

Does technology steal jobs? German economy shows the opposite

by Helmut Böttiger

For a spokesman for West Germany's Green Party, Lieschen Müller, it's really quite clear:

"The new technologies, especially microprocessors and robots, are solely to blame for the large number of the unemployed. Hitler had the right idea in his law of July 1934: Out with the machines if the same work can be done by men."

It's so simple—then for the Nazis, now for the Greens, and those who borrow arguments from the Greens.

But like most such things, this simplistic conclusion is absurd.

The largest of the five sectors of goods production in the Federal Republic of Germany employs 60% of all the robots in use in West Germany—but hasn't eliminated any workers since 1977. In the streetcar manufacturing sector, management learned from the crises of the past, and did everything to introduce the most modern and rational methods of production. The result is that 67,600 new jobs have been created in this sector of industry since 1977, up to and including 1985 (see **Table 1**).

Jobs are not simply "rationalized away." Businesses that delay investing in new technologies blunt their competitive edge, lose ground economically, and are then forced to cut back on or totally halt production. A classical example is watch manufacturing. In the 1970s, the industry hesitated to move on a technological advance then appearing—quartz watches; as a result, 40% of the jobs in the industry were lost. Only by means of strenuous exertions, through which production per employee was increased by 47%, was the industry again able to approach competitiveness, and thus to save the jobs still existing.

The textile and clothing industries had a similar experience. What was decisive in this case was not the technological level of the product, but the quality of the production

process. This sector of industry is labor intensive, and so, manufacturing was transferred to the so-called low-salary countries. At the beginning of the 1970s, an attempt to stop this trend was made through mergers and rationalization of sales, management, and production, and by holding down against wage increases. Despite all that, prices fell so sharply that only government subsidies protected the remaining companies from complete collapse.

In the meantime, manufacturing was so modernized and mechanized that prices were reduced to the levels found in Brazil or India. Simultaneously, production flexibility was increased so much that customer demand, which changes rapidly with the fashions, could be largely satisfied at the least possible risk, and without long-term speculation in fashion trends. Both apparently contradictory tendencies were effected by employment of microelectronics and computerization. And thus, the comparable production advantages of the so-called low-salary countries vanished. The German textile industry could once again stabilize its position on the world market and halt the process of job elimination.

The machine-building industry profited from the exertions of the endangered sectors, but found itself facing the same problems. In 1960, 39% of the machinery used in production was less than 6 years old, and 39% was over 10 years old. In 1980, 46% of the machinery was over 10 years old. Because of this backwardness, German machine building lost its leadership in the production of computer-controlled automated work stations to Japan.

Since 1983, the industry has gotten back on track, and has regained some of its lost territory. Of the 91,000 jobs lost between 1977 and 1984, 12,500 jobs have been re-created in the last year, thanks to technological modernization of production as well as in the products produced.

TABLE 1
West German street-car manufacturing sector

	Employed (1,000s)	% change	Unemployed (1,000s)	Productivity change (%)	Output change (%)	Work time per employee, % per annum
1970-74	26,658	+0.2	287	+4.77	+3.5	-1.4
1975-79	25,679	-0.4	1,007	+4.0	+2.8	-0.8
1980-84	25,630	-0.7	2,200	+1.9	+0.9	-0.3

Considered more generally, it can be seen that branches of industry strong in productivity were better able to defend jobs during the economic crisis than branches weak in productivity. While goods-producing companies overall eliminated some 10.7% of their jobs between 1980 and 1984, sectors strong in productivity, which make up 21% of the total firms, lost 7.6% of their jobs; sectors of average productivity, 24% of the total, lost 8.2%; and sectors weak in productivity, over half of the total, lost 13.2%. This relationship becomes clearer if the effects of processing innovations are considered. Branches that especially invested to increase their productivity, lost 5.1% of their personnel from 1979-82, average companies lost 10.3%, and firms neglecting productivity lost 15.5%.

What emerges from the comparison of the sectors is confirmed, if the development of the Federal Republic as a whole is considered. Table 2 shows clearly the connection between declining rates of growth in productivity and increases in unemployment. The reason for the retardation of productivity, as well as for the sales problems which led to the layoffs, was in the economic crisis, which had its causes in stunted monetary flows into industry. But it can be demonstrated that firms on the highest level of technological development came

through the crisis better, and could better maintain jobs, than those firms who avoided necessary investments out of other economic considerations.

In a recently concluded research project, the Technology Center of the Union of German Engineers investigated the effect of introduction of microprocessors on the number of jobs. The reason for this investigation was the powerful Green propaganda against the introduction of such technology. The research showed that only 0.4% of the total jobs lost in the firms investigated were directly made superfluous by the introduction of microelectronics. Three-quarters of all layoffs came in companies which had introduced no microelectronics.

Incidentally, the study refuted another dogma of the Greens: that the introduction of microelectronics leads to the deterioration of work skills. The research showed that demands on workers' skills increased. Investigations by the federal economics ministry, for example, show that in firms that introduced microelectronics, in comparison to conventional firms, productivity in research and development increased by 265%; administration, by 165%; sales and organization, by 156%; maintenance and repair, by 66%; and planning in the area of electronic data processing, by 56%.

TABLE 2

Shifts in employment by sector

Sector	Employment 1977-84	% change	Employment 1985
Agriculture/forestry	-219,000	-14	—
Electronics	-94,000	-10	+45,600
Machine manufacture	-91,000	-9	+12,500
Chemical industry	-21,000	-4	+5,900
Precision machining/optics	-25,000	-15	+5,400
Data processing	-45,000	-14	+5,300
Textile/clothing	-166,000	-28.5	-8,300
Steel	-84,000	-27	-7,500
Ship construction	-25,000	-36	—
Construction work	-60,000	-3	-115,000
Mining	-22,000	-9	-6,500
Quarry, sand mining, etc.	-27,000	-14	-7,800
Food	-46,000	-9	-3,100
Furniture Mfg.	-13,000	-13	-7,100
Streetcar Mfg.	+45,000	+6	+22,600
Office machines	+17,500	+28	+6,700
Synthetics	+14,000	+7	+6,000
Aero-, astronautics	+11,000	+22	n.a.
Energy	+11,000	+4	n.a.
Government employment	+379,000	+10	
Other services	+323,000	+12	
Management	+138,000	+19	
Credit, insurance	+73,000	+11	