4.8	5.2	6.3
5.1	5.1	5.3
3.1	2.9	3.1
5.0	5.1	6.1
4.5	5.0	5.1
5.2	5.7	5.8
4.3	4.2	4.9
5.5	6.2	6.2
5.1	5.2	5.5
5.3	5.3	5.5

* Year-to-date

* Year-to-date