

# International Comparisons of Productivity Trends and Levels

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The international comparisons of productivity trends and levels in this paper are largely confined to a dozen OECD countries in the post-World War II period. After all, most of the members of the Atlantic Economic Society come from these countries. The estimates are generally better for the OECD than for other countries, permitting more accurate depiction and analysis of economic developments. The patterns of productivity change are generally similar for the various countries. Of particular interest, the more industrialized countries comprise the only group in which there has been a marked convergence of productivity levels.

Following a description of relative movements of productivity and related variables between 1960 and 1988, the paper explains the differences in trends and the intertemporal patterns of change, especially the productivity slowdown after 1973. This is done by applying a growth accounting paradigm to the records of the United States, Canada, Japan, and an average for the European members of OECD. Some remarks on the prospects for productivity growth in the years ahead conclude the paper.

## I. Comparative Trends and Levels of Productivity

Table 1 shows that for the entire period 1960-88, real gross domestic product (GDP) per person employed rose less than half as fast in the U. S. as in the other 11 OECD countries — 1.4 vs. 3.2 percent in terms of average annual growth rates. The rates varied abroad from lows of 2.0 percent in Canada and 2.2 percent in the U.K. up to 4.3 percent in Italy and 5.7 percent in Japan. Output abroad also generally grew faster than in the U. S. despite slower growth of labor input, except in Canada. The estimates were prepared by the Bu-

reau of Labor Statistics (BLS) in the U. S. Department of Labor, as cited in the source notes on the tables.

The differential productivity growth resulted in a dramatic narrowing of the gap between the U. S. and the other 11 countries. From less than 43 percent of U. S. real product per employed person in 1950, the 11-country average rose to about 78 percent in 1988 (Table 2).

Output per capita is not a good proxy for output per employed person, although it is sometimes used as such. Ratios of employment to population have had diverse trends among nations, as shown in Table 3. Of the 12 in our sample, half (including the U. S. and Canada) showed definite upward movement of the ratios, so that output per capita increased more than labor productivity. Three of the countries had distinct declines in the ratios, particularly France and West Germany, so productivity improved more than output per capita. The ratios changed but little in the other three countries.

There is a significant positive correlation between changes in productivity and in real GDP among the 12 countries, and also in the broader sample of 20 countries shown later in Table 5. This is not surprising since productivity change is a major component of output growth. But the relationship also suggests the presence of economies of scale and, possibly, of utilization.

The negative correlation between relative changes in productivity and in prices, which obtains among industries of the same country, does not obtain internationally. This is because the movements of factor prices diverge substantially among nations. To illustrate the lack of relationship, Japan and West Germany had high rates of productivity growth and low rates of inflation between 1950-88. But Italy and France, which also had strong productivity growth, had relatively high inflation rates.

It is particularly noteworthy that the 1950-88 rates of change in labor productivity in Table 1 are

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TABLE 1

**The U. S. and 11 Other OECD Countries**  
**Real Gross Domestic Product**  
**and Labor Productivity**  
**(Average annual percentage rates**  
**of change 1950-1988 by subperiod)**

	1950-88		1950-60		1960-73		1973-79		1979-88	
	O	O/L	O	O/L	O	O/L	O	O/L	O	O/L
United States	3.2	1.4	3.3	2.1	3.9	1.9	2.5	0	2.7	1.0
11-country average	4.0	3.2	4.9	3.8	5.1	4.3	2.9	2.0	2.2	1.6
Canada	4.4	2.0	4.6	2.4	5.4	2.6	4.2	1.3	3.0	1.2
Japan	7.1	5.7	8.9	6.5	9.7	8.2	3.6	2.9	4.0	3.0
Belgium	3.2	2.9	3.0	2.8	4.9	4.1	2.2	2.2	1.8	1.8
Denmark	3.2	2.4	4.1	3.0	4.2	3.0	1.9	1.3	1.6	0.9
France	3.9	3.6	4.5	4.3	5.4	4.8	2.8	2.5	1.9	2.0
W. Germany	4.5	3.7	8.8	5.7	4.4	4.1	2.3	2.9	1.7	1.6
Italy	4.5	4.3	5.7	5.7	5.3	5.7	3.7	2.8	2.4	1.9
Netherlands	3.5	2.5	4.2	3.0	4.8	4.0	2.7	1.7	1.3	0.2
Norway	3.9	3.0	3.7	3.6	4.3	3.4	4.9	2.7	3.0	1.8
Sweden	3.0	2.4	3.4	2.7	4.1	3.5	1.8	0.8	1.8	1.4
United Kingdom	2.5	2.2	2.8	2.2	3.2	2.9	1.5	1.3	2.0	1.8
Addendum: Manufacturing										
United States	3.3	2.6	4.8	2.0	4.8	3.2	1.9	1.4	2.8	3.3
11-country average	5.3	5.6	6.7	4.7	5.9	6.3	1.9	4.0	2.0	3.5

*Note:* O = real gross domestic product; O/L = real product per unit of labor (persons employed).

*Source:* Bureau of Labor Statistics, U. S. Department of Labor, unpublished tables dated August 22, 1989.

negatively correlated with the initial 1950 relative levels of real GDP per employed person. The coefficient of correlation is high. The relationship is somewhat curvilinear; that is, the rate of productivity improvement tends to be less the smaller the gap. The reality of convergence is confirmed by the fact that the standard deviations of real GDP per worker from the mean for the 12 countries has successively declined over the 38-year period.

Studies by Baumol [1986] and by Kravis,

Heston, and Summers [1982] indicate that apart from the relatively industrialized nations, there has been no significant degree of convergence in productivity trends and levels in recent history. There does appear to have been some tendency in that direction, however, in selected groups of countries for limited periods of time. Even among the more advanced countries, according to the analysis by Abramovitz [1986], based on estimates of Maddison [1982] for 16 countries from 1870 to 1979, the tendency towards convergence