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INTERNATIONAL COMPARISONS OF MANUFACTURING PRODUCTIVITY AND UNIT LABOR COST TRENDS, 2010

Productivity growth in manufacturing increased in 2010 in all countries covered, the U.S. Bureau of Labor Statistics reported today. In the majority of countries labor productivity (output per hour) rose by more than 5 percent (see chart 1). In the previous year, productivity fell in 12 of 19 countries. The productivity increases in 2010 were driven by large gains in output coupled with modest changes in hours (see chart 2). Output, after having fallen in all countries in 2009, rose in all countries in 2010.

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, 2009–2010

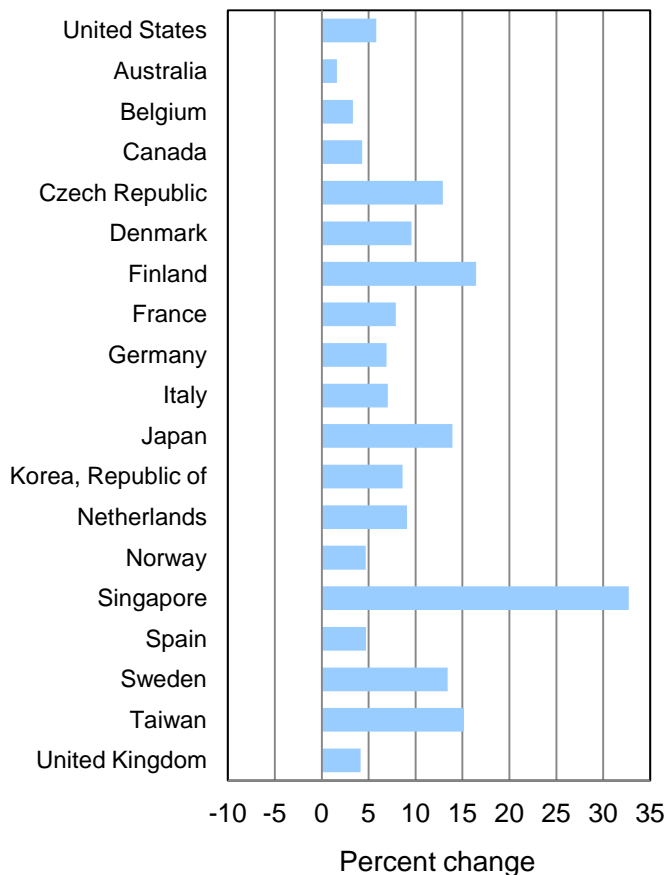
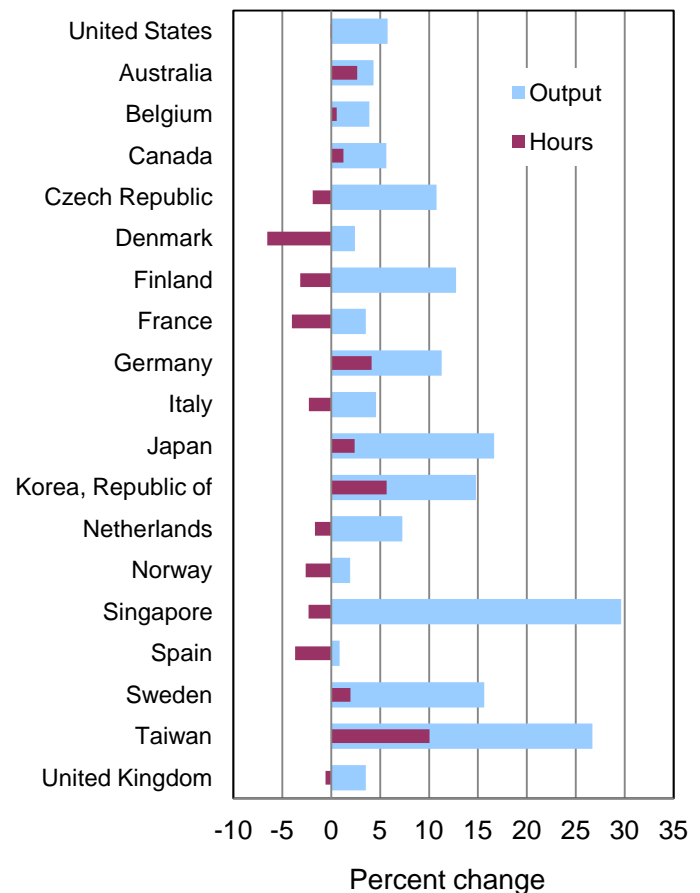
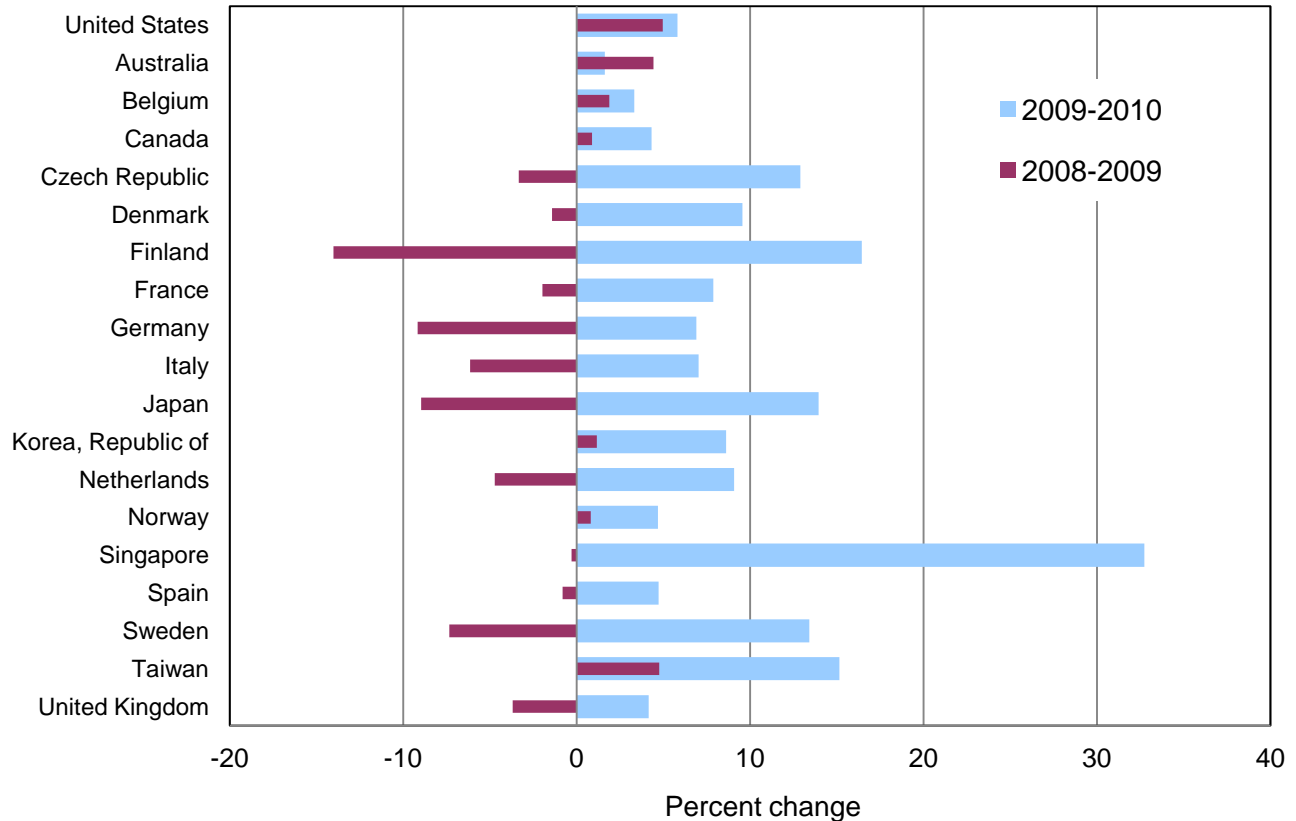


Chart 2. Percent changes in manufacturing output and hours, 2009–2010



The 2010 growth in manufacturing labor productivity represents a reversal of the previous year, where productivity fell in 12 of the 19 countries. In 2010, productivity increased in all countries covered, and six countries experienced productivity growth over 10 percent (see chart 3).

Chart 3. Percent changes in manufacturing output per hour



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Analyze trends with interactive dashboard.

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 and growth rates 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 expressed either in national currency units or in U.S. dollars. Expressed in national currency units, manufacturing unit labor costs declined in 2010 in all countries covered; Singapore, Sweden, and Japan recorded the largest drops (see chart 4). Unit labor costs in U.S. dollars showed even steeper declines than the national currency valuations for most European countries, due to the relative strength of the U.S. dollar. In 2010 unit labor costs in U.S. dollars increased in four countries.

In 2010, U.S. manufacturing labor cost competitiveness declined relative to 13 countries because unit labor costs on a U.S. dollar basis decreased more in those countries than in the United States. However, U.S. labor cost competitiveness improved relative to the other 5 countries. The United States improved its competitiveness the most against Australia due to the large appreciation of the Australian dollar against the U.S. dollar, which pushed Australian unit labor costs up more than 10 percent on a U.S. dollar basis.

Chart 4. Percent changes in manufacturing unit labor costs, 2009–2010

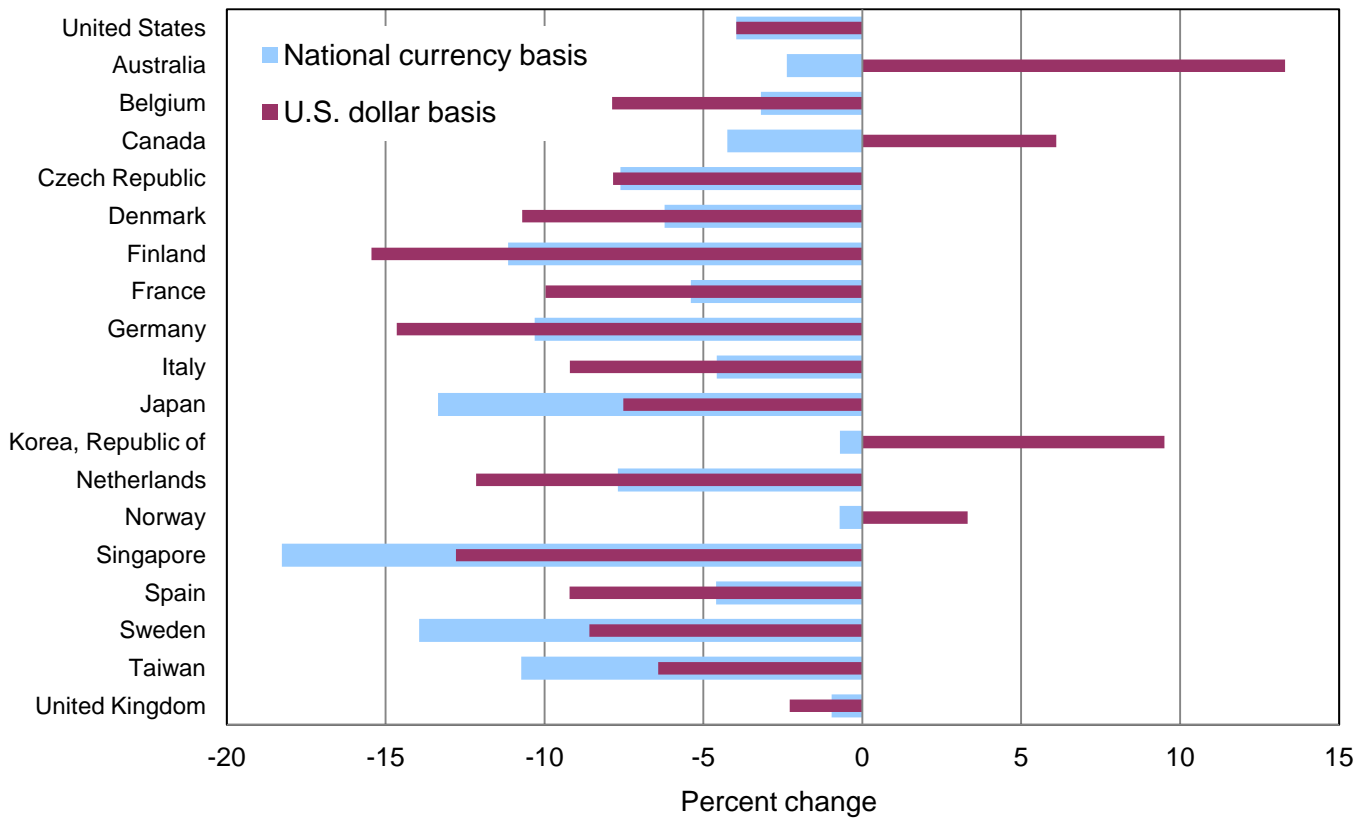


Table 1. Output per hour, output, and hours

Manufacturing, 19 countries, 1979–2010

Average annual compound rates of change

Country	Indicator	1979-2010	1979-1990	1990-2000	2000-2007	2007-2010	2008-2009	2009-2010
United States	Output per hour	4.1	3.0	4.3	6.0	3.3	5.0	5.8
	Output	2.5	2.3	4.2	2.8	-2.8	-8.6	5.8
	Hours	-1.5	-0.6	-0.1	-3.1	-5.8	-13.0	0.0
Australia	Output per hour	2.0	2.1	1.9	2.4	1.0	4.4	1.6
	Output	1.4	1.6	1.5	1.6	0.3	-2.3	4.3
	Hours	-0.5	-0.5	-0.4	-0.8	-0.7	-6.5	2.7
Belgium	Output per hour	3.0	4.2	2.8	1.8	1.8	1.9	3.3
	Output	1.4	2.6	1.5	0.7	-1.9	-8.3	3.9
	Hours	-1.5	-1.6	-1.2	-1.1	-3.6	-10.0	0.6
Canada	Output per hour	2.2	2.1	3.6	0.9	0.8	0.9	4.3
	Output	1.4	1.9	4.2	-0.6	-4.2	-11.3	5.6
	Hours	-0.7	-0.2	0.5	-1.5	-5.0	-12.1	1.3
Czech Republic	Output per hour	NA	NA	NA	7.4	5.1	-3.3	12.9
	Output	NA	NA	NA	7.4	1.7	-11.9	10.8
	Hours	NA	NA	NA	0.0	-3.2	-8.8	-1.9
Denmark	Output per hour	2.5	2.2	2.3	3.0	3.5	-1.4	9.6
	Output	1.0	1.3	1.9	0.6	-2.3	-12.1	2.4
	Hours	-1.5	-1.0	-0.4	-2.4	-5.5	-10.9	-6.5
Finland	Output per hour	5.3	5.0	6.5	7.0	-1.0	-14.0	16.4
	Output	3.7	3.4	5.5	6.2	-6.5	-24.8	12.8
	Hours	-1.5	-1.5	-0.9	-0.8	-5.5	-12.6	-3.2
France	Output per hour	3.2	3.2	3.9	3.3	0.7	-2.0	7.9
	Output	0.9	0.9	1.9	1.2	-3.0	-8.1	3.5
	Hours	-2.3	-2.3	-1.9	-2.1	-3.8	-6.3	-4.0
Germany	Output per hour	2.4	2.1	3.3	3.7	-2.5	-9.2	6.9
	Output	0.7	1.2	0.6	2.4	-4.4	-18.1	11.3
	Hours	-1.7	-0.9	-2.6	-1.3	-1.9	-9.8	4.1
Italy	Output per hour	2.0	3.4	2.6	0.3	-0.9	-6.1	7.0
	Output	0.9	2.6	1.4	0.3	-5.8	-16.0	4.6
	Hours	-1.1	-0.8	-1.2	-0.1	-4.9	-10.6	-2.3
Japan	Output per hour	3.5	3.8	3.4	3.8	2.2	-9.0	13.9
	Output	2.2	4.7	0.8	2.3	-2.3	-19.7	16.7
	Hours	-1.2	0.9	-2.4	-1.4	-4.4	-11.8	2.4
Korea, Republic of	Output per hour	NA	NA	10.5	8.1	3.4	1.2	8.6
	Output	8.6	10.8	8.4	6.8	5.1	-1.5	14.8
	Hours	NA	NA	-1.9	-1.1	1.7	-2.7	5.7
Netherlands	Output per hour	3.1	3.2	3.4	3.8	0.6	-4.7	9.1
	Output	2.0	2.4	2.7	2.0	-1.2	-8.6	7.3
	Hours	-1.1	-0.8	-0.7	-1.7	-1.7	-4.1	-1.7
Norway	Output per hour	1.8	1.9	0.7	3.0	2.1	0.8	4.7
	Output	0.7	-0.5	1.0	2.6	-0.5	-5.8	1.9
	Hours	-1.1	-2.3	0.3	-0.3	-2.6	-6.5	-2.6
Singapore	Output per hour	4.8	4.0	7.2	2.0	6.3	-0.3	32.7
	Output	6.8	7.3	7.4	5.5	6.0	-4.2	29.7
	Hours	1.9	3.2	0.2	3.5	-0.3	-3.9	-2.3
Spain	Output per hour	2.3	3.3	2.0	1.9	0.8	-0.8	4.7
	Output	1.4	2.1	2.8	1.2	-5.4	-13.6	0.9
	Hours	-0.9	-1.2	0.8	-0.6	-6.1	-12.9	-3.7
Sweden	Output per hour	4.2	2.1	6.4	6.5	-0.3	-7.3	13.4
	Output	3.2	1.7	5.7	5.0	-3.5	-18.0	15.6
	Hours	-1.0	-0.4	-0.6	-1.5	-3.2	-11.5	2.0
Taiwan	Output per hour	6.2	6.3	5.0	7.6	7.0	4.8	15.2
	Output	6.6	7.5	5.0	7.2	7.0	-4.4	26.7
	Hours	0.3	1.2	-0.1	-0.4	-0.1	-8.7	10.0
United Kingdom	Output per hour	3.3	4.0	2.9	4.2	0.2	-3.7	4.2
	Output	0.3	0.9	0.9	0.0	-3.5	-10.7	3.6
	Hours	-2.9	-3.0	-1.9	-4.0	-3.7	-7.2	-0.6

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

NA=data not available.

Table 2. Unit labor costs (ULC) in national currency, compensation, and output

Manufacturing, 19 countries, 1979–2010
Average annual compound rates of change

Country	Indicator	1979-2010	1979-1990	1990-2000	2000-2007	2007-2010	2008-2009	2009-2010
United States	ULC in nat. cur.	0.3	2.5	-0.4	-2.1	0.2	-0.5	-4.0
	Compensation	2.8	4.9	3.8	0.6	-2.6	-9.1	1.6
	Output	2.5	2.3	4.2	2.8	-2.8	-8.6	5.8
Australia	ULC in nat. cur.	NA	NA	1.7	3.0	1.3	2.2	-2.4
	Compensation	NA	NA	3.2	4.6	1.6	-0.2	1.9
	Output	1.4	1.6	1.5	1.6	0.3	-2.3	4.3
Belgium	ULC in nat. cur.	1.0	1.8	0.2	0.8	1.3	4.2	-3.2
	Compensation	2.4	4.4	1.6	1.6	-0.6	-4.4	0.6
	Output	1.4	2.6	1.5	0.7	-1.9	-8.3	3.9
Canada	ULC in nat. cur.	2.0	4.6	-0.3	2.7	-0.9	-2.4	-4.3
	Compensation	3.5	6.5	3.8	2.1	-5.0	-13.4	1.1
	Output	1.4	1.9	4.2	-0.6	-4.2	-11.3	5.6
Czech Republic	ULC in nat. cur.	NA	NA	NA	-0.2	-2.4	2.1	-7.6
	Compensation	NA	NA	NA	7.2	-0.7	-10.0	2.3
	Output	NA	NA	NA	7.4	1.7	-11.9	10.8
Denmark	ULC in nat. cur.	2.5	5.7	0.7	1.9	-0.8	4.3	-6.2
	Compensation	3.5	7.0	2.5	2.4	-3.1	-8.4	-4.0
	Output	1.0	1.3	1.9	0.6	-2.3	-12.1	2.4
Finland	ULC in nat. cur.	1.0	5.7	-2.2	-3.1	4.0	19.2	-11.1
	Compensation	4.7	9.4	3.3	2.9	-2.7	-10.4	0.2
	Output	3.7	3.4	5.5	6.2	-6.5	-24.8	12.8
France	ULC in nat. cur.	2.1	5.7	-0.2	0.1	1.8	5.0	-5.4
	Compensation	3.0	6.7	1.7	1.3	-1.3	-3.5	-2.0
	Output	0.9	0.9	1.9	1.2	-3.0	-8.1	3.5
Germany	ULC in nat. cur.	1.1	3.3	0.2	-2.3	4.4	21.9	-10.3
	Compensation	1.9	4.6	0.8	0.0	-0.1	-0.1	-0.2
	Output	0.7	1.2	0.6	2.4	-4.4	-18.1	11.3
Italy	ULC in nat. cur.	4.7	8.8	1.7	2.8	4.2	10.3	-4.6
	Compensation	5.5	11.6	3.2	3.0	-1.8	-7.4	-0.2
	Output	0.9	2.6	1.4	0.3	-5.8	-16.0	4.6
Japan	ULC in nat. cur.	-1.1	0.7	-0.9	-3.8	-1.7	11.1	-13.3
	Compensation	1.1	5.5	-0.1	-1.5	-4.0	-10.8	1.1
	Output	2.2	4.7	0.8	2.3	-2.3	-19.7	16.7
Korea, Republic of	ULC in nat. cur.	4.1	7.9	2.6	1.6	1.2	4.1	-0.7
	Compensation	13.0	19.5	11.3	8.5	6.4	2.5	14.0
	Output	8.6	10.8	8.4	6.8	5.1	-1.5	14.8
Netherlands	ULC in nat. cur.	0.5	0.8	0.3	-0.1	1.9	8.4	-7.7
	Compensation	2.6	3.2	3.0	1.9	0.7	-0.9	-1.0
	Output	2.0	2.4	2.7	2.0	-1.2	-8.6	7.3
Norway	ULC in nat. cur.	4.3	6.9	3.5	2.0	2.8	4.7	-0.7
	Compensation	5.0	6.4	4.6	4.6	2.3	-1.4	1.2
	Output	0.7	-0.5	1.0	2.6	-0.5	-5.8	1.9
Singapore	ULC in nat. cur.	0.3	3.7	-1.5	-1.1	-3.1	-0.2	-18.3
	Compensation	7.1	11.3	5.8	4.4	2.7	-4.3	6.0
	Output	6.8	7.3	7.4	5.5	6.0	-4.2	29.7
Spain	ULC in nat. cur.	4.3	7.8	2.7	2.5	1.6	2.9	-4.6
	Compensation	5.8	10.1	5.5	3.8	-3.8	-11.2	-3.8
	Output	1.4	2.1	2.8	1.2	-5.4	-13.6	0.9
Sweden	ULC in nat. cur.	1.2	6.6	-2.2	-2.2	1.7	12.3	-13.9
	Compensation	4.5	8.4	3.4	2.7	-1.8	-7.9	-0.5
	Output	3.2	1.7	5.7	5.0	-3.5	-18.0	15.6
Taiwan	ULC in nat. cur.	0.5	5.5	0.2	-3.8	-5.9	-7.4	-10.7
	Compensation	7.1	13.5	5.2	3.1	0.6	-11.5	13.1
	Output	6.6	7.5	5.0	7.2	7.0	-4.4	26.7
United Kingdom	ULC in nat. cur.	3.1	6.3	1.4	0.8	2.7	7.5	-1.0
	Compensation	3.4	7.3	2.3	0.9	-0.9	-3.9	2.6
	Output	0.3	0.9	0.9	0.0	-3.5	-10.7	3.6

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, 1979–2010

Average annual compound rates of change

Country	Indicator	1979-2010	1979–1990	1990–2000	2000–2007	2007-2010	2008-2009	2009-2010
United States	ULC in U.S. dollars	0.3	2.5	-0.4	-2.1	0.2	-0.5	-4.0
	ULC in nat. cur.	0.3	2.5	-0.4	-2.1	0.2	-0.5	-4.0
	Exchange rates	--	--	--	--	--	--	--
Australia	ULC in U.S. dollars	NA	NA	-1.3	8.5	4.5	-5.1	13.3
	ULC in nat. cur.	NA	NA	1.7	3.0	1.3	2.2	-2.4
	Exchange rates	-0.6	-3.2	-2.9	5.4	3.1	-7.1	16.1
Belgium	ULC in U.S. dollars	0.9	0.6	-2.5	6.7	0.2	-1.4	-7.9
	ULC in nat. cur.	1.0	1.8	0.2	0.8	1.3	4.2	-3.2
	Exchange rates	-0.1	-1.2	-2.6	5.8	-1.1	-5.4	-4.8
Canada	ULC in U.S. dollars	2.4	4.6	-2.7	7.6	0.5	-8.8	6.1
	ULC in nat. cur.	2.0	4.6	-0.3	2.7	-0.9	-2.4	-4.3
	Exchange rates	0.4	0.0	-2.4	4.8	1.4	-6.6	10.8
Czech Republic	ULC in U.S. dollars	NA	NA	NA	9.2	0.0	-8.6	-7.8
	ULC in nat. cur.	NA	NA	NA	-0.2	-2.4	2.1	-7.6
	Exchange rates	NA	NA	NA	9.4	2.4	-10.5	-0.3
Denmark	ULC in U.S. dollars	2.3	4.1	-2.0	7.8	-1.9	-0.9	-10.7
	ULC in nat. cur.	2.5	5.7	0.7	1.9	-0.8	4.3	-6.2
	Exchange rates	-0.2	-1.5	-2.6	5.8	-1.1	-5.0	-4.8
Finland	ULC in U.S. dollars	0.5	5.9	-7.1	2.6	2.9	12.8	-15.4
	ULC in nat. cur.	1.0	5.7	-2.2	-3.1	4.0	19.2	-11.1
	Exchange rates	-0.5	0.2	-5.1	5.8	-1.1	-5.4	-4.8
France	ULC in U.S. dollars	1.6	3.4	-2.9	5.9	0.7	-0.6	-10.0
	ULC in nat. cur.	2.1	5.7	-0.2	0.1	1.8	5.0	-5.4
	Exchange rates	-0.5	-2.2	-2.6	5.8	-1.1	-5.4	-4.8
Germany	ULC in U.S. dollars	1.9	4.5	-2.5	3.4	3.3	15.4	-14.7
	ULC in nat. cur.	1.1	3.3	0.2	-2.3	4.4	21.9	-10.3
	Exchange rates	0.7	1.1	-2.7	5.8	-1.1	-5.4	-4.8
Italy	ULC in U.S. dollars	2.8	5.2	-3.8	8.7	3.0	4.4	-9.2
	ULC in nat. cur.	4.7	8.8	1.7	2.8	4.2	10.3	-4.6
	Exchange rates	-1.8	-3.3	-5.4	5.8	-1.1	-5.4	-4.8
Japan	ULC in U.S. dollars	1.9	4.6	2.1	-5.0	8.4	22.6	-7.5
	ULC in nat. cur.	-1.1	0.7	-0.9	-3.8	-1.7	11.1	-13.3
	Exchange rates	3.0	3.8	3.0	-1.3	10.3	10.4	6.7
Korea, Republic of	ULC in U.S. dollars	1.2	4.1	-2.0	4.5	-6.0	-10.3	9.5
	ULC in nat. cur.	4.1	7.9	2.6	1.6	1.2	4.1	-0.7
	Exchange rates	-2.8	-3.4	-4.5	2.8	-7.0	-13.8	10.3
Netherlands	ULC in U.S. dollars	1.2	1.7	-2.4	5.7	0.8	2.6	-12.2
	ULC in nat. cur.	0.5	0.8	0.3	-0.1	1.9	8.4	-7.7
	Exchange rates	0.6	0.9	-2.7	5.8	-1.1	-5.4	-4.8
Norway	ULC in U.S. dollars	3.7	4.9	0.0	8.1	1.8	-6.2	3.3
	ULC in nat. cur.	4.3	6.9	3.5	2.0	2.8	4.7	-0.7
	Exchange rates	-0.6	-1.9	-3.4	6.0	-1.1	-10.4	4.1
Singapore	ULC in U.S. dollars	1.8	5.5	-1.0	0.8	0.2	-2.9	-12.8
	ULC in nat. cur.	0.3	3.7	-1.5	-1.1	-3.1	-0.2	-18.3
	Exchange rates	1.5	1.7	0.5	2.0	3.4	-2.8	6.7
Spain	ULC in U.S. dollars	2.3	3.8	-3.0	8.5	0.5	-2.7	-9.2
	ULC in nat. cur.	4.3	7.8	2.7	2.5	1.6	2.9	-4.6
	Exchange rates	-2.0	-3.7	-5.5	5.8	-1.1	-5.4	-4.8
Sweden	ULC in U.S. dollars	-0.5	3.5	-6.4	2.2	-0.4	-3.4	-8.6
	ULC in nat. cur.	1.2	6.6	-2.2	-2.2	1.7	12.3	-13.9
	Exchange rates	-1.7	-2.9	-4.3	4.5	-2.1	-14.0	6.2
Taiwan	ULC in U.S. dollars	0.9	8.3	-1.3	-4.5	-4.6	-11.6	-6.4
	ULC in nat. cur.	0.5	5.5	0.2	-3.8	-5.9	-7.4	-10.7
	Exchange rates	0.4	2.7	-1.5	-0.7	1.4	-4.5	4.8
United Kingdom	ULC in U.S. dollars	2.1	4.7	-0.3	4.9	-5.8	-9.2	-2.3
	ULC in nat. cur.	3.1	6.3	1.4	0.8	2.7	7.5	-1.0
	Exchange rates	-1.0	-1.6	-1.6	4.1	-8.3	-15.6	-1.3

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

NA=data not available.

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

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 19 countries compared. Below is a summary of the concepts used in this release. For more detailed information, see www.bls.gov/ilc/#productivity.

Definitions. Labor productivity is defined as real output 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.

Methodology. 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.

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. 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.

Output for the United States. 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.

Level Comparisons. 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.

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