United Nations Economic Commission for Europe

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In 2002, the robot stock in Spain grew by 12% - the Spanish motor vehicle industry is more robotized than that of France

Spectacular growth in robot investment

Between 1994 and 1999, sales of industrial robots in Spain surged continuously, recording an annual average increase of over 30%. By 2000, sales had reached 2,941 units (see figure 1). In 2001, sales soared by another 22%, reaching a record level of 3,584 units, just above that of France but 85% higher than in the United Kingdom. In view of this spectacular growth it was not a surprise that there was a market set-back of 33% in 2002. On the other hand, the stock of robots in operation continued to expand. In 2002 it increased by 12% and reached close to 18,400 units.

7% growth per year in 2003-2006

The robot market in the European Union is forecasted to grow by an annual average of about 7% in 2003-2006. As order intake of industrial robots placed by European customers increased by as much as 25% in the first half of 2003, compared with the same period in 2002, reaching the highest level ever recorded, this forecast might very well be far too conservative.

The robot density in Spain at the same level as in France…

For every 10,000 persons employed in the Spanish manufacturing industry at the end of 2002, there were 66 industrial robots, which puts Spain at the same level as France, which had 67 (see figure 2). The increase in Spain has been spectacular considering that there were only 8 robots per 10,000 employees in 1990. The Spanish robot density is almost double that of the United Kingdom.

In the Spanish motor vehicle industry there are as many as 760 robots per 10,000 production workers, which puts the Spanish motor vehicle industry well ahead of that of France, the United Kingdom and Sweden as concerns robotization and more or less at the same level as that of the United States (see figure 3).

…/

Falling relative prices for robots

Between 1990 and 2000, prices of robots fell sharply, after which they started to level off. At the same time there was a spectacular improvement in the performance of the robots. They became much faster, more reliable, more accurate, more versatile and above all were equipped with much more powerful processing capabilities, including sensor interaction. This implied that the price of robots, expressed in constant 1990 US dollars fell from index 100 in 1990 to 57 in 2002, without taking into account the improvements in performance (see figure 4). If quality changes had been taken into account, it was estimated that the index would have fallen to 27. In other words, an average robot sold in 2002 would have cost about 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.

At the same time, the index of labour compensation in the Spanish business sector increased from 100 to 185, which of course is the driving force behind the expansion of robot investments. Relative to labour, robots become cheaper and cheaper every year.

Welding and plastic moulding are the major application areas

Welding is the predominant application area in Spain. At the end of 2002, it accounted for as much as 54% of the operational robot stock, a figure which has been slowly falling from some 64% in the early 1980s.

The second largest application area was machining with 8% of the stock, followed by plastic moulding with just below 8%.

The motor vehicle industry is by far the largest user

The motor vehicle industry is the predominant robot user in Spain, accounting for as much as 69% of the 2002 total operational stock. The second largest user branch was the chemical industry, which made up just below 8% of the stock. The fabricated metal products industry accounted for about 5% of the total stock.

For the global development of industrial robots and service robots, see a parallel press release (ECE/STAT/03/P01) issued on the same day as the present one.

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Figure 1a. Estimated operational stock of robots at year-end and shipments

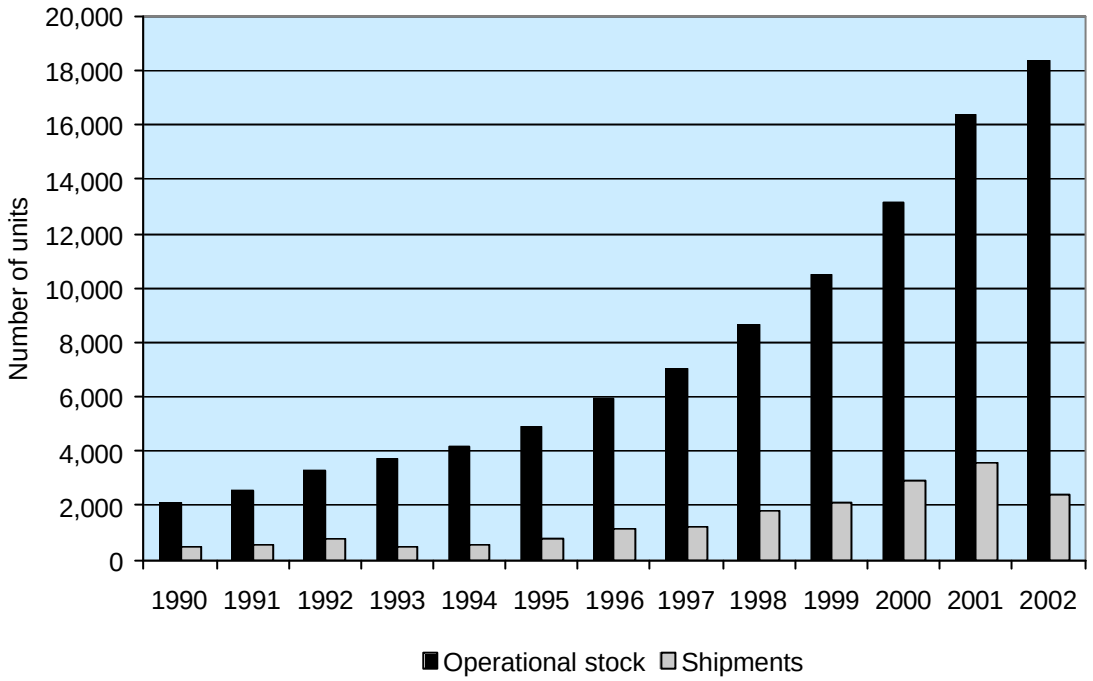
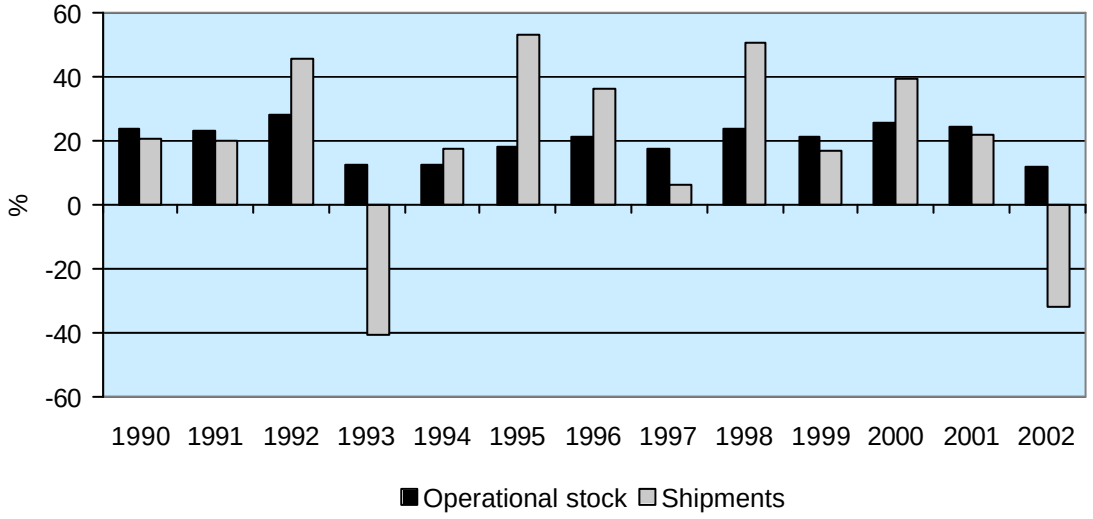


Figure 1b. Yearly percentage change in estimated operational stock and in shipments



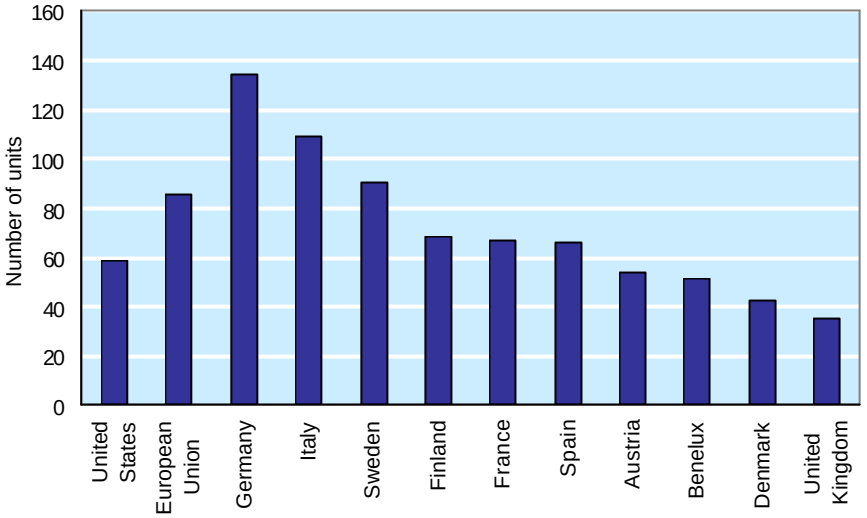
	2002
Japan a/	308
Rep. of Korea b/	128
United States	**58**
European Union	**86**
Germany	135
Italy	109
Sweden	91
Finland	68
France	67
Spain	66
Austria	54
Benelux	51
Denmark	43
United Kingdom	36
Australia	33
Norway	21
Portugal	9
Czech Rep.	8

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 2002



	2001	2002
France	**540**	**630**
Germany	**890**	**1,000**
Italy	**1,010**	**1,130**
Japan	**1,600**	**1,700**
Spain	**670**	**760**
Sweden	**540**	**570**
United Kingdom	**520**	**550**
United States	**690**	**770**

Sources: UNECE and IFR.

Figure 3. Number of robots per 10,000 production workers in the motor vehicle industry, 2001 and 2002

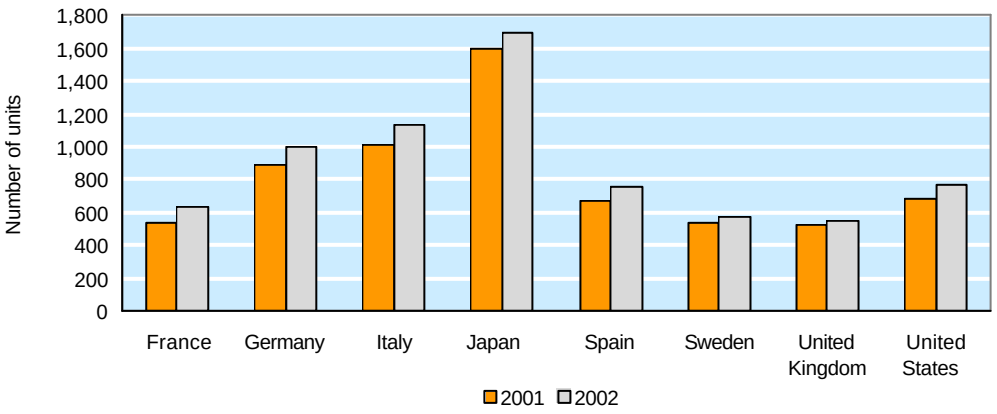
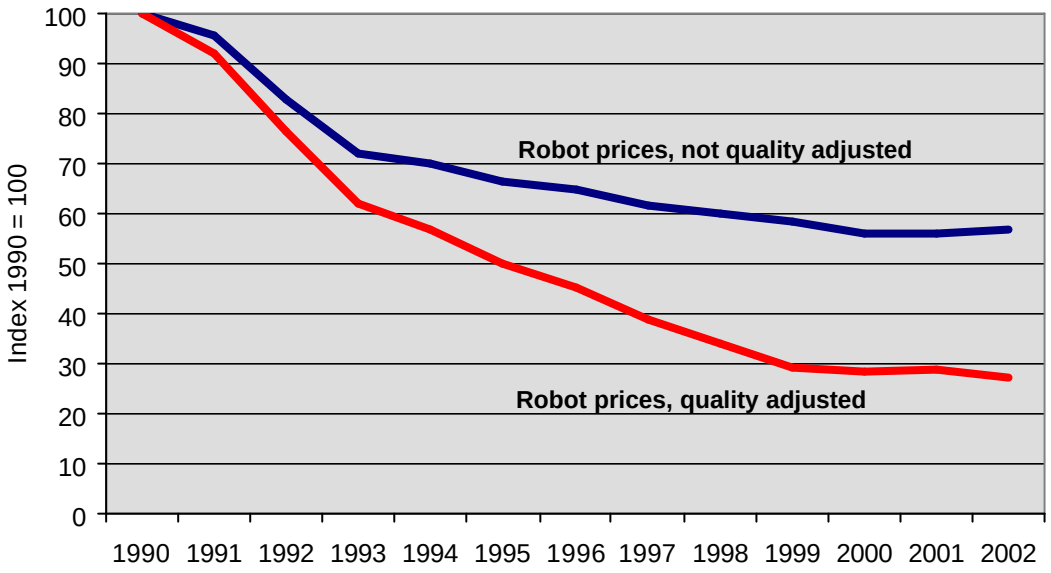
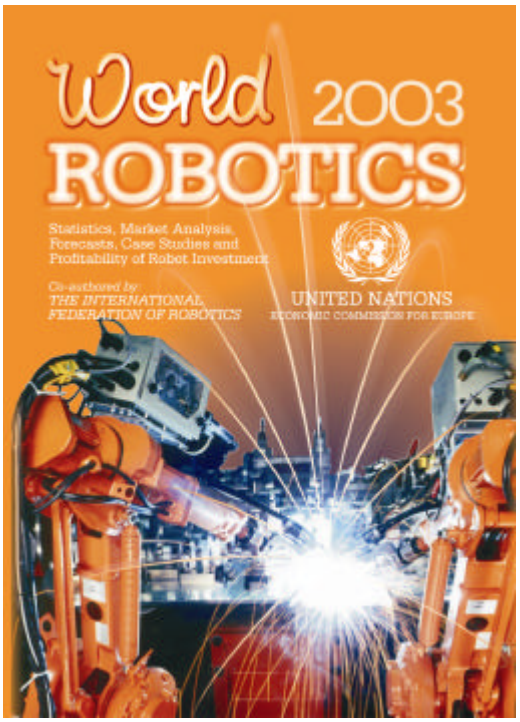


Figure 4
Price index of industrial robots for international comparison (based on 1990 $ conversion rate), with and without quality adjustment.



The publication ***World Robotics 2003*** – *Statistics, Market Analysis, Forecasts, Case Studies and Profitability of Robot Investment* is available, quoting Sales No. GV.E.03.0.16 or ISBN No. 92-1-101059-4, through the usual United Nations sales agents in various countries or from the United Nations Office at Geneva (see address below), priced at US$ 130:



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