United Nations Economic Commission for Europe

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Geneva, 1 October 2002

Germany surpassed United States in 2001, becoming the world's second largest user of industrial robots

Growth projected to be 5% per year in 2002-2005

After years of growth the market in 2001 was almost flat…

In 2001, the robot market in Germany was almost at the same level as the record year of 2000, a slight fall of 2% was recorded. Some 12,500 new robots were installed (see figure 1). For the period 2002-2005, growth is projected at an annual average rate of 5.1%. In 2005, the market is estimated to reach 15,300 units.

Total accumulated sales of robots up to the end of 2001 amounted to about 121,400 units. The stock of robots still in operation is estimated at some 99,000 units, an increase of 9% over 2000. By the end of 2005, the stock is projected to have reached 134,000 units.

Since 1993, German production of industrial robots has continuously increased, except in 1997, reaching 13,250 units in 2001. In terms of value, production of robot units, without systems integration, amounted to about €677 million.

The export ratio of robots (in terms of units) in 2001 amounted to 49%, a share which was rather stable in the period 1998-2000. The import ratio (imports as a percentage of domestic supply) surged from 36% in 1994 to 50% in 1997 but fell back to just over 45% in 1998-2001.

Germany has the world's highest robot density

For every 10,000 persons employed in the German manufacturing industry at the end of 2001, there were 127 industrial robots, which puts Germany at the top, disregarding Japan which includes all types of robots and not just general purpose robots in the statistics (see figure 2). In the motor vehicle industry there are as many as 890 robots per 10,000 production workers.

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Robots prices are down, labour costs are up…

Between 1990 and 2001, prices of industrial robots fell from index 100 to 48, 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 22. In other words, an average robot sold in 2001 would have cost less than a fourth 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 last few years, however, the price decline has levelled out.

In the same time, the index of labour compensation in the German business sector increased from 100 to 137 – in the motor vehicle industry hourly wages excluding social costs increased from DM 23.43 to DM 36.01 in the same period. This implies that the relative prices of robots fell from 100 in 1990 to 35 in 2001 without quality adjustment, and to 16 when taking quality improvements into account.

It is interesting to note that the unit value of robots fell from over €80,000 in 1991 to about €51,000 in 1998, since which time it has been stable. This sharp fall in unit value is probably explained mainly by economies of scale and increased productivity.

Welding is the dominant application area

With almost 31,300 units or 32% of the estimated total stock of operational robots at the end of 2001, welding was the largest application area. In view of the size of the German automobile industry, this result is not surprising.

Material handling, which accounted for almost 13,600 robots at the end of 2001, was the second largest application area with just under 14% of the total stock of operational robots.

The motor vehicle industry is the largest user of robots

With about 50,500 robots, representing 51% of the 2001 total stock of operational robots, the motor vehicle industry was by far the largest robot-using branch. The chemical industry made up 10% of the total stock while the fabricated metal products industry, the machinery industry and the electrical machinery industry each had a share of about 6%.

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.

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

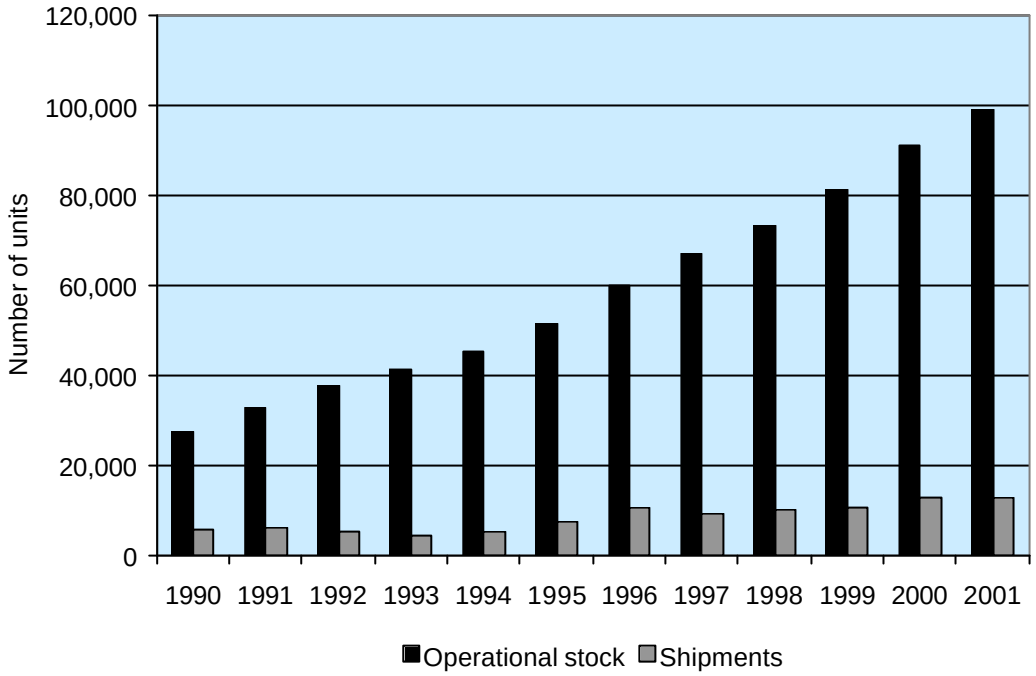


Figure 2. Number of multipurpose industrial robots per 10,000 employees in the manufacturing industry (ISIC rev.3: D)

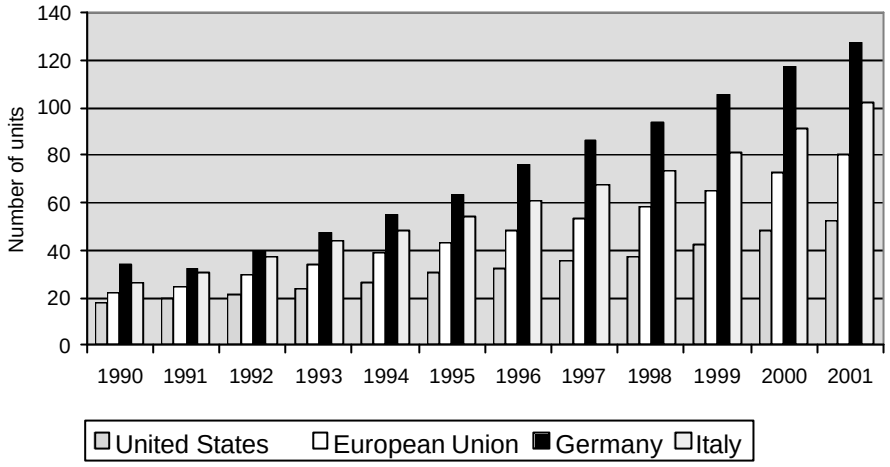
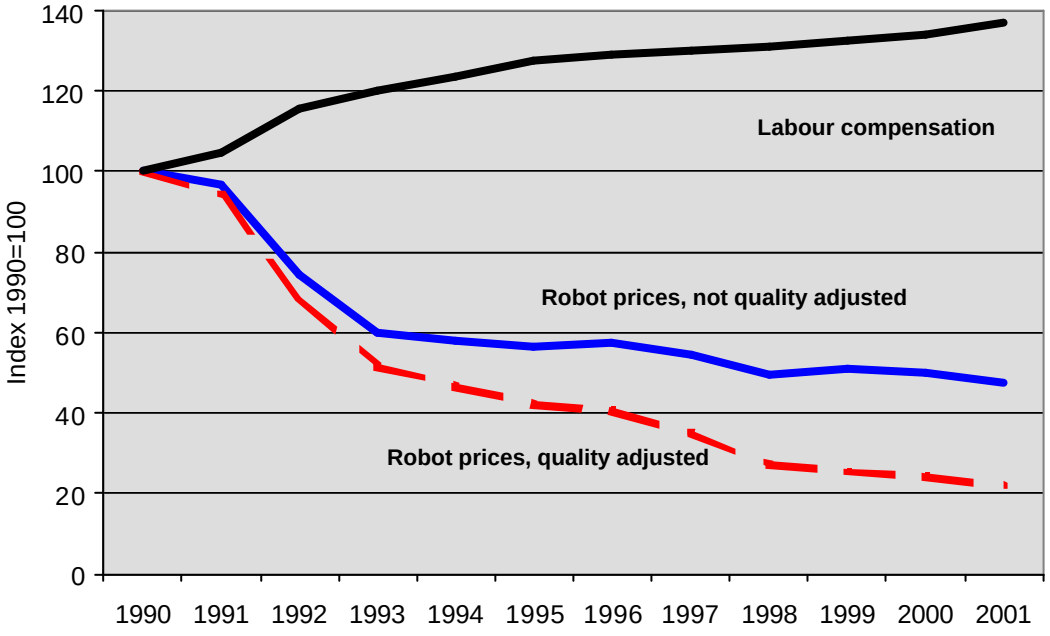
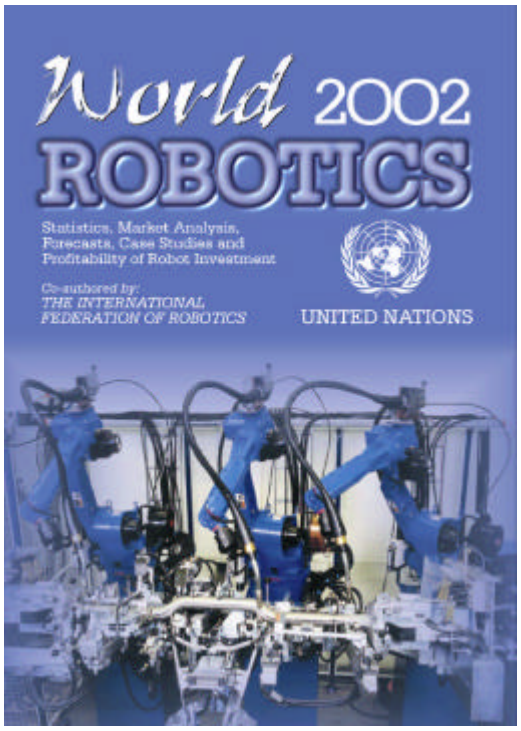


Figure 3
Price index of industrial robots in Germany, with and without quality adjustment. Index of labour compensation in the German business sector



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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