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After several years of growth, robot investment came to a temporary halt in the United States in 2001

Investment is projected to grow at an annual rate of 7% in 2002-2005

2001 investment was down but 2002 points towards recovery

North American investment in industrial robots increased from about 3,900 units to almost 12,800 units in the period 1992-1999. In 2000, sales increased by 1% to almost 13,000 units (see figure 1). In 2001, shipments fell by 17% to about 10,800 units. In the first half of 2002, orders are, however, up again with 2% over 2001.

For the period 2002-2005, investment is projected to increase by an average annual rate of 7%, resulting in a market level of 14,200 robots in 2005.

Close to 100,000 robots in operation

At the end of 2001, the operational robot stock in North America is estimated to have reached approximately 97,300 units, representing an increase of 8% over 2000. Total accumulated yearly sales of robots in North America since the end of the 1960s are estimated at some 130,000 units.

By the end of 2005, the stock of operational robots is estimated to be just over 130,000 units.

United States lagging behind the European Union...

For every 10,000 persons employed in the United States manufacturing industry at the end of 2001, there were 52 industrial robots, compared with 127 in Germany and 81 in the European Union (see figure 2). In the United States motor vehicle industry there are as many as 700 robots per 10,000 production workers.

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Robot prices are down, labour costs are up...

Between 1984 and 1990, the average unit value of robots shipped almost doubled, from \$65,000 to \$115,000 (in current prices). After that, however, the unit value fell continuously, and amounted to between \$95,000 and \$90,000 in the period 1993-1998. In 1999-2001, the unit price fell to the range of \$79,000-\$83,000.

Between 1990 and 2001, prices of industrial robots fell from index 100 to 31, without taking into account that robots installed in 2001 had a much higher performance than those installed in 1990 (see figure 3). If quality changes had been taken into account, it was estimated that the index would have fallen to 11. In other words, an average robot sold in 2001 would have cost just over a tenth of what a robot with the same performance would have cost in 1990, if it had been possible to produce such a robot in that year.

In the same time, the index of labour compensation in the American business sector increased from 100 to 152. This implies that the relative prices of robots fell from 100 in 1990 to 20 in 2001 without quality adjustment, and to 7 when taking quality improvements into account.

Hourly wages, excluding social costs, for production workers in the motor vehicle industry increased from \$14.56 to \$19.36 in this period. In the food industry the corresponding hourly wages were \$9.62 and \$12.88, respectively, a level which is one explanation why the food industry is lagging behind in the use of robots.

The motor vehicle industry in the lead in robot use

The automotive industry is by far the largest customer for robots, accounting for at least 50% of the installed base, followed by industries such as off-road vehicles, electronics, food, pharmaceuticals, appliances, aerospace and metal fabrication.

Welding and material handling dominate...

Welding robots accounted at the end of 2001 for about 48% of the estimated total stock of operational robots, of which spot welding accounted for 32 percentage points. Material handling and palletizing/packaging taken together had a share of about 24%, followed by assembly with about 9%. Machining and dispensing each had a share of just over 7%.

High share of advanced robots

Of the total number of industrial robots shipped in both 2000 and 2001, the share of sophisticated robots with 5 axes or more accounted for between 94% and 95%.

For the global development of industrial robots and service robots, see a parallel press release (ECE/STAT/02/01) issued on the same day as the present one.

Figure 1. Estimated operational stock of robots at year-end in the United States and shipments during the year

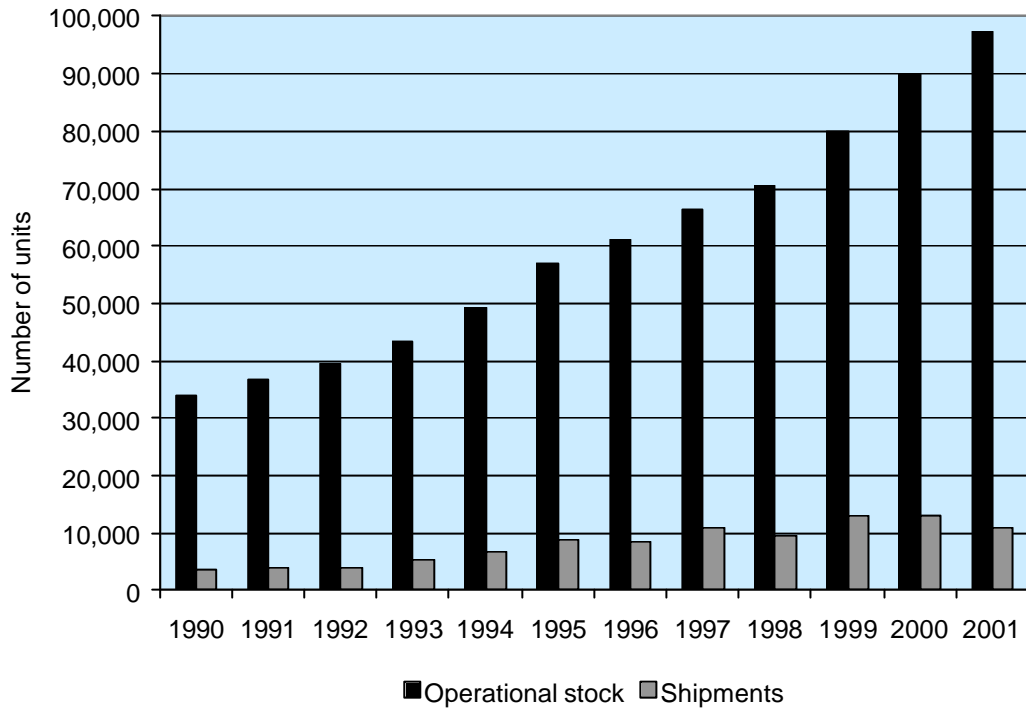
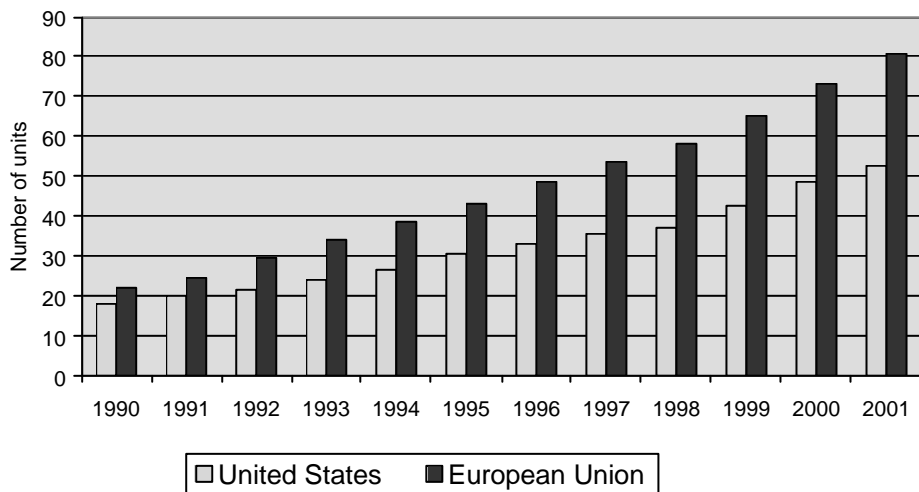
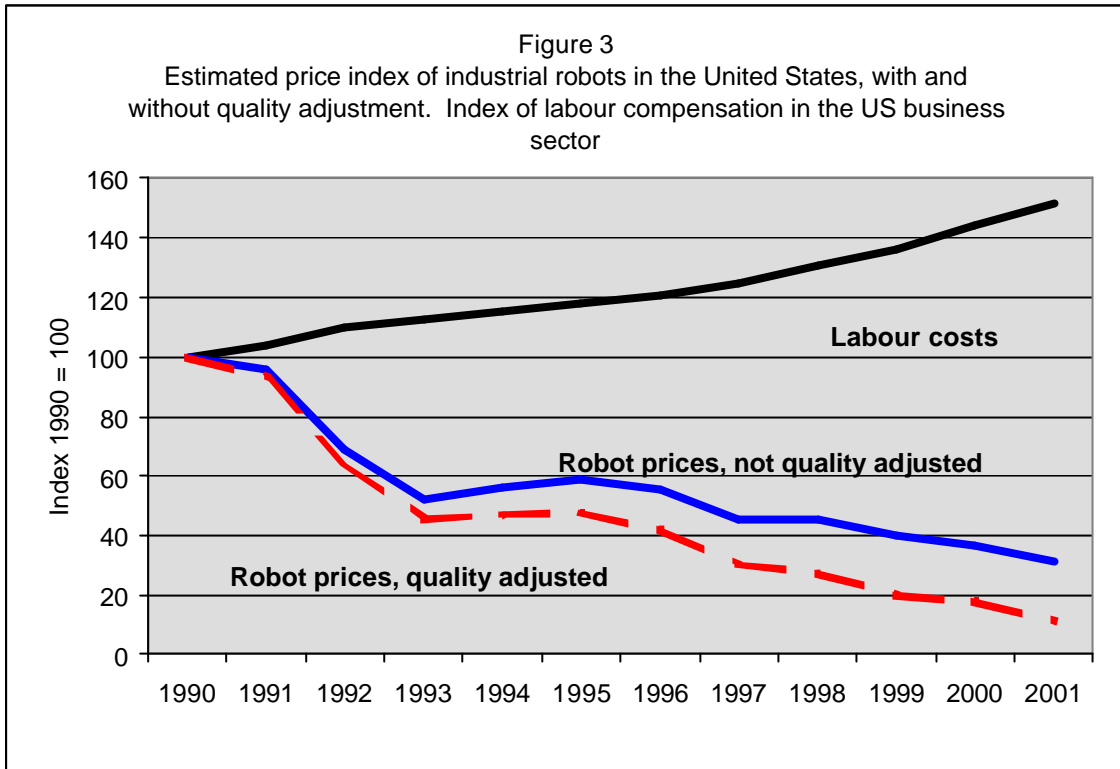
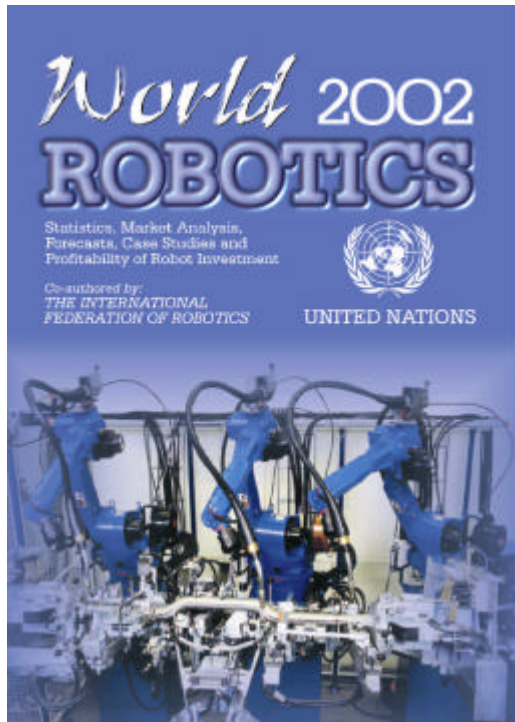


Figure 2. Number of multipurpose industrial robots per 10,000 employees in the manufacturing industry (ISIC rev.3: D)





The publication **World Robotics 2002 – Statistics, Market Analysis, Forecasts, Case Studies and Profitability of Robot Investment** is available, quoting Sales No. GV.E.02.0.8 or ISBN No. 92-1-101047-0, through the usual United Nations sales agents in various countries or from the United Nations Office at Geneva (see address below), priced at US\$ 120:



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