

УДК 364.2:331

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Conceptual Fundamentals of Assessment of a Human Development Level

Рассмотрены и обобщены подходы к измерению развития человека с помощью его синтетического индекса. Проведен анализ способов определения достижений разных стран в этой области. Исследованы количественные и качественные методы сравнения.

The approaches to the human development measurement with help of the synthetic human development index are considered and generalized. The various ways to define the achievements of different countries in this field are analyzed. The quantitative and qualitative methods to compare the human development levels in the different countries are examined.

Розглянуто і узагальнено підходи до вимірювання розвитку людини за допомогою синтетичного індексу. Проведено аналіз засобів визначення досягнень різних країн у цій царині. Досліджено якісні та кількісні методи порівняння.

Decision-making process in the field of human development requires comprehensive research of a cause-and-effect relation between the social, economical, political, cultural affairs within a country and its overall progress in the changing world. The aim of this paper is to examine and analyze quantitative and qualitative methods of assessment of human development. There is a need in a generalized approach to evolution of economic theory in the field of human development for better understanding what social and economic indicators should be used to assess a level of human development. The main goal of this paper is to analyze the possibilities for accurate estimations of different dimensions of human development from the point of view of economic theory. This article focuses on the problem of description of different qualitative characteristics such as various aspects of human development by quantitative indicators.

Defining human development

Human development is a process of enlarging people's choices. The most critical of these wide-ranging choices are to live a long and healthy life, to be educated and to have access to the resources needed for a decent standard of living. The additional choices include political freedom, guaranteed human rights and personal self-respect.

The development enables people to have these choices. No one can guarantee a human happiness, and the choices people make are their own concern. But the process of development should at least create a conducive environment for people, individually and collectively, to develop their full potential and to have a reasonable chance of leading the productive and the creative lives in accord with their own needs and interests.

Human development thus concerns more than the formation of human capabilities, such as improved health or knowledge. It also concerns the use of these capabilities, be it for work, the leisure or the political and cultural activities. And if the scales of human development fail to balance the formation and use of human capabilities, a lot of human potential will be frustrated.

The idea that social arrangements must be judged by the extent to which they promote "human good" goes back at least to Aristotle. He also warned against judging societies merely by such things as income and wealth. Aristotle argued for seeing "the difference between a good political arrangement and a bad one" in terms of its successes and failures in facilitating people's ability to lead "flourishing lives". Human being as the real end of all activities was a recurring theme in the writings of most of the early philosophers.

Key words: human development index, gross national product, Gini coefficient.

The same motivating concern can be found in the writings of the early leaders of quantification in economics – William Petty, Gregory King, Francois Quesnay, Antoine Lavoisier and Joseph Lagrange, the grandparents of Gross National Product (GNP) and Gross Domestic Product (GDP). It is also clear in the writings of the leading political economists – Adam Smith, David Ricardo, Robert Malthus, Karl Marx and John Stuart Mill [1].

The early leaders of quantification in economics kept their main focus on people, a focus that in recent years has been blurred. Although development has been a constant concern of government policymakers, economists and other social scientists – and has touched the lives of more people than ever before – there has been little agreement on what constitutes development, how it is best measured and how it is best achieved. One reason for this lack of agreement is that dissatisfaction with the pace and character of economic and social change has instilled a desire to redefine the aims and measures of development.

Statistical data bases were established by the UN Statistical Office and Population Division, the World Bank, the International Monetary Fund (IMF), and the Organisation for Economic Cooperation and Development (OECD). These have been complemented, and in part updated, by selected statistical data collected from government sources by the United Nations Development Programme (UNDP) country offices. The other contributing UN system and affiliated organisations were the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the International Labour Organisation (ILO), the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the United Nations Fund for Population Activities (UNFPA), the Office of the United Nations High Commissioner for Refugees (UNHCR), the United Nations Children's Fund (UNICEF), UNIDO, the United Nations Office at Vienna (UNOV), the United Nations Research Institute for Social Development (UNRISD), the United Nations Sudano-Sahelian Office (UNSO), the World Food Programme (WFP), and the World Health Organization (WHO). Further in-

puts were received from various UNDP offices, in particular UNDP's country offices, the Regional Bureaux, the Division for Women in Development, the Division for Nongovernmental Organisations and the Office of Project Services.

While the pioneers of measurement of the national output and income stressed the importance of the social concerns, the economic growth became the main focus after the Second World War. The growth in the capital stock was seen as the means of achieving the development, and the growth rate of per capita GDP became the sole measure of the development.

The income was first developed as a way of measuring welfare and well-being by Pigou, who described economic welfare as the measurable part of the human welfare – the part that could be brought into a relationship with "the measuring rod of money". As a measure of a well-being, the income pertains to individuals or to households. It was seen as a forward-looking measure of the benefits yet to come rather than as a record of what had already transpired.

But the production and the distribution processes constrain the income of an individual or household. Thus, the income is also a record of an economic activity, of the production of goods and services already achieved. This backward-looking, recording aspect came to the fore during the Second World War. Income at the national level-GDP or GNP, as it came to be called – became a measure of an activity of the total mass of quantity of goods and services produced, weighted by their respective prices, rather than a measure of an individual wellbeing.

As GNP became the goal of development in the 1950s and 1960s, the question of promoting individual well-being receded. It was assumed that the well-being would follow automatically from the economic growth. A tenuous link between the income and the well-being was made through the notion of the income per capita, which compounded the shift of the emphasis from the welfare to the production by its insensitivity to a distribution. In time, the distribution was altogether forgotten, and the argument of "trickle down" was made to defend such neglect. Thus, the income

moved from an admittedly partial monetary measure of well-being to the centre stage as a measure of production and as the sole measure of welfare in its per capita form.

By the 1960s, it was clear from many developing countries that the income growth had not tackled the problem of the mass poverty. The income distribution and the equity came to the forefront as an additional objective of development. The focus of the development was turned towards the alleviation of the poverty, a change that led to a re-examination of the concept of the income and its adequacy as a measure of the development.

Against this central dominance of the income, several voices were raised. In a pioneering effort at UNRISD, McGranahan and associates examined several development indicators – some related to a mortality and a morbidity, others to such social factors as the urbanisation and still others to the economic factors. These indicators were correlated with each other and used jointly to describe the socioeconomic development. Each indicator was related to per capita GDP in a series of regressions that allowed the identification of a threshold level of the development. Below this threshold a country was underdeveloped and above it, developed [1–4].

But the problem of combining these various indicators into a single measure of development, in analogy with income still remained. The income is a price-weighted sum of quantities of different goods and services exchanged in the marketplace. The prices are by no means ideal weights. They may overvalue or undervalue goods and services for which the market is imperfect, and still worse, they totally ignore those for which the market does not exist. But prices are in some sense "natural" weights, since they are part of people's everyday experience. A price conveys the relative importance of one good compared with another in terms of income.

Any synthetic index combines the diverse indicators. Weighting can be equal or determined by such data-driven statistical techniques as factor analysis. Weights have a statistical interpretation, but they can not be explained either by daily experience or by the relative importance of the indicators. By contrast, the income provides an indication about the trade-

off of a consumer or producer who is willing to make a choice among different goods.

Another concern of measuring development is deciding which indicators to include and which to leave out. The income measure includes all goods and services that are produced and marketed, among them are harmful goods that pollute the atmosphere or injure health. In this sense, income is comprehensive, a quality that alternative indexes lack. The more comprehensive they seem to be, the more indicators they include, and the less they are transparent and relevant to daily experience.

In response to such considerations Morris put forward the Physical Quality of Life Index (PQLI). He saw the UNRISD effort as measuring development as an *activity*. He wished to focus on development as *achieved well-being* and chose three indicators – infant mortality, life expectancy at age one and literacy, combining them in a simple unweighted index to give the PQLI. There obviously is considerable overlap between the first two indicators, particularly for developing countries, as they both relate to longevity and are connected by a precise relationship [1].

The perception of development has since shifted – first, from the *economic* development to the *socioeconomic* development, with a new emphasis on poverty. Now the shift is to human development. It emphasises the development of the human choices and returns to the centrality of people. It is reflected in measuring development not as the expansion of commodities and wealth but as the widening of human choices. The outcome is the human development index (HDI).

There is a need for paying attention to the link between the economic growth and the human development for a variety of reasons. Many fast-growing developing countries are discovering that their high GNP growth rates have failed to reduce the socioeconomic deprivation of substantial sections of their population. Even industrial nations are realizing that high income is not protection against the rapid spread of such problems as drugs, alcoholism, AIDS, homelessness, violence and the breakdown of family relations.

There is no automatic link between the income growth and the human progress. The main preoc-

cupation of development analysis should be how such a link can be created and reinforced.

This way of looking at development differs from the conventional approaches to the economic growth, the human capital formation, the human resource development, the human welfare or the basic human needs. It is necessary to delineate these differences clearly to avoid any confusion. The human progress may be lacking in some societies despite rapid GNP growth or high per capita income levels unless some additional steps are taken.

Theories of the human capital formation and the human resource development view human beings primarily as means rather than as ends. They are concerned only with the supply side – with human beings as the instruments for furthering commodity production. True, there is a connection, for human beings *are* the active agents of all production. But human beings are more than capital goods for the commodity production. They are also the ultimate ends and beneficiaries of this process. Thus, the concept of the human capital formation (or human resource development) captures only one side of human development, not its whole. The human welfare approaches look at human beings more as the beneficiaries of the development process than as participants in it. They emphasise distributive policies rather than production structures [1–5].

The basic needs approach usually concentrates on the bundle of goods and services that deprived population groups need: food, shelter, clothing, health care and water. It focuses on the provision of these goods and services rather than on the issue of human choices.

The human development, by contrast, brings together the production and distribution of commodities and the expansion and use of human capabilities. It also focuses on the choices – on what people should have, be and do to be able to ensure their own livelihood. Human development is, moreover, concerned not only with basic needs satisfaction but also with human development as a participatory and dynamic process. It applies equally to less developed and highly developed countries.

Measuring human development

In any system for measuring and monitoring human development, the ideal would be to include

many variables, to obtain the comprehensive picture. But the current lack of relevant comparable statistics precludes that.

The measurement of human development should focus on the three essential elements of human life – longevity, knowledge and decent living standards.

As for the first component – longevity – the life expectancy at birth is the indicator. The use of life expectancy as one of the principal indicators of human development rests on three considerations: the intrinsic value of longevity, its value in helping people pursue various goals and its association with other characteristics, such as good health and nutrition. A long life correlates closely with an adequate nutrition, good health and education and other valued achievements. Life expectancy is thus a proxy measure for several other important variables in human development. This association makes life expectancy an important indicator of the human development, especially in view of the present lack of comprehensive information about people's health and nutritional status.

For the second key component knowledge – literacy figures are only a crude reflection of access to education, particularly to the good quality education so necessary for productive life in modern society. But literacy is a person's first step in learning and knowledge-building, so the literacy figures are essential in any measurement of the human development. In a more varied set of indicators, importance would also have to be attached to the outputs of higher levels of education. But for basic human development, literacy deserves the clearest emphasis.

The third key component of human development – command over resources needed for a decent living – is perhaps the most difficult to measure simply. It requires data on access to land, credit, income and other resources. The most readily available income indicator – per capita income – has wide national coverage. But the presence of non-tradable goods and services and the distortions from exchange rate anomalies, tariffs and taxes make per capita income data in nominal prices not very useful for international comparisons. Such data can, however, be improved by using purcha-

sing power-adjusted real GDP per capita figures, which provide better approximations of the relative power to buy commodities and to gain command over resources for a decent living standard.

A further consideration is that the indicator should reflect the diminishing returns to transforming income into the human capabilities. In other words, people do not need excessive financial resources to ensure a decent living. This aspect was taken into account by using the logarithm of real GDP per capita for the income indicator.

All three measures of human development suffer from a common failing: they are averages that conceal wide disparities in the overall population. Different social groups have different life expectancies. There often are wide disparities in male and female literacy. And income is distributed unevenly.

The average value of the literacy, life expectancy and other indicators can be similarly adjusted. There is a great deal of technical literature on the subject, but the basic approach is simple. If inequality is seen as reducing the value of average achievement as given by an unweighted mean, that average value can be adjusted by the use of inequality measures. Such distributional corrections can make a significant difference to evaluations of country performance. The Gini coefficient, probably, is the most widely used measure of income inequality.

The conceptual and methodological problems of quantifying and measuring human development become even more complex for political freedom, personal security, interpersonal relations and the physical environment. But even if these aspects largely escape measurement now, analyses of the human development must not ignore them. The correct interpretation of the data on quantifiable variables depends on also keeping in mind the more qualitative dimensions of human life. Special effort must be undertaken for developing a simple quantitative measure to capture the many aspects of human freedom.

The first two indicators – life expectancy and adult literacy – are commonly used concepts. But the third the purchasing power to buy commodities for satisfying basic needs – is not as well understood. The GNP figures typically used for in-

ternational comparisons do not adequately account for national differences in purchasing power or the distorting effect of official exchange rates. To overcome these inadequacies, it is necessary to use here the purchasing–power–adjusted GDP estimates developed in the International Price Comparison Project, a collaborative effort of the UN Statistical Office, the World Bank, EUROSTAT, OECD, ECE and ESCAP, now being expanded by USAID. And since there are diminishing returns in the conversion of income into the fulfilment of human needs, the adjusted GDP per capita figures have been transformed into their logarithms.

The human development index

People do not isolate the different aspects of their lives. Instead, they have an overall sense of well-being. That is why it is important to construct a composite index of human development. Past efforts to devise such an index have not come up with a fully satisfactory measure. They have focussed either on income or on social indicators, without bringing them together in a composite index. Since human beings are both the means and the end of development, a composite index must capture both these aspects.

The human development index captures the three essential components of human life – longevity, knowledge and basic income for a decent living standard. Longevity and knowledge refer to the formation of human capabilities, and income is a proxy measure for the choices people have in putting their capabilities to use.

The breakthrough for the HDI was the creation of a single statistic which was to serve as a frame of reference for both social and economic development. The HDI sets a minimum and a maximum for each dimension, called goalposts, and then shows where each country stands in relation to these goalposts, expressed as a value between 0 and 1.

The education component of the HDI is now measured by mean of years of schooling for adults aged 25 years and expected years of schooling for children of school entering age. Mean years of schooling is estimated based on educational attainment data from censuses and surveys available in the UNESCO Institute for Statistics database. Expected years of schooling estimates are based on

enrolment by age at all levels of education and population of official school age for each level of education. Expected years of schooling are capped at 18 years. The indicators are normalized using a minimum value of zero and maximum values are set to the actual observed maximum value of mean years of schooling from the countries in the time series, 1980–2012, that is 13,3 years estimated for the United States in 2010. Expected years of schooling are maximized by its cap at 18 years. The education index is the geometric mean of two indices.

The life expectancy at birth component of the HDI is calculated using a minimum value of 20 years and maximum value of 83,57 years. This is the observed maximum value of the indicators from the countries in the time series, 1980–2012. Thus, the longevity component for a country where life expectancy birth is 55 years would be 0,551.

For the wealth component, the goalpost for minimum income is \$100 (PPP) and the maximum is \$87,478 (PPP), estimated for Qatar in 2012 [4].

Purchasing power parity (PPP) is an economic theory and a technique used to determine the relative value of currencies, estimating the amount of adjustment needed on the exchange rate between countries in order for the exchange to be equivalent to (or on par with) each currency's purchasing power. It asks how much money would be needed to purchase the same goods and services in two countries, and uses that to calculate an implicit foreign exchange rate. Using that PPP rate, an amount of money thus has the same purchasing power in different countries.

The decent standard of living component is measured by Gross National Income (GNI) per capita (PPP\$) instead of GDP per capita (PPP\$). The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric mean.

The HDI facilitates instructive comparisons of the experiences within and between different countries.

Indicators of country performance

To assess human development it is important to consider several indicators separately -life expectancy at birth, mortality of children under five years

of age, female and male literacy, and nutritional status, especially that of children. But good time series are also rare for many of these indicators.

Another option – the one chosen here – is to select an indicator that has fairly comprehensive time series data and that correlates closely with other indicators of human development. The under-five mortality rate meets both these requirements. The extensive empirical evidence suggests that reductions in the under-five mortality rate usually reflect improvements in nutrition particularly that of pregnant women, infants and children – as well as achievements in education, especially female literacy. Estimates of life expectancy, in turn, are strongly influenced by under-five mortality rates, particularly in developing countries.

The long-run trends in under-five mortality rates thus provide a useful indicator of changes in human development. But these rates refer primarily to changes on only one side of the human development equation – the formation of human capabilities. They do not capture the use of human capabilities.

The investment rate is an important determinant of growth, but there is considerable uncertainty about how much extra growth comes from more investment. To sustain growth, countries should aim to maintain the investment rate at 15% to 20% of GDP.

Even more important is the rate of technical change, associated with science, technology and the development of human capabilities. So, promoting human development is important not only in itself but also as a critical input to the growth process.

The policy environment is important for the efficient use of investment resources and for adapting to changing world conditions in ways that permit the sustained growth.

As with growth, the literature on the determinants of income distribution is vast and complex, but it has produced two general conclusions about the better distribution of primary income that does so much for improving human development [5].

Good asset distribution, which for developing countries usually means good land distribution, is also important. A study of alternative development strategies over the past 30 years found that a good distribution of primary income was invariably asso-

ciated with fairly equal land distribution. Countries that have had a land reform – China, the Republic of Korea and the Democratic Republic of Korea – have reduced poverty and inequality quite considerably. Most countries that have not – such as Brazil and the Philippines – continue to have large numbers of people living in poverty, even when they have managed high rates of economic growth [6].

Rapid expansion of productive employment opportunities is essential for spreading incomes throughout the population.

Growth with equity is the optimal combination for generating good macro conditions needed to achieve human development objectives. Despite much controversy on the appropriate policy environment, there is an agreement that the essentials for equitable growth comprise sensible and flexible use of prices to reflect opportunity costs, the opening of market systems, supportive policies towards investment, technology and human resources and policies for distributing assets and expanding productive employment opportunities – with the appropriate mix tailored to individual countries.

Participatory development starts with self-reliance, which means people being able to take care of themselves. To stress people's economic, political and social self-reliance is not to argue against state intervention in human development. On the contrary, greater participation of all people in the development process depends on carefully designed government policies and programmes. But government interventions in support of human development should also encourage private initiative in the broadest sense [7].

Summary. The combination of policies appropriate for a country depends in large part on the level of income per capita, on the achievement in the human development and on the distribution of the assets and income.

Little is known about how inputs relate to outputs in human development – for example, about what combination of health services, education and nutrition support bring about the best improvements in child mortality. Yet without this knowledge, governments have difficulty in identifying cost-effective and efficient policies. A comprehensive survey of micro studies in the socio-

logical, economic, medical, biological, and public health fields would be a useful first step in developing production functions for human development. Evidence from Western Europe, Japan, and the most successful developing countries would also help to increase knowledge about the optimal sequencing of policies towards the social sectors.

Further research of conceptual issues of the human development is necessary for building adequate models of development for groups of countries, separate countries, and even different sectors within a country. Thus, essential principles of human development assessment set out in this paper will be used for further research to model influence of macroeconomic factors on the growth of the national income as a component of the human development index, to determine the most influential indicators for every group of countries with the same human development level, to build forecasts for HDI's level in Ukraine. Therefore, conclusions made in this article are necessary to continue the extensive studies of modeling of the human development.

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Поступила 15.09.2014
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