

5. International Comparisons of Productivity: Approaches and Problems

Liberalisation in international flow of goods, services and factors of production has resulted in aggressive competition in global markets. The survival in the global markets has made it necessary to improve productivity and produce high quality goods at competitive prices. This has led to a renewed interest in cross-country studies on competitiveness and on international comparisons of productivity.

The concept of competitiveness is a much broader concept than those of cost-competitiveness and productivity. Porter [1990] highlighted the two major sources of competitiveness, viz., efficiency in use of resources (or productivity, which leads to cost-competitiveness) and product differentiation. He further emphasised that through product differentiation, it is possible to neutralise cost disadvantage and that this has been the strategy pursued by the industrialised countries. The concept of competitiveness encompasses the relative costs at which products are produced (comparative advantage) and sold. In an open economy, the prices at which goods are sold are determined by prices of factor and intermediate inputs, profit margins and exchange rates. Movements in any of these variables influence the competitiveness of a product in the global markets. Other qualitative determinants of competitiveness include customisation of the products and after-sales services [Wagner and Ark, 1996]. In general, it is observed that countries which have been competitive at the global level are those which have improved productivity and lowered cost levels (Ark, 1996). Mere product differentiation is not of much use. In fact, improvement in productivity extends the scope for manoeuvring competitiveness.

The three main approaches used in cross-country comparisons of productivity are: (a) comparisons of *levels* of productivity; (b) comparisons of *growth rates* of productivity; and, (c) productivity case studies [Wagner and Ark, 1996]. Macro and meso studies generally resort to (a) and/or (b). It needs to be mentioned that studies that compare only growth rates of productivity are not of much use. Comparisons of productivity levels are necessary, as only these can reveal the 'initial magnitudes' of productivity differences across countries.

It needs to be mentioned that the international comparisons of levels of competitiveness and productivity have mainly focussed on labour productivity and unit labour costs. The concept of cost-competitiveness is often proxied by unit labour costs (ULCs). Unit labour costs are defined as the ratio of 'labour costs' to 'labour productivity'. These comparisons are bilateral in nature.

The ULCs are expressed in a common currency and hence, the exchange rate becomes another determinant of cost-competitiveness. Since the prices of commodities are rarely the same across countries, nominal output of the countries is converted into real output by using prices prevailing in the respective countries. This conversion is usually done by using the unit value ratios (UVRs) or expenditure purchasing power parities (EPPPs). It has been observed that the use of UVRs and EPPPs can yield significant differences in productivity and competitiveness estimates. It also needs to be added here that this methodology enables only bilateral comparisons and the estimates of competitiveness or productivity so obtained, very often do not satisfy transitivity property required for multilateral comparisons.

At present the following data sets on productivity are published on a regular basis. These are: (i) Indices on labour productivity growth for 12 countries; (ii) Multifactor productivity series for France, Germany and the United States; (iii) Employee compensation, capital stock, investment, output, etc. (as a part of International Sectoral Database, ISDB, for 14 OECD countries; and, (iv) STAN database covering the various aspects of manufacturing sector for 21 OECD countries. The first two series are published by the US Bureau of Labour Statistics (BLS). The data for these two series are available since 1950 and 1956, respectively. Data series (iii) and (iv) are published by the OECD. ISDB data series starts from 1960, whereas, the STAN database is available for the period 1970 onwards. Research papers, which have often made extensive use of the above-mentioned series, are another source of information on international comparisons of productivity and cost competitiveness. It is worth noting that due to the methodological problems, the BLS has avoided international comparisons of productivity [Ark, 1996b].

In [Table 15](#), we reproduce one of the most recently available empirical evidence on the comparative levels of labour productivity across countries. It can be seen that the level of labour productivity in India was exceptionally low during the benchmark year as compared to the corresponding levels for the developed countries. This indicates the extent of productivity gap. With this data set it is not difficult to understand as to why merely the comparisons of growth rate in productivity are inadequate. Even a country like Korea had the labour productivity level, which was almost one-fourth of that witnessed by the United States. None of the countries had labour productivity level that was greater than that in the United States. France, Ireland, Japan, the Netherlands and the United States had productivity levels higher than that in Germany. All these countries and Germany witnessed higher labour productivity as compared to the United Kingdom.

Table 15: Comparative Levels of Value Added per Person Employed in Manufacturing, 1987, as a % of the US, West Germany and the UK

Country	United States = 100	West Germany = 100	United Kingdom = 100
India	7.2	10.3	13.5
East Germany	22.5	32.0	41.9
Czechoslovakia	23.9	34.0	44.6
Portugal	24.5	34.9	45.7
Korea	26.3	37.5	49.1
Brazil	30.7	43.7	57.3
Spain	46.4	66.2	86.7
United Kingdom	53.6	88.7	100.0
West Germany	70.2	100.0	112.7
France	71.2	109.3	133.0
Ireland	73.4	104.6	137.0
Japan	76.4	108.9	142.7
Netherlands	83.5	118.7	155.6
United States	100.0	142.5	186.7

Source: Wagner and Ark [1996, p.7].

The reliability of studies using the 'industry of origin' approach hinges on the accuracy of the conversion factor to express output and productivity into a common currency. Finding such a conversion factor is fraught with numerous difficulties. The reliable comparison of productivity levels across countries depends on two components, viz., comparable indicators of output and inputs for each country, and a conversion factor to convert output values to a common currency unit. Exchange rate is not an appropriate conversion factor for the latter, as it is heavily influenced by speculative capital flows and does not indicate real price differences across countries [Ark, 1996a].

In [Table 16](#) and [17](#), we report the growth rates of labour productivity and TFP, respectively, in the five major industrialised nations. Growth rates of TFP for selected East Asian economies have been reported in [Table 18](#).

It can be seen from [Table 16](#) that the rates of growth of labour productivity for all the developed countries mentioned in this table are less than that witnessed by the Indian manufacturing sector for a similar period (5.1 per cent per annum, see [Table 9](#)). However, the level of labour productivity differs so vastly ([Table 15](#)) that even if labour productivity continues to grow at this rate in India, the convergence to the international productivity levels in manufacturing sector seems to be a difficult proposition in the near future.

Table 16. Annual Compound Growth Rates of Value Added per Hour Worked in Manufacturing and in the Total Economy, 1950-1994

Country	Total Economy			Manufacturing		
	1950-73	1973-87	1987-94	1950-73	1973-87	1987-94
Germany (Fed. Rep.)	6.0	2.5	3.2	6.9	2.7	2.8
France	5.0	3.1	1.7	5.7	3.5	3.4
Japan	7.7	3.0	2.6	9.4	4.8	4.1
United Kingdom	3.1	2.4	1.9	4.2	3.2	4.9
United States	2.7	1.1	1.0	2.8	2.5	2.3

Source: Wagner and Ark [1996 p.1].

Table 17: Growth Rates of TFP in Selected Developed Countries

Country	Total Economy			Manufacturing	
	1950-73	1973-87	1987-93	1973-87	1987-93
Germany	2.5	1.0	1.0	1.1	1.5
France	3.8	1.3	1.4	2.1	2.7
Japan	4.6	1.1	0.8	3.8	1.4
United Kingdom	2.5	1.0	1.5	1.7	2.9
United States	1.5	-0.2	0.6	0.8	0.3

Source: Ark [1996b; p. 21]

Table 18: Growth Rates of TFP in Selected East-Asian Economies

Country	Hong Kong	Singapore	South Korea	Taiwan
Growth rate of	3.9 (1971-76)	-0.9 (1970-80)	5.3 (1970-75)	0.1 (1970-80)
TFP (period of the	2.2 (1976-81)		-0.7 (1975-80)	
study)	0.9 (1981-86)	-1.1 (1980-90)	5.1 (1980-85)	2.8 (1980-90)
	2.4 (1986-91)		0.8 (1985-90)	
	2.3 (1966-90)	0.2 (1966-90)	1.7 (1966-90)	2.1 (1966-90)

Note: Figures for Hong Kong are for the total economy. For other countries figures pertain only to the manufacturing sector.

Source: Adapted from Young [1995].

Our estimates of growth rates of TFPS1 and TFPS2 for the manufacturing sector in India (2.6 and 2.0 per cent per annum, respectively, for the period 1973-74 to 1997-98) show that in terms of growth rate of TFP, India's performance seems to be quite comparable with the developed countries. We also do not find India to be a poor performer vis-à-vis the East-Asian economies. This fact has also been corroborated by a recent study [Hulten,1999].