

Analyzing the recent upward surge in overtime hours

During the economic expansion of the 1990s, employers in manufacturing industries were more likely than in previous recoveries to increase overtime hours among existing employees than to hire new workers

Ron L. Hetrick

From March 1991, the end of the last recession, to early 1997, average weekly overtime in manufacturing increased by 1.6 hours, reaching its highest level—4.9 hours—since BLS began publishing the series in 1956.¹ Overtime remained at or near this high level over the next year, retreating slightly by the end of 1998. These data are from the BLS Current Employment Statistics (CES) survey, a monthly survey of payroll, hours, and earnings collected from a sample of more than 400,000 of the Nation's employers. The CES program defines overtime as hours for which premiums were paid because they exceeded the number of straight-time workday or workweek hours. Average overtime is computed by dividing the total number of overtime hours in a given industry by the number of production workers in that industry, including those that work no overtime at all.

Historically, average overtime has increased with recoveries and fallen with recessions, with the level never exceeding 4.1 hours. Average overtime fell from 3.7 to 3.3 hours during the 1990-91 recession, but the current expansion has seen overtime reach an unprecedented level. This article analyzes the striking growth in overtime from March 1991 to January 1998 and its relationship to employment.

Overtime growth in the 1990s

Following the 1990-91 recession, cyclical job loss in manufacturing continued until mid-1993. Indeed, after losing 683,000 jobs during the downturn, another 400,000 manufacturing jobs were lost after the recession officially ended in March 1991. Inter-

estingly, however, the cyclical trend in manufacturing overtime hours turned around exactly the same month that the recession ended. By the time that manufacturing employment started its cyclical recovery in July 1993, average overtime had increased from 3.3 to 4.1 hours. (See chart 1.) Overtime hours continued to surge, reaching 4.8 hours in the last quarter of 1994. Manufacturing employment expanded until April 1995, adding a total of 541,000 jobs in a period of less than 2 years.

Average factory overtime fell by 0.6 hour in 1995. In 1996, it started inching upwards again, while employment in the industry experienced a mild downward trend. By December of 1996, average weekly overtime had reached 4.6 hours, after starting the year at 4.2 hours. Employment also started back on a growth trend early in 1996, but at a very slow pace. By March 1997, overtime had reached a record high of 4.9 hours—a level it sustained for the next 2 months and then revisited at the end of the year. In contrast, employment, while still growing, ended 1997 at a level nearly 700,000 lower than its prerecession peak in March 1989.

Sources of overtime growth

Manufacturing's record-setting increase in average weekly overtime is the result of two factors. The first, as shown in table 1, is that, from March 1991 to January 1998, overtime increased in all but one of the component industries in manufacturing. The increases ranged from a notable 3-hour gain in transportation equipment to a relatively slight increase of 0.6 hour in apparel products. As

Ron L. Hetrick is an economist in the Division of Monthly Industry Employment Statistics, Bureau of Labor Statistics.

Chart 1. Employment and average weekly overtime hours in manufacturing, 1990-98, seasonally adjusted



the table illustrates, more than half of the 20 industries within manufacturing had increases of at least 1 hour over the 1991–98 period. In fact, many of these industries had set records for their overtime series by early 1997.²

Some specific industries made exceptional contributions to the growth in overtime hours. Within transportation, for example, overtime in the motor vehicle manufacturing industry jumped by a remarkable 4.4 hours. Similarly, within primary metals, overtime in iron and steel foundries grew by 3.7 hours, and within industrial machinery and equipment, refrigeration and service machinery overtime increased by 2.9 hours.³

The second factor driving the increase in overtime is that the distribution of employment in manufacturing was shifting towards component industries that were adding the most overtime over the 1991–98 period. This effect can be quantified by dividing the industries in the table into two groups. The 10 industries that had the greatest increase in overtime after the recession together averaged 5.2 overtime hours, which was 1.2 hours more than the average for the other 10 industries. At the same time, the 10 industries with the highest average overtime increase also had an accumulated increase in production workers of 11.2 percent, while the bottom 10 lost 4.7 percent of their production workers.

The combined effect of the growth in overtime in nearly every industry and the employment increases in industries with large gains in overtime can be seen in aggregate overtime

(the product of production workers and average weekly overtime hours). The top ten overtime gainers accounted for 68 percent of the total manufacturing aggregate overtime in January 1998, compared with 60 percent in March 1991.

Overtime hours also would increase if employment in industries with high overtime levels grew faster than employment in industries with lower levels of overtime. To determine whether this was a factor, manufacturing overtime in 1998 was computed using the employment distribution of March 1991. The results showed that the shift in industry mix contributed little to the increase in overtime, adding just 0.1 hour.

Substituting overtime for employment

Historically, both employment and overtime have increased as the U.S. economy emerged from recessions, with overtime gains generally occurring prior to the employment gains. While this has remained the case since March 1991, employers appeared to rely more heavily on overtime in the current expansion than on hiring new employees. This part of the analysis focuses on overtime growth from the beginning of the current recovery until overtime hours peaked 82 months later, in January 1998, comparing it with employment growth over the same period. The data are compared with two other expansions that lasted at least 82 months. (See table 2.)

When the recoveries that began in March 1961 and Decem-

Table 1. Change in overtime hours in manufacturing industries, March 1991–January 1998

SIC code	Industry	March 1991	January 1998	Level change	Percent change
20–39	Total, manufacturing	3.3	4.9	1.6	48.5
37	Transportation equipment	3.1	6.1	3.0	96.8
33	Primary metal industries	4.2	6.8	2.6	61.9
34	Fabricated metal products ..	3.1	5.2	2.1	67.7
32	Stone, clay, and glass products	4.2	6.2	2.0	47.6
35	Industrial machinery and equipment	3.6	5.6	2.0	55.6
25	Furniture and fixtures	2.0	3.9	1.9	95.0
30	Rubber and miscellaneous plastics products	3.2	4.7	1.5	46.9
22	Textile mill products	3.5	4.9	1.4	40.0
24	Lumber and wood products .	3.0	4.3	1.3	43.3
	Electronic and other electrical equipment	3.1	4.3	1.2	38.7
28	Chemicals and allied products	4.3	5.3	1.0	23.3
26	Paper and allied products	4.7	5.7	1.0	21.3
38	Instruments and related products	2.9	3.8	.9	31.0
31	Leather and leather products	1.6	2.5	.9	56.3
39	Miscellaneous manufacturing	2.4	3.2	.8	33.3
20	Food and kindred products .	4.3	5.1	.8	18.6
27	Printing and publishing	2.6	3.4	.8	30.8
21	Tobacco products	2.1	2.8	.7	33.3
23	Apparel and other textile products	1.6	2.2	.6	37.5
29	Petroleum and coal products	6.1	6.1	.0	.0

NOTE: These data are seasonally adjusted; only not seasonally adjusted data for overtime are published on a monthly basis. Industries are listed in descending order, beginning with the industry having the greatest change over the period in the *level* of overtime and ending with the industry having the least change in overtime.

ber 1982 were 82 months old, they had added 3.5 million and 1.3 million manufacturing jobs, respectively. The peak levels of average overtime associated with those recoveries were 4.1 hours in February through April 1966 and 4.0 hours in February and April 1989. The current recovery's overtime gain of 1.6 hours is slightly below the two previous recoveries; however, because the *level* at the onset of the current expansion was significantly higher, the peak levels of the two previous recoveries were superseded in less than 2 years. Even with this record-setting strength in overtime, employment grew by only 397,000, or just 17 percent of the average job growth in the two earlier recoveries.

The implied substitution of overtime for hiring can be quantified using full-time equivalents. Full-time equivalents are computed by taking the aggregate overtime and dividing it by 40, the number of hours in a standard workweek. For example, if 20 people worked 6 hours of overtime, the full-time equivalent of that overtime would be 3—that is, 3 extra production workers could have been hired rather than existing workers accumulating 120 weekly overtime hours.

From March 1991 to January 1998, the number of production workers in manufacturing increased by 601,000. Over the same period, the full-time equivalent of the aggregate overtime change

in manufacturing was 571,000 jobs. (See table 3.) That means that if employers had hired new workers instead of increasing overtime, nearly twice as many production workers would have been hired.

The table also shows where these workers would have been hired. Transportation equipment, which includes auto and aircraft assembly, had an overtime change valued at 107,000 full-time equivalent jobs, or one-fifth of the total for all manufacturing. Industrial machinery and fabricated metals also would have accounted for a large portion of the hiring during this period. Other industries with relatively large full-time equivalents included rubber and plastics, electronics, and primary metals.

A common factor among the industries that added the most overtime was a highly skilled workforce. The data suggest that when the overall skill level among workers in an industry is relatively high, firms tend to increase overtime during expansions rather than hire new workers. Training highly skilled workers is costly, especially if many of them may be laid off during the next recession. For similar reasons, workers in some highly skilled occupations are in short supply and thus may not be available to the hiring establishment. The 10 industries within manufacturing with the largest overtime gains since the recession had more than 17 percent of their employment in highly skilled positions; the comparable figure for the 10 industries with the least gains is 8 percent.⁴

Employment and overtime in 1998

After starting 1998 at the record-setting level of 4.9 hours, by the end of the year, average weekly overtime in manufacturing had fallen by 0.4 hour. (See table 4.) Meanwhile, employment in manufacturing declined by 238,000 over the same period, as many export-sensitive industries reacted to the economic crises then occurring in Southeast Asia, Russia, and Brazil. The industry groups with the largest aggregate overtime declines in 1998 included specific (three-digit) industries that were the most export-sensitive of all manufacturing industries, including computers, aerospace, semiconductors, and household audio and video equipment.⁵ The 0.4-hour reduction in manufacturing overtime is equal to 157,000 full-time equivalents—that is, had overtime not been reduced

Table 2. Manufacturing peak overtime in selected recoveries and employment growth after 82 months of expansion

Start date	Overtime hours		Employment (in thousands)		
	Peak level	Change	Level change	Percent change	Average monthly change
March 1961	4.1	2.0	3,505	21.8	43
December 1982 .	4.0	1.7	1,280	7.1	16
Average	4.1	1.9	2,393	14.4	30
March 1991	4.9	1.6	397	2.2	5

by 0.4 hour, employers would have had to lay off an additional 157,000 factory workers in 1998.

UNLIKE IN PREVIOUS EXPANSIONS, manufacturing employers in the 1990s were more likely to increase overtime hours among existing employees than to hire new employees. Despite beginning the current expansion at historically high levels, overtime increased by nearly as many hours as in the earlier expansions of the 1960s and 1980s, bringing the level to a record high (4.9 hours) by the end of 1997. From its low of 3.3 hours in March 1991, overtime increased by 48 percent. The gains in overtime were spread throughout the manufacturing industry groups, with the largest gains occurring in durable goods, especially transportation equipment and primary metal industries.

Table 3. Production worker and full-time equivalent growth in manufacturing, March 1991 to January 1998

[Numbers in thousands]

Industry	Production worker growth	Full-time equivalent growth ¹	Combined total ²
Total manufacturing	601	571	1,172
Durable goods	722	443	1,165
Lumber and wood products	115	30	145
Furniture and fixtures	47	22	69
Stone, clay, and glass products	36	26	62
Primary metal industries	13	38	51
Fabricated metal products	146	71	217
Industrial machinery and equipment	178	86	264
Electronic and other electrical equipment	85	39	124
Transportation equipment	141	107	248
Instruments and related products	-53	6	-47
Miscellaneous manufacturing	14	6	20
Nondurable goods	-121	123	2
Food and kindred products	46	30	76
Tobacco products	-4	0	-4
Textile mill products	-53	13	-40
Apparel and other textile products	-187	2	-185
Paper and allied products	5	14	19
Printing and publishing	-6	17	11
Chemicals and allied products	-2	14	12
Petroleum and coal products	-11	-2	-13
Rubber and miscellaneous plastics products	126	39	165
Leather and leather products	-35	0	-35

¹ Full-time equivalents are computed by taking the total number of overtime hours and dividing it by 40, the number of hours in a standard workweek. This analytical tool provides an estimate of the number of production workers that could have been hired if employers had hired new workers instead of increasing overtime.

² This *hypothetical* total is obtained by combining the figures for actual production worker growth over the period with those for full-time equivalents. Thus, these figures represent the total number of production workers that could have been hired had employers not increased overtime.

Table 4. Change in production workers, full-time equivalents and overtime hours in selected industries, 1997-98

[In thousands except for overtime]

Industry	Change in production workers	Change in full-time equivalents	Change in overtime hours
Total, manufacturing	-238	-157	-.4
Industrial machinery and equipment	-25	-41	-1.1
Transportation equipment	-40	-34	-.9
Electronic and other electrical equipment	-50	-21	-.6
Primary metal industries	-16	-14	-.8
Fabricated metal products	-11	-13	-.4

NOTE: Changes are calculated from December 1997 to December 1998, using seasonally adjusted figures.

Meanwhile, employment in manufacturing grew quite modestly during the 1990s expansion, increasing by about 4 percent from its trough in June 1993 to its peak in March 1998. Over comparable periods in the 1960s and 1980s, by contrast, employment increased by 15 percent and 5 percent, respectively. Largely as a result of economic crises abroad, employment began to decline in early 1998, with losses concentrated in export-sensitive industries. But just as overtime had substituted for job gains in the current expansion through 1997, it acted as a cushion against job loss in 1998. In fact, had overtime not been reduced by 0.4 hour in 1998, instead of a loss of nearly a quarter-million jobs in manufacturing, the loss would have been closer to 400,000. Manufacturing employment continued to decline in 1999, while overtime hours held steady, rising slightly by the end of the year.

Notes

¹ The "official" starting and ending dates of recessions and expansions are determined by the National Bureau of Economic Research (NBER)—a private, nonprofit, nonpartisan research organization dedicated to promoting a greater understanding of how the economy works. NBER identifies economic turning points—that is, dates when economic activity turned in the opposite direction. For more information, see NBER's website, on the Internet at <http://www.nber.org/>, accessed February 2000.

² Industries are defined by the Standard Industrial Classification (SIC) system. The 20 component industries within manufacturing are those at the two-digit SIC level of aggregation. For more information on the SIC system, see *Standard Industrial Classification Manual, 1987* (Washington, DC, Office of Management and Budget, 1987).

³ Overtime data for specific (three-digit) industries within transportation equipment, primary metals, and industrial machinery are not seasonally adjusted. Therefore, to avoid seasonal fluctuations, overtime hours are measured from December 1990 to December 1997.

⁴ Data from the BLS 1996 Occupational Employment Statistics program. Highly skilled positions were defined as engineers, technicians, scientists, and precision workers and assemblers.

⁵ This analysis is based on the percent of employment tied to exports in 1993; data are from the BLS Office of Employment Projections.