

LABOUR PRODUCTIVITY AND UNIT LABOUR COST		
Economic development	Employment	Core indicator

## 1. INDICATOR

(a) **Name:** Labour productivity and unit labour costs.

(b) **Brief Definition:** Labour productivity is defined as output per unit of labour. The Key Indicators of Labour Markets (KILM) distinguish five different categories. These are:

- i. the total economy.
- ii. manufacturing.
- iii. transport and communication.
- iv. trade, including sales and repairs of motor vehicles, wholesale, retail, hotels and restaurants.
- v. agriculture, forestry and fisheries.

The unit labour cost is defined as labour cost per unit of output.

(c) **Unit of Measurement:** 1990 US\$.

(d) **Placement in the CSD Indicator Set:** Economic development/ Employment.

## 2. POLICY RELEVANCE

(a) **Purpose:** This indicator provides estimates of growth rates of labour productivity. All estimates are made according to the national accounts conventions to ensure that labour productivity for individual sectors can be compared. Labour productivity therefore is a key measure of economic performance. Unit labour cost represents a direct link between productivity and the cost of labour used in generating output.

(b) **Relevance to Sustainable/Unsustainable Development (theme/sub-theme):** Economic growth in a country or a sector could be ascribed either to increased employment or to more effective work by those who are employed. The latter effect can be demonstrated through statistics on labour productivity. The understanding of the driving forces behind labour productivity, in particular the accumulation of machinery and equipment, improvements in organization as well as physical and institutional infrastructures, improved health and skills of workers (“human capital”) and the generation of new technology, is important for formulating policies to support economic growth.

Labour productivity estimates can serve to develop and monitor the effects of labour market policies. For example, high labour productivity is often associated with high levels or particular types of human capital, indicating priorities for specific education

and training policies. Likewise, trends in productivity estimates can be used to understand the effects of wage settlements on rates of inflation or to ensure that such settlements will compensate workers for (part of) realized productivity improvements.

Finally, productivity measures can contribute to the understanding of how labour market performance affects living standards. When the intensity of labour utilization – the average number of annual working hours per head of the population – is low, the creation of employment opportunities is also an important means of raising per capita income in addition to productivity growth. In contrast, when labour utilization is already high, productivity will be the key to improving living standards.

A rise in a country's unit labour cost represents an increased reward for labour's contribution to output. However, a rise in labour cost that is higher than the rise in labour productivity may be a threat to a country's competitiveness, if other costs are not adjusted in compensation. As a competitiveness indicator, unit labour costs are particularly relevant for the manufacturing industry where many internationally tradable products are produced.

**(c) International Conventions and Agreements:** None

**(d) International Targets/Recommended Standards:** The overall goal of the International Labour Organisation is decent work for all women and men in all countries. Decent work is about opportunities for women and men to obtain decent and productive employment in conditions of freedom, equity, security and human dignity.

The revised MDG monitoring framework, presented in 2007 to the General Assembly, includes the new target "Achieve full and productive employment and decent work for all, including women and young people" under MDG 7 (Eradicate extreme poverty and hunger).

**(e) Linkages to Other Indicators:** While increasing labour force participation is at best a transitional source of growth depending on the rate of population growth and the age structure, the productivity of labour determines in the long run the rise in per capita income. For a substantial number of countries, the productivity measures for the total economy and manufacturing are complemented with measures of unit labour cost, which are defined as labour cost per unit of output.

### **3. METHODOLOGICAL DESCRIPTION**

**(a) Underlying Definitions and Concepts:** Productivity represents the amount of output per unit of input. Output is measured as "value added", which is the total production value minus the value of intermediate inputs, such as raw materials, semi-finished products, services purchased and energy inputs. Value added, called "gross domestic product" (GDP) in the national accounts, represents the compensation for input of services from capital (including depreciation) and labour directly engaged in production. The GDP concepts for the total economy are expressed at market prices, which reflect the market value of the output produced. For the individual sectors, GDP

at market prices is adjusted to basic price levels, i.e. indirect taxes on products are subtracted and subsidies on products are added. The adjusted GDP, therefore, represents the amount receivable by the producer for a unit of good or service produced.

Labour productivity growth may be due to either increased efficiency of workers themselves (without greater use of other inputs), or improvements or increases in inputs used by workers, such as physical capital, human capital or intermediate inputs. Estimated labour productivity may also show an increase if the mix of activities in the economy or in an industry has shifted from activities with low levels of productivity to activities with higher levels, even if none of the activities have become more productive.

Unit labour cost is defined as labour compensation per unit of gross value added produced. Total labour compensation is measured to include gross wages and salaries of employees in addition to other costs of labour that are paid by employers, including employers' contributions to social security and pension schemes. In addition to employees' compensation, estimated labour costs of the self-employed are included where possible, mostly imputed on the assumption that the labour compensation per self-employed person equals that of an employee. Therefore, this adjustment can only be made when the number of self-employed persons is known separately.

**(b) Measurement Methods:** For a constant "mix" of activities, the best measure of labour input to be used in the productivity equation would be "total number of annual hours actually worked by all persons employed". In many cases, however, this labour input measure is difficult to obtain or estimate reliably. For this reason, the labour productivity measures often show both gross value added per person employed and gross value added per hour worked.

Labour compensation estimates are obtained from the national accounts estimates so that value added (GDP) and labour costs are compatible.

Gross value added and total labour compensation figures, expressed in constant prices, may be taken from national accounts. Especially for sectors producing tradable goods, cross-country comparisons are important. To compare labour productivity and unit labour cost levels across countries, it is necessary to convert gross value added to US dollars on the basis of adjusted purchasing power parity (PPP). PPP represents the amount of a country's currency that is required to purchase a standard set of goods and services worth one US dollar. The use of PPPs takes account of differences in relative prices between countries. Had official currency exchange rates been used instead, the implicit assumption would be that there are no differences in relative prices across countries. The total economy estimates of gross value added used for KILM 18 are expressed in terms of 1990 US dollars, as the 1990 PPP made it possible to compare the largest set of countries. For the individual sectors, the base year is 1997. This year was chosen due to the availability of a new set of multilateral PPPs by industry for this benchmark year.

**(c) Limitations of the Indicator:** Limitations to the international and historical comparability of the estimates are summarized under the following four headings.

#### *Output measures in national currencies*

Output measures are obtained from national accounts and represent, as much as possible, GDP at market prices for the total economy and value added at basic prices for the individual sectors. However, despite common principles that are mostly based on the United Nations System of National Accounts, there are still significant problems in international consistency of national accounts estimates, in particular for countries outside the OECD. Such factors include different treatment of output in services sectors, different procedures in correcting output measures for price changes, in particular the use of different weighting systems in obtaining deflators and different degree of coverage of informal economic activities in developing economies and of the underground economy in developed economies in national accounts.

#### *Employment*

Estimates of employment are, as much as possible, for the average number of persons with one or more paid jobs during the year. As in the case of output estimates, the employment estimates are sensitive to under-coverage of informal or underground activities, which accounts for a substantial portion of labour input. In some cases, informal activities are not included in the production and employment statistics at all. In agriculture the labour force estimates include a substantial number of (part-time and seasonal) family workers. However, the estimates presented for the countries in this data set are meant to cover all economic activity.

#### *Working hours*

Estimates of annual working hours are often unavailable or are relatively unreliable. Even for developed economies, annual working hours are not consistently defined across countries. For example, statistics on working hours often refer to paid hours rather than to hours actually worked, implying that no adjustments are made for paid hours that are not worked, such as hours for paid vacation or sickness, or for hours worked that are not paid for. Moreover, statistics on working hours often are only available for a single category of the workforce (in many cases, only employees), or only for a particular industry (such as manufacturing) or for particular types of establishments (for example, those above a certain size or in the formal sector). As always, these problems are particularly serious for a substantial number of low-income economies. Whether and how the estimates of annual hours worked have been adjusted for such weaknesses in the primary statistics is often undocumented.

#### *Total labour compensation*

The national accounts of developing economies often do not provide estimates of labour compensation which explains the limited number of developing countries for which unit labour cost estimates are available.

#### *Purchasing power parities*

The International Comparison Program (ICP) price surveys to obtain PPPs are carried out for selected benchmark years only. Not all estimates are for the same year, so that it was necessary in Maddison (1995) to carry some data forward to 1990 with the use of national price indices. The precise nature of the ICP price surveys can differ across

countries, principally for non-OECD countries. The ICP pricing procedures have been criticized for lack of comparability and reflection of the specified items between countries. Furthermore, the multilateral character of the estimates is affected by the fact that the PPPs were, in fact, estimated for six different regions, and “globalized” with particular interregional (binary) links. Finally, within each of the regions, the aggregation procedures of the PPPs differ.

**(d) Status of the Methodology:** The methodology is well established. The indicator is widely used in developed and developing countries.

**(e) Alternative Definitions/Indicators:** It could be useful to break down this indicator by age group and sex as we might see an evolution of the labour productivity with more experience and gender differences in pay for the same work.

#### **4. ASSESSMENT OF DATA**

**(a) Data Needed to Compile the Indicator:** Growth Domestic Product, gross value added per sector, the number of annual hours actually worked by all persons employed per sector, total labour compensation and the number employers and self-employed persons.

**(b) National and International Data Availability and Sources:** At the international level, the productivity indicator in ILO’s KILM for the total economy covers 97 countries with coverage extending to all KILM regional groups (table 18a). Together, these countries represent more than 93 per cent of the world population and more than 98 per cent of world GDP. For a subset of countries (mostly in Europe and North America, with some in Asia and South America), separate measures are provided for manufacturing (31 countries), transport and communication (18 countries) and trade (15 countries). For agriculture, forestry and fisheries estimates include 113 countries. For unit labour cost, 14 countries are included in the KILM database.

**(c) Data References:** KILM is accessible at <http://www.ilo.org/public/english/employment/strat/kilm/>  
The estimates available in the database from both the OECD and the GGDC (Groningen Growth and Development Centre), were originally obtained from national statistical offices and, where possible, have been harmonized for differences in concepts and industry classifications and supplemented, where necessary, with national accounts statistics obtained directly from the individual countries. For non-OECD countries, the national accounts and labour statistics, which were assembled from national sources by international organizations such as the World Bank, the Asian Development Bank, the Food and Agriculture Organization (FAO), the ILO and the United Nations Statistical Office, are mostly taken as the point of departure. These sources are complemented by the series from Maddison (2003), in particular to cover the period 1980-90.

#### **5. AGENCIES INVOLVED WITH THE DEVELOPMENT OF THE INDICATOR**

(a) **Lead Agency:** The lead agency is the International Labour Office (ILO), located in Geneva, Switzerland. Contact: [kilm@ilo.org](mailto:kilm@ilo.org)

(b) **Other Contributing Organizations:** None.

## 6. REFERENCES

### (a) **Readings:**

*Yearbook of Labour Statistics* (ILO, Geneva).

*Bulletin of Labour Statistics* (biannual) (ILO, Geneva).

Statistical yearbooks and other publications issued by the national statistical offices.

*Surveys of Economically Active Population, Employment, Unemployment and Underemployment -An ILO Manual on Concepts and Methods* (ILO, Geneva, 1992).

*Sources and Methods: Labour Statistics, Volume 3 - Economically active population, employment, unemployment and hours of work (household surveys)*, third edition (ILO, Geneva, 2004).

*Sources and Methods: Labour Statistics, Volume 4- Employment, unemployment, wages and hours of work (administrative records and related sources)*, second edition (ILO, Geneva, 2004).

*Sources and Methods: Labour Statistics, Volume 5- Total and economically active population, employment and unemployment (population censuses)*, second edition (ILO, Geneva, 1996) (third edition under preparation).

*ILO-comparable annual employment and unemployment estimates*, in *Bulletin of Labour Statistics, 2004-4* (ILO, Geneva, 2004)

*System of National Accounts 1993* (Commission of the European Communities,

International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank, Brussels/Luxembourg, New York, Paris, Washington, D.C., 1993)

Current international recommendations on labour statistics (ILO, Geneva, 2000). See in particular: *Resolution concerning Statistics of the Economically Active Population, Employment, Unemployment and Underemployment*, adopted by the Thirteenth International Conference of Labour Statisticians (October 1982).

### (b) **Internet sites:**

International Labour Office, Bureau of Statistics: the ILO's statistical database on labour statistics, including unemployment data and ILO-comparable estimates:

<http://laborsta.ilo.org>

International recommendations on labour statistics, including the resolution concerning statistics of the economically active population, employment, unemployment and underemployment:

<http://www.ilo.org/public/english/bureau/stat/res/index.htm>

Key Indicators of the Labour Market, Geneva, 2003 (available on CD-ROM; sample tables on web site):

<http://www.ilo.org/public/english/employment/strat/kilm/>