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ROBOT INVESTMENTS SURGE TO RECORD LEVELS

Latest data

"Never before have so many orders for industrial robots been placed by the European, North American and Asian industries, pointing towards an acceleration in the drive to automate", says Jan Karlsson of the United Nations Economic Commission for Europe (UNECE), which together with the International Federation of Robotics (IFR), regularly surveys the robot market.

Worldwide orders in 2004 were up 20% ...

In 2004, worldwide orders for industrial robots were 20% higher than in 2003, see figure 1. In Asia (heavily dominated by Japan and the Republic of Korea but also by a rapidly increasing market in China) they surged by 43%. Thereafter followed North America with 23% and Europe with 5%. Never before have so many robots been ordered, worldwide as well as by the various regions.

In North America first and third quarters (Q1 and Q3) 2004 both grew by 16% while preliminary figures for Q4 2004 show a growth of 10%, see figure 2. In Europe, 2004 started out bad with a drop of 8% but growth picked up sharply in the following quarters. Q3 2004 recorded a growth of 22% while in Q4 it stopped at 9%. Asia showed impressive growth of over 40% in all quarters except Q3.

Non-automotive industries are sharply stepping up their robot investments ...

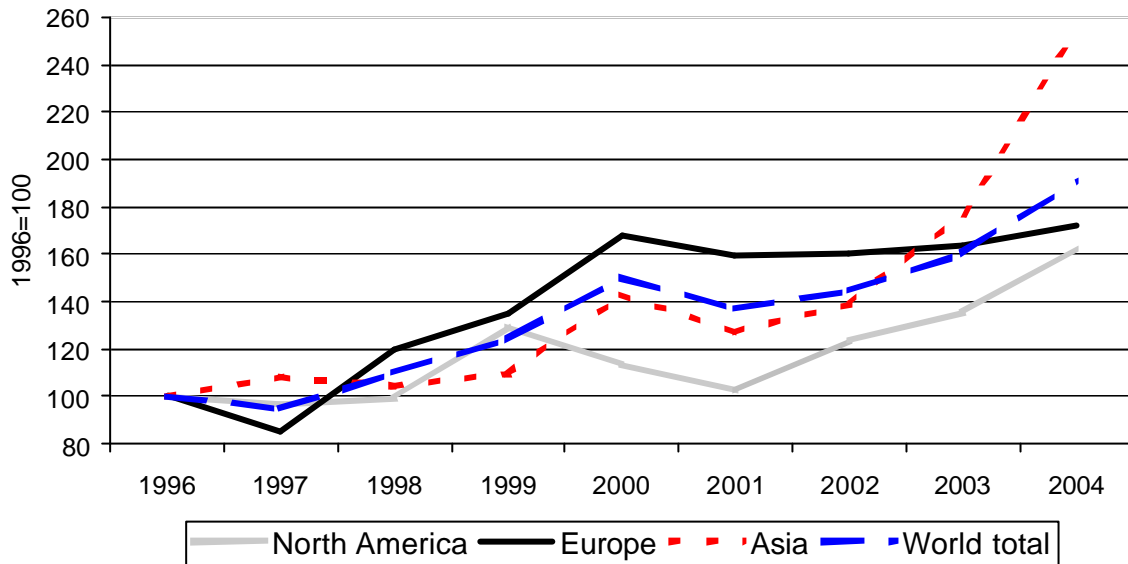
Normally, it is the automotive industry that leads the drive to robotize. In 2004, however, there was a significant turn around. Worldwide non-automotive industries increased their orders with close to 42% while final automotive assembly increased by less than 1% and automotive components with 19%.

In North America and Asia, non-automotive industries increased their orders with as much as 71% and 42%, respectively. In Europe a growth of 22% was recorded in orders from the non-automotive industries, in contrast to the final assembly in the automotive industry, which recorded a decrease in robot orders of 11%.

.../

Figure 1

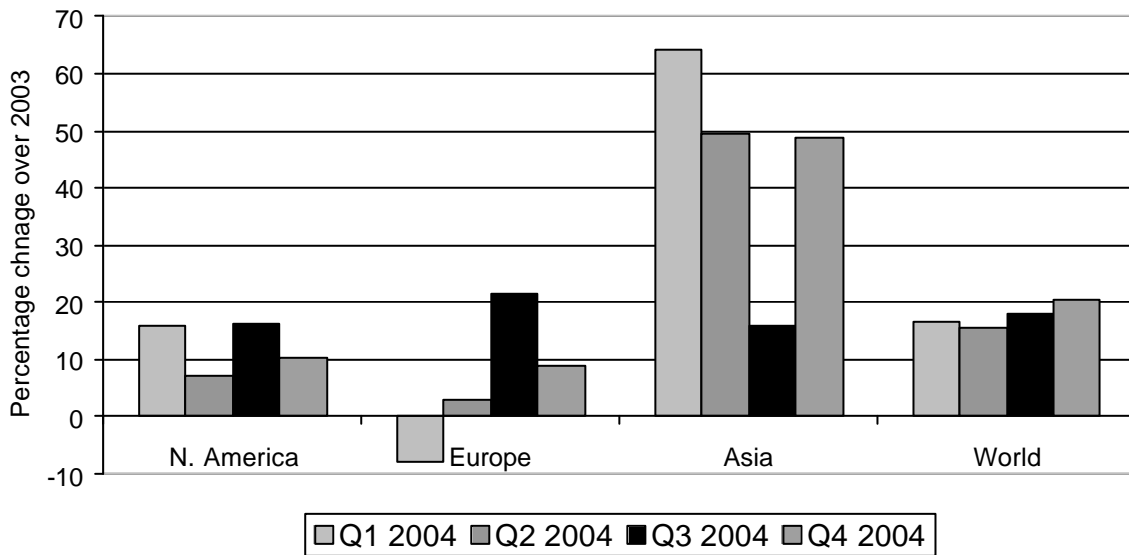
Index of order intake by region of customers, 1996=100



Note. Data for 2004 are preliminary for N. America and World total.
Sources: UNECE and IFR.

Figure 2

Order intake by region of customers in 2004, percentage change over the corresponding quarters in 2003



Note. Data for Q4 2004 are preliminary for N. America and World total.
Sources: UNECE and IFR.

100,000 new robots were installed worldwide in 2004 ...

Based on record new orders placed in 2004, the UNECE estimates that at least 100,000 new robots will have been installed in 2004, of which

- ◆ 31,100 in the European Union (15% more than in 2003 but only 1% over the previous record in 2001),
- ◆ 16,100 in North America (27% more than in 2003 and 24% of the previous record of year 2000); and
- ◆ 51,400 in Asia, mainly in Japan but with rapidly increasing number in China (22% over 2003), see table 1 and figure 3.

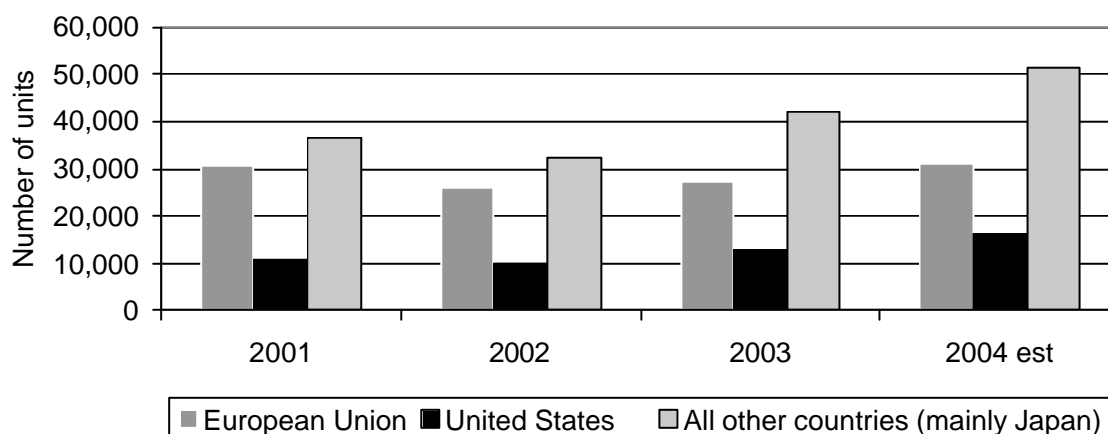
Table 1

Yearly new installations of industrial robots 2001-2003 and estimates for 2004. Number of units

Country	2001	2002	2003	2004 est
European Union	30,800	26,100	27,100	31,200
United States	10,800	10,000	12,700	16,100
All other countries (mainly Japan)	36,500	32,500	42,000	51,400
Total	78,100	68,600	81,800	98,700

Sources: UNECE and IFR.

Figure 3

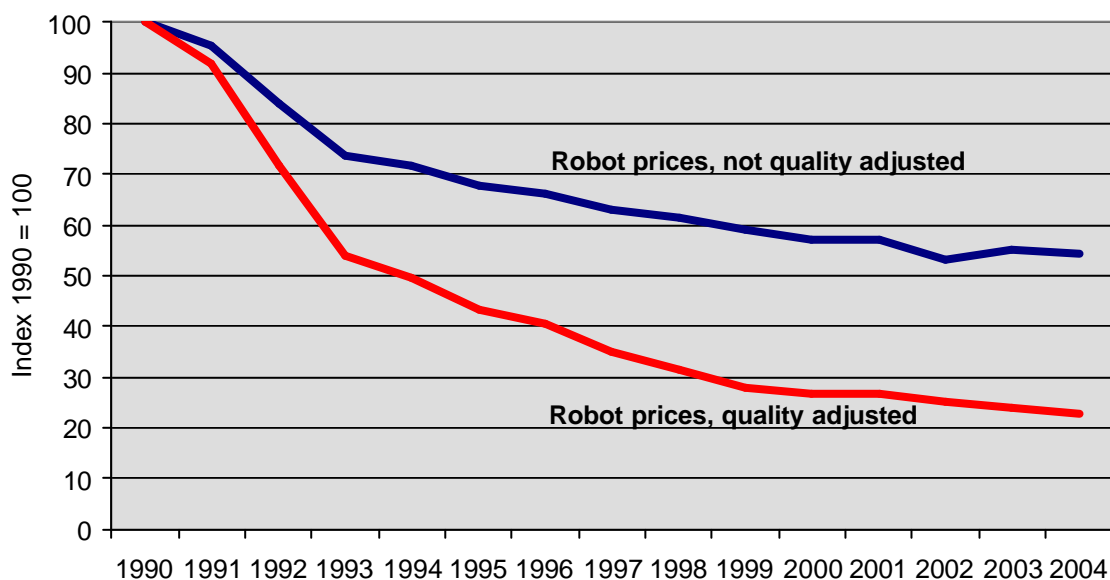


Robotization spurred by plummeting robot prices, ...

The surge in robot investments has several explanations. A central reason is that prices of robots are falling rapidly relative to labour costs. Expressed in constant 1990 US\$, **robot prices in year 2004 were on average 46% lower than in 1990**, see figure 4. At the same time today's robots have much higher performance than those produced in 1990 with respect to versatility, speed, accuracy, and above all computer power. Meantime-between-failure improved by over 200% and accuracy by close to 70%, just to take a few examples.

A quality-adjusted price index, that is, an index in which consideration is taken to the continuous performance improvements, would therefore show an even higher price reduction. It is estimated that **a robot in year 2004 costs less than one fourth of a robot in 1990 with the same performance**.

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



... increasing labour costs, ...

While prices of robots have plummeted and quality has increased, labour costs have risen steadily. In the OECD area, **labour compensation per employee in the business sector rose by over 100%** in the period 1990-2004. The prices of robots relative to labour compensation thus fell from 100 in 1990 to **27**, when taking no consideration to performance improvements, and to **11** when calculating the effects of performance improvements.

"Rapidly falling relative prices of robots paired with shrinking labour supply, in particular to the manufacturing sector, in the years ahead will spur continued high growth in robot investment", says Jan Karlsson, UNECE. "We have only seen the first phase of the robotization drive, which has mainly focused on the automotive industry. The food industry and all other manufacturing industries as well as many non-manufacturing sectors, are as the year 2004 data clearly show, significantly stepping up their investment in robot systems".

For more information please contact:

Mr. Jan Karlsson
Statistical Division
United Nations Economic Commission
for Europe (UNECE)
Palais des Nations
CH - 1211 Geneva 10, Switzerland

Phone: +41(0)22 917 32 85
Fax: +41(0)22 917 00 40
E-mail: jan.karlsson@unece.org