



**Embargo:
20 October 2004,
11:00 hours (Geneva time)**

Press Release ECE/STAT/04/P03
Geneva, 20 October 2004

Solid recovery of sales and production of industrial robots in Germany - the world's second largest user and producer of industrial robots

After a slight drop in 2002, sales in 2003 jumped 13% ...

In 2003, about 13,400 new industrial robots were installed in Germany, compared with 12,700 in the United States, making an important contribution to the competitiveness of German industry. The stock of robots in operation amounted to about 112,700 units at the end of 2003, against 112,400 in the United States (see figure 1a).

While the robot market in 2002 was down by 16% in the European Union, it only fell by just below 7% in Germany, in terms of units, and by 5% in terms of value. As a comparison, the value of the German market for machine tools fell by as much as 20%. Robot investments seem to be less sensitive to recession than other types of investment goods. In 2003, robot sales on the German market increased by 13%.

Both the German figures and the EU figures should also be seen in the light of unprecedented growth since 1994, with the exception of 1997 and 2001-2002 (see figure 1b).

For the period 2004-2007, the market in Germany is projected to grow by a yearly average of 5%, reaching 16,300 units in 2007, which would result in a robot stock of over 151,000 units.

Germany has the world's highest robot density

For every 10,000 persons employed in the German manufacturing industry at the end of 2003, there were 148 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 1,000 robots per 10,000 production workers (see figure 3).

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

Between 1990 and 2003, prices of industrial robots fell from index 100 to 51, without taking into account that robots installed in 2003 had a much higher performance than those installed in 1990 (see figure 4). 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 2003 would have cost about a fifth 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.

At the same time, the index of labour compensation in the German business sector increased from 100 to 144. This implies that the relative prices of robots fell from 100 in 1990 to 35 in 2003 without quality adjustment, and to 15 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 only slightly falling, reaching €49,000 in 2003. 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 34,700 units or 31% of the estimated total stock of operational robots at the end of 2003, 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 18,800 robots at the end of 2003, was the second largest application area with 17% of the total stock of operational robots.

The motor vehicle industry is the largest user of robots

With about 63,400 robots, representing 56% of the 2003 total stock of operational robots, the motor vehicle industry was by far the largest robot-using branch. The chemical industry made up 9% of the total stock while the fabricated metal products industry, the machinery industry and the electrical machinery industry each had a share of between 4% and 6%.

<p>For the global development of industrial robots and service robots, see a parallel press release (ECE/STAT/04/P01) issued on the same day as the present one.</p>
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Figure 1a. Estimated operational stock of robots at year-end and shipments during the year

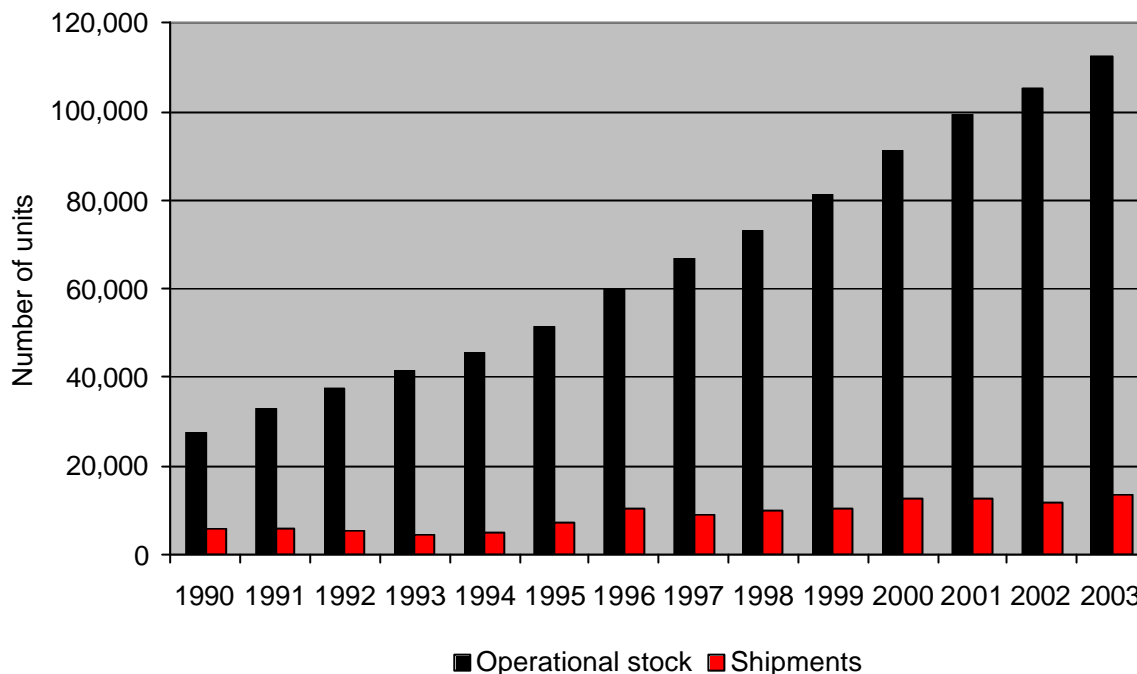
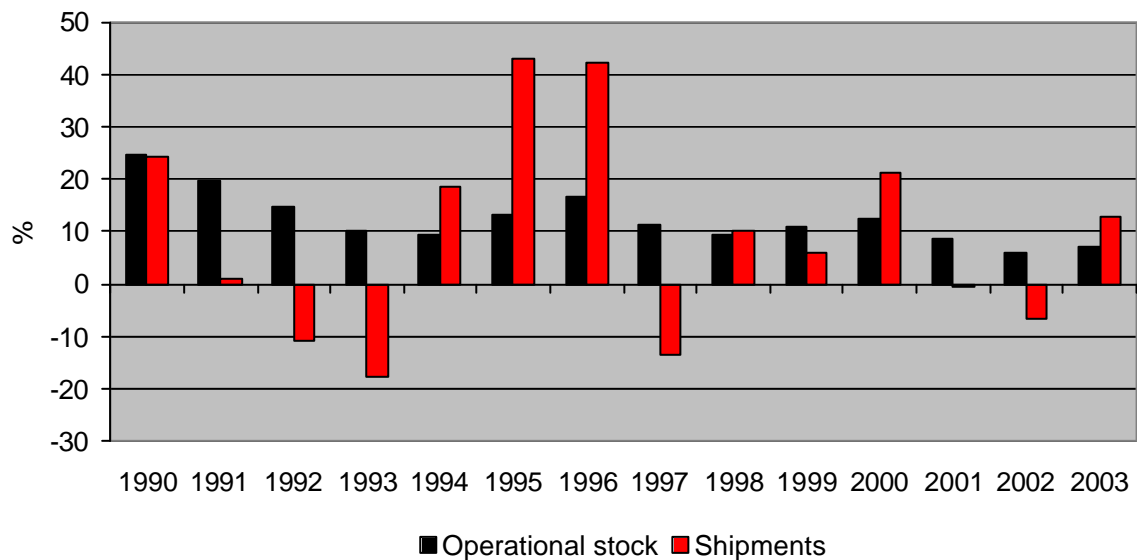


Figure 1b. Yearly percentage change in estimated operational stock and in shipments



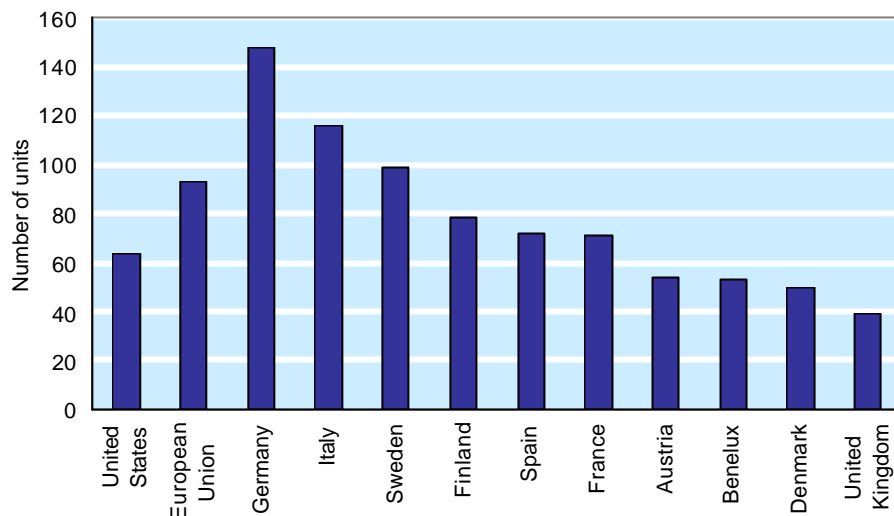
	2003
Japan a/	322
Rep. of Korea b/	138
United States	63
European Union	93
Germany	148
Italy	116
Sweden	99
Finland	78
Spain	72
France	71
Austria	54
Benelux	53
Denmark	50
United Kingdom	39
Australia	36
Norway	24
Portugal	15
Czech Rep. a/	12

Sources. UNECE and IFR.

a/ Up to and including 2000, data for Japan include all types of robots. As from 2001, data exclude dedicated robots, except for dedicated machining robots. As from 2001, Japanese statistics are therefore much more comparable with those of other countries.

b/ All types of industrial robots.

Figure 2. Number of robots per 10,000 persons employed in the manufacturing industry in 2003



	2001	2003
France	720	910
Germany	760	1,000
Italy	1,040	1,400
Japan	1,300	1,400
Spain	650	800
Sweden	560	560
United Kingdom	580	660
United States	640	740

Sources: UNECE and IFR.

Figure 3 Number of robots per 10,000 production workers in the motor vehicle industry, 2001 and 2003

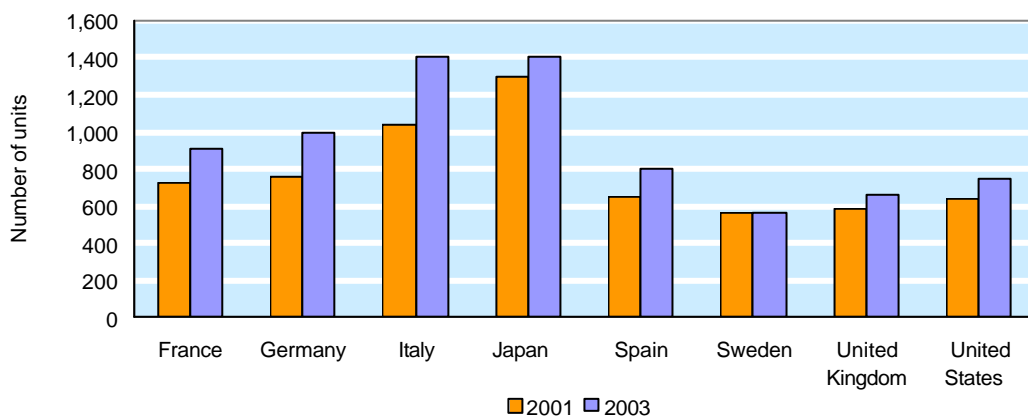
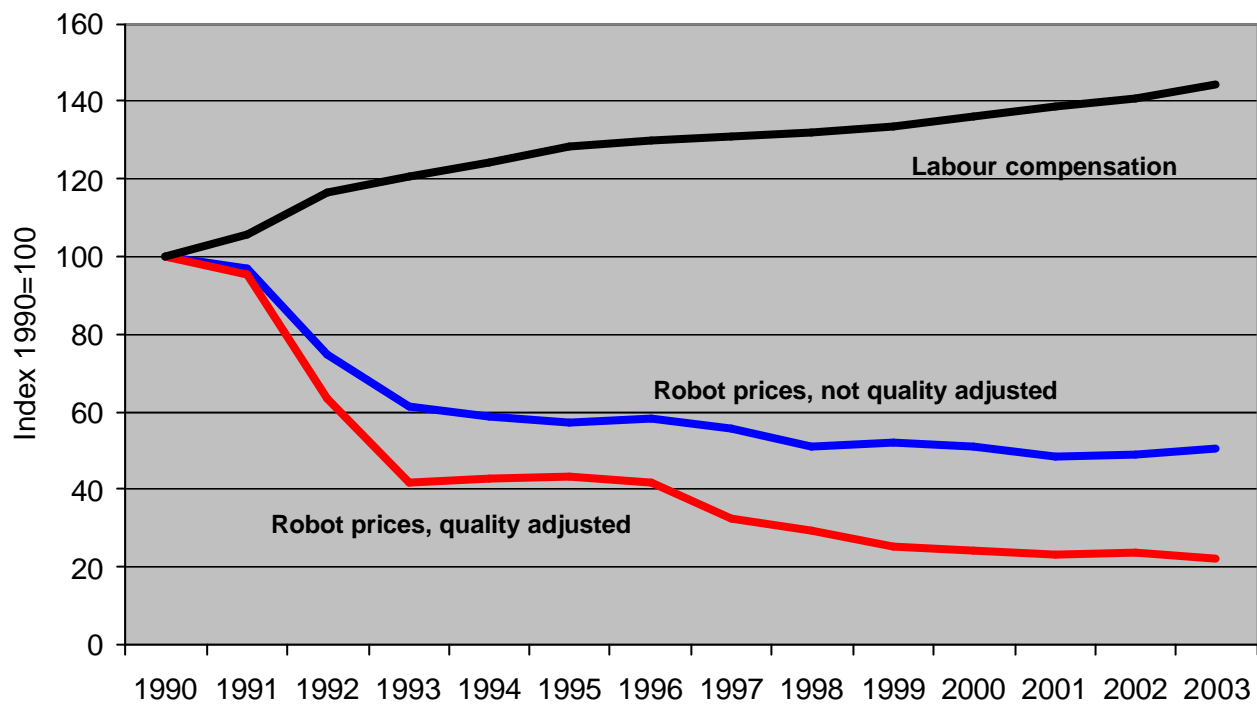
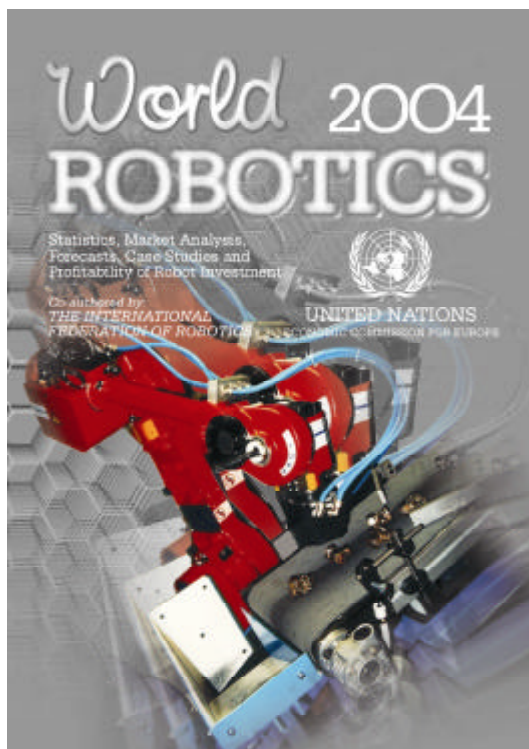


Figure 4.
Price index of industrial robots in Germany, with and without quality adjustment.
Index of labour compensation in the German business sector



The publication **World Robotics 2004 – Statistics, Market Analysis, Forecasts, Case Studies and Profitability of Robot Investment** is available, quoting Sales No. GV.E.04.0.20 or ISBN No. 92-1-101084-5, through the usual United Nations sales agents in various countries or from the United Nations Office at Geneva (see address below), priced at US\$ 150:



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