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INTERNATIONAL COMPARISONS OF MANUFACTURING PRODUCTIVITY AND UNIT LABOR COST TRENDS, 2011

Manufacturing productivity increased in 2011 in 15 of 19 countries covered, the U.S. Bureau of Labor Statistics reported today. Labor productivity (output per hour) rose by more than 2 percent in the majority of countries (see chart 1). These productivity increases were generally driven by gains in output coupled with modest changes in hours (see chart 2).

The data presented for the United States differ from those in the BLS Productivity and Costs news release. (See technical notes.)

Chart 1. Percent changes in manufacturing output per hour, 2010–2011

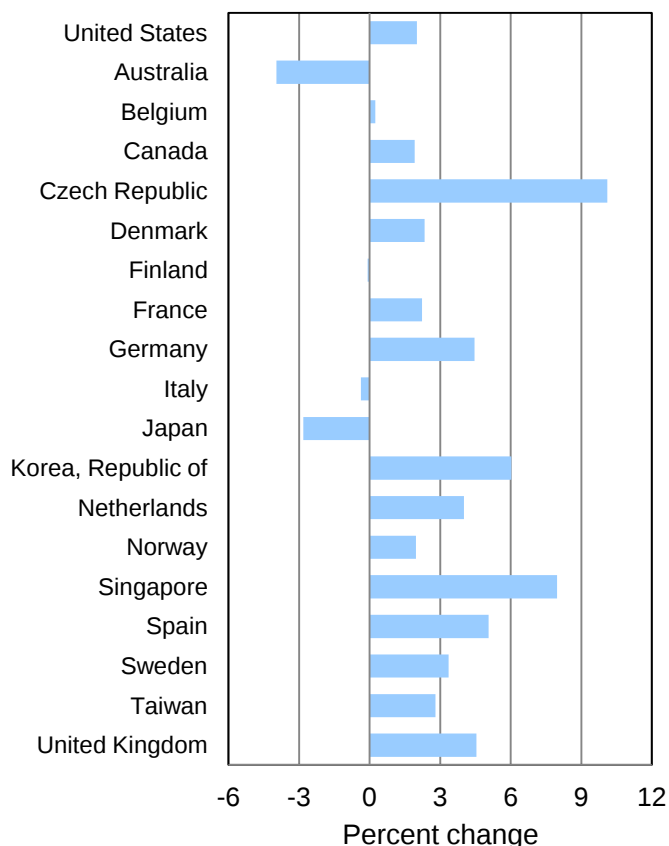
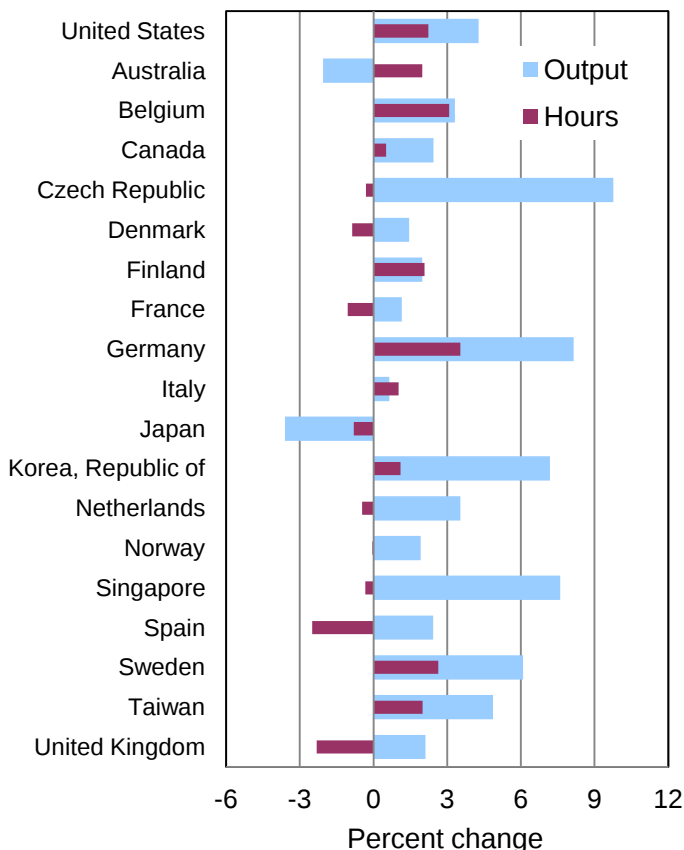
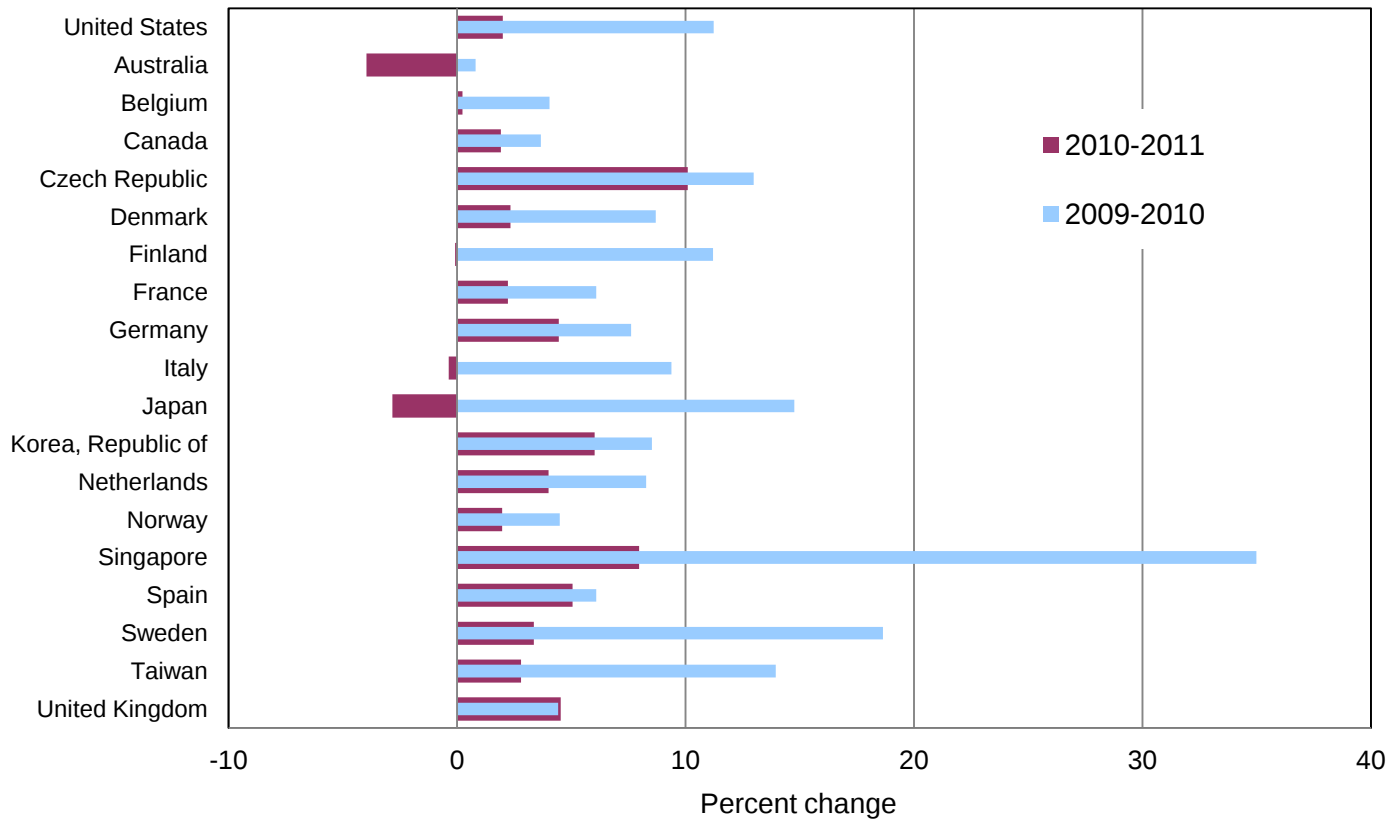


Chart 2. Percent changes in manufacturing output and hours, 2010–2011



In 2011, only the United Kingdom had larger productivity growth in manufacturing than in the previous year; in all other countries, productivity growth slowed down or declined. Only the Czech Republic and Singapore experienced productivity growth of 8 percent or higher in 2011, while in 2010 the majority of countries experienced growth that exceeded 8 percent (see chart 3).

Chart 3. Percent changes in manufacturing output per hour



Get More Information

Analyze trends with interactive charts.

The Excel version of the data tables includes an interactive dashboard that displays charts from a custom selection of variables, countries, and time periods at www.bls.gov/ilc/#productivity.

Find additional data.

The data tables with annual indexes back to 1950 used to prepare this report are available at www.bls.gov/ilc/#productivity.

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Unit labor costs are the cost of labor input required to produce one unit of output and can be denominated either in national currency units or in U.S. dollars. Expressed in national currency units, manufacturing unit labor costs increased in 2011 in about half the countries covered; Japan and Australia recorded the largest increases (see chart 4).

To compare unit labor costs across countries, they are generally converted into a common currency, in this case U.S. dollars. Changes in a country's unit labor costs in U.S. dollars are roughly equivalent to the change in unit labor costs in national currency plus the change in the value of the country's currency relative to the U.S. dollar (see table 3). The values of the currencies of all countries compared appreciated relative to the U.S. dollar in 2011. As a result, unit labor costs in U.S. dollars showed larger increases than unit labor costs expressed in national currencies.

In 16 of the countries covered, unit labor costs on a U.S. dollar basis increased more than in the United States, causing the U.S. manufacturing labor cost competitiveness to increase relative to these countries. The United States improved its competitiveness the most against Australia and Japan due to the large appreciation of their respective currencies against the U.S. dollar. However, U.S. labor cost competitiveness deteriorated relative to the Republic of Korea and the Czech Republic.

Chart 4. Percent changes in manufacturing unit labor costs, 2010–2011

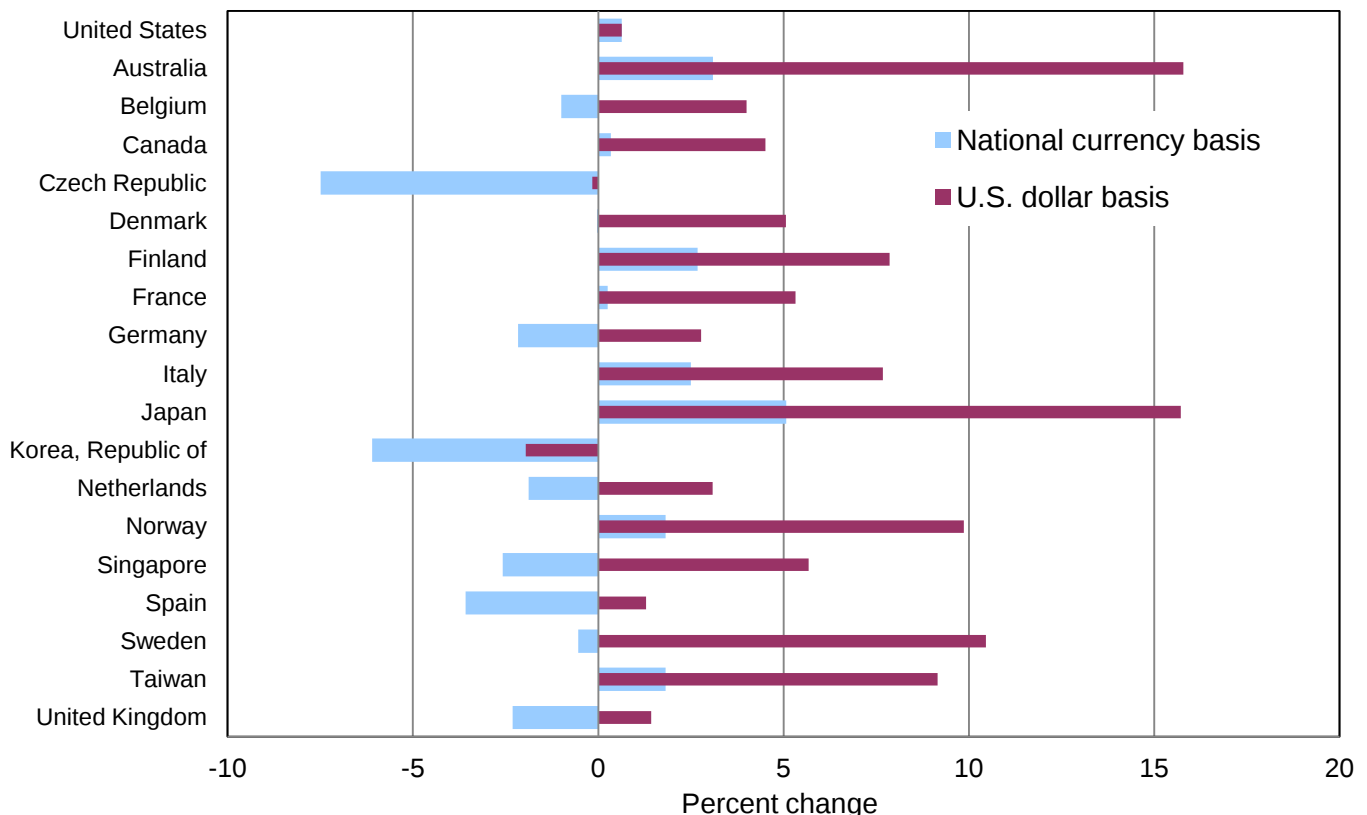


Table 1. Output per hour, output, and hours

Manufacturing, 19 countries, 1979–2011

Average annual compound rates of change

Country	Indicator	1979-2011	1979-1990	1990-2000	2000-2007	2007-2011	2009-2010	2010-2011
United States	Output per hour	4.2	3.0	4.3	6.1	3.8	11.2	2.0
	Output	2.7	2.3	4.2	2.9	-0.3	11.2	4.3
	Hours	-1.4	-0.6	-0.1	-3.1	-3.9	0.0	2.2
Australia	Output per hour	1.7	2.1	1.8	2.3	-0.5	0.8	-4.0
	Output	1.2	1.6	1.5	1.5	-1.2	0.7	-2.1
	Hours	-0.5	-0.5	-0.4	-0.8	-0.7	-0.1	2.0
Belgium	Output per hour	2.8	4.2	2.8	2.2	-0.2	4.1	0.2
	Output	1.2	2.6	1.5	0.7	-2.2	4.8	3.3
	Hours	-1.5	-1.6	-1.2	-1.5	-2.0	0.7	3.1
Canada	Output per hour	2.2	2.1	3.6	1.0	0.8	3.7	1.9
	Output	1.4	1.9	4.2	-0.6	-2.8	5.2	2.4
	Hours	-0.7	-0.2	0.6	-1.6	-3.5	1.5	0.5
Czech Republic	Output per hour	NA	NA	NA	9.7	8.3	13.0	10.1
	Output	NA	NA	NA	9.4	5.4	13.8	9.8
	Hours	NA	NA	NA	-0.3	-2.7	0.8	-0.3
Denmark	Output per hour	2.4	2.4	2.4	2.9	1.5	8.7	2.3
	Output	0.8	1.4	2.0	0.5	-3.1	1.5	1.5
	Hours	-1.5	-0.9	-0.4	-2.4	-4.5	-6.6	-0.9
Finland	Output per hour	4.9	5.0	6.5	7.0	-2.9	11.2	-0.1
	Output	3.5	3.4	5.5	6.2	-5.8	9.1	2.0
	Hours	-1.3	-1.5	-0.9	-0.8	-3.0	-1.9	2.1
France	Output per hour	3.2	3.2	3.9	3.3	1.1	6.1	2.2
	Output	0.9	0.9	1.9	1.2	-1.8	3.6	1.2
	Hours	-2.2	-2.3	-1.9	-2.1	-2.9	-2.3	-1.0
Germany	Output per hour	2.5	2.1	3.4	4.2	-1.9	7.6	4.5
	Output	1.0	1.2	0.6	3.0	-2.4	11.3	8.1
	Hours	-1.5	-0.9	-2.6	-1.2	-0.5	3.5	3.5
Italy	Output per hour	2.1	3.4	2.5	0.9	0.0	9.4	-0.4
	Output	1.0	2.6	1.3	0.8	-3.5	7.0	0.6
	Hours	-1.1	-0.8	-1.2	-0.1	-3.5	-2.1	1.0
Japan	Output per hour	3.4	3.8	3.3	3.8	2.2	14.8	-2.8
	Output	2.3	4.7	0.8	2.6	-1.4	18.2	-3.6
	Hours	-1.1	0.9	-2.4	-1.1	-3.5	3.0	-0.8
Korea, Republic of	Output per hour	NA	NA	10.5	8.1	4.1	8.5	6.0
	Output	8.5	10.8	8.4	6.8	5.6	14.7	7.2
	Hours	NA	NA	-1.9	-1.1	1.5	5.7	1.1
Netherlands	Output per hour	3.1	3.2	3.4	3.8	1.1	8.3	4.0
	Output	2.1	2.4	2.7	2.0	-0.3	6.9	3.5
	Hours	-1.0	-0.8	-0.7	-1.7	-1.3	-1.3	-0.5
Norway	Output per hour	1.8	2.0	0.9	2.3	2.6	4.5	2.0
	Output	0.7	-0.6	1.2	2.3	0.1	2.2	1.9
	Hours	-1.1	-2.5	0.2	-0.1	-2.4	-2.2	0.0
Singapore	Output per hour	5.0	4.0	7.2	2.0	7.7	35.0	8.0
	Output	6.8	7.3	7.4	5.5	6.4	29.7	7.6
	Hours	1.8	3.2	0.2	3.5	-1.2	-3.9	-0.3
Spain	Output per hour	2.8	3.3	2.0	2.9	3.0	6.1	5.1
	Output	1.4	2.1	2.8	1.1	-3.2	0.5	2.4
	Hours	-1.3	-1.2	0.8	-1.8	-6.0	-5.2	-2.5
Sweden	Output per hour	4.2	2.1	6.2	6.6	0.9	18.6	3.4
	Output	3.3	1.7	5.8	5.2	-1.3	19.8	6.1
	Hours	-0.8	-0.4	-0.4	-1.3	-2.2	1.0	2.6
Taiwan	Output per hour	6.1	6.3	5.0	7.6	5.7	13.9	2.8
	Output	6.5	7.5	5.0	7.2	6.2	25.4	4.9
	Hours	0.4	1.2	-0.1	-0.4	0.5	10.0	2.0
United Kingdom	Output per hour	3.4	3.5	3.0	4.5	2.2	4.4	4.5
	Output	0.4	0.9	0.9	0.1	-1.7	3.8	2.1
	Hours	-2.9	-2.5	-2.1	-4.3	-3.8	-0.6	-2.3

NOTE: Output is real value added in national currency units.

German data for years before 1991 pertain to the former West Germany.

NA=data not available.

Table 2. Unit labor costs, compensation, and output

National currency basis, manufacturing, 19 countries, 1979–2011

Average annual compound rates of change

Country	Indicator	1979-2011	1979-1990	1990-2000	2000-2007	2007-2011	2009-2010	2010-2011
United States	Unit labor costs	0.2	2.5	-0.4	-2.2	-0.7	-9.1	0.6
	Compensation	2.9	4.9	3.8	0.6	-1.0	1.1	4.9
	Output	2.7	2.3	4.2	2.9	-0.3	11.2	4.3
Australia	Unit labor costs	NA	NA	1.6	2.8	2.4	0.0	3.1
	Compensation	NA	NA	3.1	4.4	1.2	0.7	1.0
	Output	1.2	1.6	1.5	1.5	-1.2	0.7	-2.1
Belgium	Unit labor costs	1.1	1.8	0.2	1.0	2.0	-3.7	-1.0
	Compensation	2.4	4.4	1.6	1.7	-0.2	0.9	2.3
	Output	1.2	2.6	1.5	0.7	-2.2	4.8	3.3
Canada	Unit labor costs	2.0	4.6	-0.3	2.7	-0.1	-5.8	0.3
	Compensation	3.5	6.5	3.8	2.1	-2.8	-0.9	2.8
	Output	1.4	1.9	4.2	-0.6	-2.8	5.2	2.4
Czech Republic	Unit labor costs	NA	NA	NA	-1.8	-5.4	-8.8	-7.5
	Compensation	NA	NA	NA	7.4	-0.3	3.8	1.5
	Output	NA	NA	NA	9.4	5.4	13.8	9.8
Denmark	Unit labor costs	2.6	5.5	0.5	2.1	1.1	-5.4	0.0
	Compensation	3.5	7.0	2.5	2.5	-2.1	-4.0	1.4
	Output	0.8	1.4	2.0	0.5	-3.1	1.5	1.5
Finland	Unit labor costs	1.2	5.7	-2.2	-3.1	5.2	-9.6	2.7
	Compensation	4.7	9.4	3.3	2.9	-0.9	-1.3	4.7
	Output	3.5	3.4	5.5	6.2	-5.8	9.1	2.0
France	Unit labor costs	2.1	5.8	-0.2	0.1	1.7	-3.9	0.3
	Compensation	3.0	6.7	1.7	1.3	-0.1	-0.5	1.4
	Output	0.9	0.9	1.9	1.2	-1.8	3.6	1.2
Germany	Unit labor costs	1.6	3.3	1.4	-2.2	3.8	-8.6	-2.2
	Compensation	2.5	4.6	2.0	0.7	1.4	1.8	5.8
	Output	1.0	1.2	0.6	3.0	-2.4	11.3	8.1
Italy	Unit labor costs	4.4	8.8	1.9	2.1	3.1	-6.3	2.5
	Compensation	5.5	11.6	3.2	3.0	-0.6	0.3	3.2
	Output	1.0	2.6	1.3	0.8	-3.5	7.0	0.6
Japan	Unit labor costs	-1.1	0.7	-0.9	-4.4	-1.0	-13.9	5.1
	Compensation	1.1	5.5	-0.1	-1.8	-2.3	1.8	1.3
	Output	2.3	4.7	0.8	2.6	-1.4	18.2	-3.6
Korea, Republic of	Unit labor costs	3.7	7.9	2.6	1.6	-0.7	-0.6	-6.1
	Compensation	12.6	19.5	11.3	8.5	4.9	14.0	0.6
	Output	8.5	10.8	8.4	6.8	5.6	14.7	7.2
Netherlands	Unit labor costs	0.5	0.8	0.3	-0.1	1.3	-6.9	-1.9
	Compensation	2.6	3.2	3.0	1.9	1.0	-0.5	1.6
	Output	2.1	2.4	2.7	2.0	-0.3	6.9	3.5
Norway	Unit labor costs	4.0	6.7	3.4	2.3	1.3	-1.9	1.8
	Compensation	4.7	6.1	4.5	4.7	1.5	0.3	3.8
	Output	0.7	-0.6	1.2	2.3	0.1	2.2	1.9
Singapore	Unit labor costs	0.2	3.7	-1.5	-1.1	-3.0	-18.3	-2.6
	Compensation	7.0	11.3	5.8	4.4	3.2	6.0	4.8
	Output	6.8	7.3	7.4	5.5	6.4	29.7	7.6
Spain	Unit labor costs	3.9	7.8	2.7	2.4	-0.5	-5.0	-3.6
	Compensation	5.4	10.1	5.5	3.5	-3.7	-4.5	-1.2
	Output	1.4	2.1	2.8	1.1	-3.2	0.5	2.4
Sweden	Unit labor costs	1.1	6.6	-2.1	-2.3	1.0	-17.5	-0.5
	Compensation	4.5	8.4	3.6	2.8	-0.3	-1.2	5.5
	Output	3.3	1.7	5.8	5.2	-1.3	19.8	6.1
Taiwan	Unit labor costs	0.5	5.5	0.2	-3.8	-4.0	-9.4	1.8
	Compensation	7.1	13.5	5.2	3.1	1.9	13.6	6.8
	Output	6.5	7.5	5.0	7.2	6.2	25.4	4.9
United Kingdom	Unit labor costs	2.7	6.1	1.3	0.6	1.1	0.7	-2.3
	Compensation	3.1	7.0	2.2	0.6	-0.6	4.5	-0.2
	Output	0.4	0.9	0.9	0.1	-1.7	3.8	2.1

NOTE: German data for years before 1991 pertain to the former West Germany.

NA=data not available.

Table 3. Unit labor costs (ULC) in U.S. dollars and in national currency

Manufacturing, 19 countries, 1979–2011

Average annual compound rates of change

Country	Indicator	1979-2011	1979-1990	1990-2000	2000-2007	2007-2011	2009-2010	2010-2011
United States	ULC in U.S. dollars	0.2	2.5	-0.4	-2.2	-0.7	-9.1	0.6
	ULC in nat. cur.	0.2	2.5	-0.4	-2.2	-0.7	-9.1	0.6
	Exchange rates	--	--	--	--	--	--	--
Australia	ULC in U.S. dollars	NA	NA	-1.3	8.4	7.9	16.1	15.8
	ULC in nat. cur.	NA	NA	1.6	2.8	2.4	0.0	3.1
	Exchange rates	-0.2	-3.2	-2.9	5.4	5.3	16.1	12.3
Belgium	ULC in U.S. dollars	1.2	0.6	-2.5	6.9	2.5	-8.4	4.0
	ULC in nat. cur.	1.1	1.8	0.2	1.0	2.0	-3.7	-1.0
	Exchange rates	0.0	-1.2	-2.6	5.8	0.4	-4.8	5.1
Canada	ULC in U.S. dollars	2.6	4.6	-2.7	7.6	2.0	4.4	4.5
	ULC in nat. cur.	2.0	4.6	-0.3	2.7	-0.1	-5.8	0.3
	Exchange rates	0.5	0.0	-2.4	4.8	2.1	10.8	4.2
Czech Republic	ULC in U.S. dollars	NA	NA	NA	7.5	-1.8	-9.0	-0.2
	ULC in nat. cur.	NA	NA	NA	-1.8	-5.4	-8.8	-7.5
	Exchange rates	NA	NA	NA	9.4	3.8	-0.2	7.9
Denmark	ULC in U.S. dollars	2.6	4.0	-2.1	8.0	1.5	-10.0	5.1
	ULC in nat. cur.	2.6	5.5	0.5	2.1	1.1	-5.4	0.0
	Exchange rates	-0.1	-1.5	-2.6	5.8	0.4	-4.8	5.1
Finland	ULC in U.S. dollars	0.9	5.9	-7.1	2.6	5.6	-13.9	7.9
	ULC in nat. cur.	1.2	5.7	-2.2	-3.1	5.2	-9.6	2.7
	Exchange rates	-0.3	0.2	-5.1	5.8	0.4	-4.8	5.1
France	ULC in U.S. dollars	1.8	3.4	-2.9	5.9	2.1	-8.6	5.3
	ULC in nat. cur.	2.1	5.8	-0.2	0.1	1.7	-3.9	0.3
	Exchange rates	-0.3	-2.2	-2.6	5.8	0.4	-4.8	5.1
Germany	ULC in U.S. dollars	2.4	4.5	-1.4	3.5	4.2	-13.0	2.8
	ULC in nat. cur.	1.6	3.3	1.4	-2.2	3.8	-8.6	-2.2
	Exchange rates	0.8	1.1	-2.7	5.8	0.4	-4.8	5.1
Italy	ULC in U.S. dollars	2.7	5.2	-3.7	8.1	3.5	-10.8	7.7
	ULC in nat. cur.	4.4	8.8	1.9	2.1	3.1	-6.3	2.5
	Exchange rates	-1.6	-3.3	-5.4	5.8	0.4	-4.8	5.1
Japan	ULC in U.S. dollars	2.0	4.6	2.1	-5.6	9.2	-8.1	15.7
	ULC in nat. cur.	-1.1	0.7	-0.9	-4.4	-1.0	-13.9	5.1
	Exchange rates	3.2	3.8	3.0	-1.3	10.3	6.7	10.1
Korea, Republic of	ULC in U.S. dollars	1.1	4.1	-2.0	4.5	-5.0	9.6	-2.0
	ULC in nat. cur.	3.7	7.9	2.6	1.6	-0.7	-0.6	-6.1
	Exchange rates	-2.6	-3.4	-4.5	2.8	-4.3	10.3	4.4
Netherlands	ULC in U.S. dollars	1.3	1.7	-2.4	5.7	1.7	-11.4	3.1
	ULC in nat. cur.	0.5	0.8	0.3	-0.1	1.3	-6.9	-1.9
	Exchange rates	0.7	0.9	-2.7	5.8	0.4	-4.8	5.1
Norway	ULC in U.S. dollars	3.7	4.7	-0.1	8.5	2.5	2.1	9.9
	ULC in nat. cur.	4.0	6.7	3.4	2.3	1.3	-1.9	1.8
	Exchange rates	-0.3	-1.9	-3.4	6.0	1.1	4.1	7.9
Singapore	ULC in U.S. dollars	1.9	5.5	-1.0	0.8	1.5	-12.8	5.7
	ULC in nat. cur.	0.2	3.7	-1.5	-1.1	-3.0	-18.3	-2.6
	Exchange rates	1.7	1.7	0.5	2.0	4.6	6.7	8.5
Spain	ULC in U.S. dollars	2.1	3.8	-3.0	8.3	-0.1	-9.6	1.3
	ULC in nat. cur.	3.9	7.8	2.7	2.4	-0.5	-5.0	-3.6
	Exchange rates	-1.8	-3.7	-5.5	5.8	0.4	-4.8	5.1
Sweden	ULC in U.S. dollars	-0.2	3.5	-6.3	2.1	2.0	-12.4	10.5
	ULC in nat. cur.	1.1	6.6	-2.1	-2.3	1.0	-17.5	-0.5
	Exchange rates	-1.3	-2.9	-4.3	4.5	1.0	6.2	11.1
Taiwan	ULC in U.S. dollars	1.2	8.3	-1.3	-4.5	-1.3	-5.0	9.2
	ULC in nat. cur.	0.5	5.5	0.2	-3.8	-4.0	-9.4	1.8
	Exchange rates	0.6	2.7	-1.5	-0.7	2.8	4.8	7.2
United Kingdom	ULC in U.S. dollars	1.8	4.4	-0.4	4.6	-4.3	-0.7	1.4
	ULC in nat. cur.	2.7	6.1	1.3	0.6	1.1	0.7	-2.3
	Exchange rates	-0.9	-1.6	-1.6	4.1	-5.4	-1.3	3.8

NOTE: Exchange rates are value of foreign currency relative to the U.S. dollar.

German data for years before 1991 pertain to the former West Germany.

NA=data not available.

TECHNICAL NOTES

The comparisons in this release are based on data available to the Bureau of Labor Statistics as of September 1 from national statistical offices of the countries compared. Below is a summary of the concepts used in this release. For more information on the methodology used in this release, see the detailed technical notes at www.bls.gov/ilc/#productivity.

Labor productivity is defined as real output in national currency per hour worked. Unit labor costs are defined as the cost of labor input required to produce one unit of output, and are computed as compensation in nominal terms divided by real output.

BLS constructs the trends in this release from three basic measures: output, total labor hours, and total compensation. In general, the output measures are real value added and total labor hours refer to hours worked by all employed persons. Total compensation includes employer expenditures for direct pay, employer social insurance expenditures, and labor-related taxes and subsidies.

In general, the measures relate to total manufacturing as defined by the International Standard Industrial Classification (ISIC). Data for the United States and Canada are in accordance with the North American Industry Classification System (NAICS), except for compensation data for the United States before 1987. For most countries, the measures are prepared according to the United Nations System of National Accounts 1993 (SNA 93) for the most recent years. For earlier years, data were compiled according to other systems of national accounts.

The U.S. manufacturing output series used in this release differs from the manufacturing output series that BLS publishes as part of its major sector productivity and costs measures for the United States.¹ The International Labor Comparisons program uses a value added output concept, while the major sector series is on a sectoral output basis, which is gross output less intra-sector sales and transfers. Even though BLS has determined that sectoral output is the correct concept for U.S. measures of productivity, there are other considerations that make value added the better concept for international comparisons of labor productivity, such as differences among countries in the extent of vertical integration of industries and the availability of value added data.

The BLS measures are limited to trend comparisons. BLS does not prepare level comparisons of manufacturing productivity because of data limitations and technical problems in comparing the levels of manufacturing output among countries.

For more information on the methodology used in this release, see the detailed technical notes at www.bls.gov/ilc/#productivity.

¹ For more information about sectoral output, see www.bls.gov/lpc/.