Journal of Social Development in Africa (1986), 1, 81-91

Measures Of Development and Measurement Of Happiness*

K. VALASKAKIS AND I. MARTIN +

Measures of Development

Largely due to an early integration of mathematics and formal techniques into economic theory, economics advanced faster than other social sciences isolating economists from other social scientists and reducing human problems to those superficial levels which could be dealt with by "number crunching". The inadequacy of these technical solutions led to the present schism between economists and non-economists, the latter viewing economists with numbers as "idiots savants", the former dismissing sociological theories as mere "cocktail party conversation".

The GPID project seeks an integrated approach to the problem of international development. Reacting against its intellectual predecessor of the late 1950s and 1960s: economic development, it seeks a non-economic based vision of development. The GPID project in attempting to "bring economics back into the Church" has been treated with some distrust and apprehension because conventional economic indicators are poor in two senses; they are incomplete and are often misleading. But to eliminate them, disregard them and start from scratch may not be that useful or pragmatically feasible. Our approach here is to recognise fully their weakness and then outline avenues for improvement.

Familiar indicators

Of all the economic indicators that are familiar to the general public, two must be singled out as particularly important. The first stems from microeconomics; the study of individual markets within the economy. This indicator is nothing more nor less than the level of relative prices. Indeed, the price mechanism is supposedly the prime indicator of the relative importance of different products and services in the economy.

Price adjustments, in theory, are supposed to correct any structural imbalance in the economy. For example, the argument goes: if there is an energy shortage the price of energy should go up and thus eliminate the shortage by reducing the demand for energy. Similarly, if there is unemploy-

* A paper first published in **Development Forum**, July/August 1980.

+ Professor and research associate respectively, University of Montreal, 2900 Boulevard Edouard Mont Petit, CP 6128, Succursale 'A' Montreal H3C 3J7 Quebec Canada.

ment, this means that the demand for labour is too low. To correct this, the price of labour, i.e. the wage rate, should go down. Jean-Baptiste Say's celebrated law argued that as long as prices are flexible supply will create its own demand and that, therefore, structural imbalances are impossible.

This mechanistic view, which underlies the whole of microeconomics, is vulnerable to criticism. The first correctly points out that, even if mechanically true, the automatic adjustment brought about by the price mechanism is not helpful in real situations because certain equilibrium prices (i.e. prices that will allow supply and demand to be equated) are unacceptable for social, cultural or human reasons. For example, a very low wage rate might eliminate unemployment but at the cost of creating a subsistence-level proletariat as was the case during the British industrial revolution. Similarly an increase in the price of energy might well promote conservation but at the cost of extreme hardship.

The second type of criticism levelled is even more telling. Price is an adequate performance indicator only in perfect markets with no extreme influences. As soon as markets become either imperfect or subject to externalities, the price response tends to be severely flawed. Market imperfections can arise from monopolies, lack of information, transaction costs, and so on, and these distort the efficient allocation of resources present in perfect markets. As for externalities, they arise from a combination of events not measurable by prices. For example, traffic jams, pollution and environmental deterioration are real costs that are not reflected in the price of a product. Further, as Schumacher has pointed out, the price mechanism is incapable of distinguishing between a renewable and a non-renewable resource.

The third criticism of the price mechanism as a performance indicator is that even when it works, it operates with a serious time-lag. For instance, the price of a non-renewable resource may indeed rise but perhaps too late to prevent premature depletion of that resource. If such is the case, we are in an "overshoot and collapse system". The price mechanism which is supposed to act as a negative feedback loop operates with a built-in disastrous time-lag-result: the system overshoots and collapses.

For all these reasons, the price mechanism, which was Adam Smith's vision of the "invisible hand" of God co-ordinating and protecting markets, is seriously flawed and cannot fully be trusted. But by the same token, we must not yield to the opposite conclusion and assert that because price is not necessarily a measure of true value it is never a measure of value at all, and has no use. On the contrary, the concept of 'price' and its underlying idea of 'cost' can be rehabilitated and reformulated to reflect social, cultural and ecological phenomona.

The second major performance indicator for the economy is the gross national product (GNP). This stems from a 'macroeconomic' analysis which views the overall performance of the economy. The GNP is the rough sales figures of a firm or the salary of a wage earner. Essentially the GNP measures

the flow of funds from one sector of the economy to the other. There are three ways of effecting such measurement. The first is a factor-price approach which assumes that there are four factors of production: land, labour, capital and enterprise, each of which commands a remuneration. Land obtains 'rent', labour a 'wage', capital an 'interest' and enterprise a 'profit'. By adding these up we obtain the total sum of money earned by productive agents for their services. This remuneration is supposed to reflect the economic value of the productive services themselves. The GNP can also be reached by the 'expenditure by private consumers, by business, by government and by foreigners minus national expenditure abroad.

Finally, the GNP can also be obtained by a value-added input-output analysis. This technique, invented by Wassily Leontieff, measures the value added by one industry to another in the overall economic transformation process. This analysis is depicted in a square matrix and gives a global figure for aggregate economic activity in a year given.

All three GNP-computing methods are supposed to arrive at the same figure of statistical discrepancies. It is important to note that they all have one thing in common. They measure economic performance by the level of perceived market-mediated activity. This is, at the same time, the strength and the glaring weakness of the GNP.

The Flow-stock Problem

The GNP measures a flow of money not a stock. What this means is that the economic activity of a nation is measured for a given time period, usually a year, but the starting and ending points are not. In other words, the GNP keeps track of increases to a stock of wealth but not of wealth itself. The decrease in wealth that would result, say from the depletion of a non-renewable resource, is not accounted for at all. On the contrary, the faster we use up a non-renewable resource the higher the GNP.

The absence of a wealth indicator to complement the expenditure indicator that is the GNP leads to manifestly absurd results when considering, for purposes of comparison, the case of an individual's economic performance. Surely an individual who spends a great deal and uses up his capital could be blamed rather than praised. Yet, a nation that does exactly the same thing is 'rewarded' by a high GNP, which is considered a good thing, no matter what. The failure of the GNP to distinguish between a renewable and a non-renewable resource is one of the reasons why conservation measures always look bad in economic statistics. On the contrary squandering looks very good. We are not measuring the 'level of water in the bathtub' (which is the stock accumulated wealth) but merely the water flowing in through the tap and out through the drain. By adding these two flows, we get a perverted indicator of pseudo-performance which is very misleading.

The GNP indicator measures all activity generated through the market mechanism whether that activity is productive, unproductive or destructive. The GNP accounts will give equal place to $1 000 of food-products generated by the agricultural sector and $1 000 paid to workers to dig up holes and fill them up again. An outbreak of flu leading to the greater sale of pharmaceutical products is translated by a positive increase in the GNP. The absence of an expected disease, on the other hand, leading to a decrease in the consumption of pharmaceuticals, reduces the GNP. An earthquake is 'good' because it leads to much reconstruction activity. A durable building is 'bad' because it reduces further construction demand.

At the limit, the best way to maximize the GNP is to have a war. As long as the productive system itself is not destroyed, war acts as a powerful and effective demand on new production. There is built-in obsolence since an important proportion of production coming out of factories, such as tanks and airplanes, go up in smoke and there is a need to build *ad infinitum.*

It is statistically true that the US economy, for instance, never performed closer to absolute capacity than during the Second World War. In fact, from a GNP point of view, this war was ideal. Shielded from bombardment its economy was churning out war material in gigantic proportions.

Second best to a hot war is a cold war which, although not consuming as much production, provides a steady demand for weapons which become technologically obsolescent and must be replaced. In explaining the existence of wars and evil in general, it is tempting to resort to the Machiavellian assumption of a conspiracy of sinister forces, such as the military-industrial capitalists, and so on. Although there is undoubtedly some truth in conspiracy theories, the problem is exacerbated by misleading economic indicators telling us, erroneously, that all activity, productive, unproductive or destructive has equal value in the national accounts.

The Housewife Problem

The GNP indicator is designed to measure only market-transactions involving a monetary transfer. Thus, in the celebrated case of the unrewarded housewife, there is the situation of a certain Mrs Brown, who works slavishly at home with nine children and her work goes unrecognised. Because no monetary transaction has occurred there is no item to enter into the GNP accounts. Across the street Mrs Smith on the other hand instead at doing her own housework goes over to her neighbour Mrs Jones and does hers. Mrs Jones reciprocates by doing Mrs Smith's housework. Just for the fun of it, they 'pay' each other $100 (or $1 000 or $10 000) a week. The GNP accounts faithfully register these transactions and show an overall increase in economic activity.

The failure of the GNP indicator to account for non-monetary transactions means that it underestimates total economic activity. This problem is

particularly serious in the case of developing countries where the non-monetary sector is quite large. This sector in fact includes two sub-sectors. The first is characterised by small self-sufficient units such as farms. The second involves barter-exchange without the use of money.

Comparison between the economic performance of countries with a large non-monetary sector and others with a small one are therefore very misleading and exaggerate the gap in performance between the two.

Following from the above, it is obvious that a serious international comparisons problem exists. Above and beyond the existence of non-monetary sectors in the economy, there are at least four other factors making such comparisons hazardous.

The first relates to site specificity. Obviously, the requirement for survival in the Artic circle are different from those in Majorca. Two families with equal wealth living in each of these areas may not necessarily be equally well-off. The Arctic climate leads to considerable expenditures for protection against the cold that are not required in Majorca. Therefore, site specificaity must certainly affect the relevance of GNP comparisons.

The second is culture specificity. Different cultures attach different importance to various goods. It would be foolish to attempt transnational comparisons which do not take these differences into account. (This point lends support to the relevance of the needs approach of the GPID).

The third is time specificity. Comparisons across time are as hazardous as across space because of changing tastes and demographic composition to name but a few.

Finally, international comparisons are further distorted by the severe monetary exchange fluctuations that have become the norm in the international economic system. Overnight, the Japanese may become the richest people on earth by changes in the external exchange value of the yen; without any real changes having occurred.

The GNP is very selective in its accounting. It includes all market transaction whether 'good' or 'bad' and excludes non-market transactions. It also excludes all costs and benefits of external nature that cannot be attributed to one individual or group.

An example of negative external influences is pollution and environmental degradation. This, in most cases, is not accounted for unless there is a market transaction involving the payment of money for anti-pollution activity. The result is that by ignoring polution we overestimate our economic performance. When the costs do materialise they do so quite suddenly involving a breakdown of the system. The GNP also excludes other positive elements. The pleasure of living in a healthy, pleasant and aesthetic environment is not reflected in the national economic accounts, leading in these cases to an understatement of economic well-being.

Measurement of Happiness

Faced with the difficulties involved with economic indicators (good answers to bad questions) and social indicators (bad answers to good questions), there is a choice of approaches.

The conventional economic approach concentrates on measurable indicators even if misleading, and hopes for the best with vague statements that "GNP does not measure happiness but only the possibility of happiness".

The social indicators approach largely ignores economic indicators and concentrates instead of either non-measurable, very qualitative indicators or alternatively chooses allegedly quantitative social indicators by compiling a few available statistics. For example, two frequent "social" indicators are newspapers per 1 000 inhabitants and hospital beds per 1 000 inhabitants. It is unclear what these indicators are supposed to mean. Is it better to have more or less newspapers per 1 000 inhabitants? Is it better to have many hospital beds and a sick population or fewer hospital beds and a healthy one? The trouble with many social indicators is that they tend to indicate very little because no explict behavioural theory underlies them.

The proposed approach for GPID attempts to integrate social and economic indicators. The requirements for a good set of indicators are that they should:
— reflect a complex, multi-dimensional human reality;
— possess an underlying behavioural theory of needs, wants and their method of satisfaction;
— be empirically capable of assembly. (To single out an indicator that can never be measured is not useful. What are needed are operationally significant criteria to judge progress regression).

This approach leads us to advance a blueprint composed of seven new indicators which will gradually shed new light on the development problem.

The first proposal would involve a system of weights to make the GNP measure more meaningful. An income of $1 000 generated by hairdressers or manucurists or doctors or industrial workers is treated like a $1 000 contribution to the GNP, no matter what the source. To remedy this "blindness", it may be possible to multiply the individual dollar values from various sectors by an appropriate coefficient reflecting the relative importance of that sector. In other words, if we claim that milk is more important than manicure, we will assign a higher coefficient to milk production than to manicure. Although each sector will have generated $1 000, the value weighted GNP accounts will show two different mathematical products. If the agricultural sector has a coefficient of, say, three then $1 000 in milk production is actually worth $3 000 of manicure which has a coefficient of one.

In the present system, a dollar is a dollar is a dollar. The GNP accounts do not tamper with what is considered the "wisdom of the free market". However, the "wisdom of the market" or the "invisible hand" allocates resources and fixes relative prices on the basis of supply and demand. "Demand" stands for

purchasing power, not "need". If we wish to base our economic accounting on some assumption of a hierarchy of needs, then these coefficients become useful. In short, the basic needs approach would yield us a graduated set of needs which can then be used to generate weights. These weights would multiply the sectoral activities to generate the value-weighted GNP.

The value-weighted approach to the GNP means that rather than assessing the GNP solely as a monetary function of market supply and demand, an appraised, or "valuated", system would assign certain weights to the needs or priorities determined by different cultures. Thus, wine would have a higher coefficient in France, spaghetti in Italy, bullfights in Spain. It may be a specific-purpose need-hierarchy. For instance, in a country that wishes to industrialise an industrial activity, will be assigned a higher coefficient than a non-industrial activity.

It must be noted that a further refinement can be introduced by considering the use of zero or negative weights. The standard reference coefficient could be one. Highly desirable activities could be reflected by a coefficient higher than one. Zero-sum activities such as exchange of property could be assigned a zero-weight thus cancelling its effect on the GNP. Similarly, undesirable activities, such as war, could be assigned negative weights thus reducing the value-weighted GNP.

The flexibility that could emerge from the systematic use of a value-weighted GNP could be a great help in development-planning since not one but many such value-weighted GNPs could be computed for the same year. One could reflect ecological considerations, another cultural, a third compatibility with the national plan, and so on. In essence we would be assessing crude or "gross" economic activity by explicit value-judgements introduced as quantitative weights.

The principal problem with the idea of value-weights is to put together a method of obtaining them. The range of choices here is quite large. It is sufficient at this point to note that explicit polling, dialogues, expert-opinion, Delphis or revealed preference could be used to obtain the relevant value weights.

The GNP measure, including its value-weighted version, is in the final analysis a measure of flow or of activity. It say nothing about the level of stock or previous accumulation. Yet most development processes are largely conditioned by the extent of realised accumulation. In fact, the capitalist system itself has emerged through the process of accumulation. Obviously what is needed is an indicator that will measure the accumulated assets and liabilities of the nation.

The construction of such an index presents problems of immense magnitude and scope but they are not insurmountable. Essentially what is needed is a classification of "assets" in terms of the usual resource categories such as:
— renewable, non-renewable and inexhaustible natural resources;
— public and private capital infrustructure (man-made public goods);
— the nature and quality of the labour force.

The next step would be to find a common denominator to aggregate this stock of productive resources. The usual candidate is money. It is far from an optimum solution but in the absence of clear alternatives the "least worst".

An additional problem is the valuation of long-term assets to account for depreciation and appreciation. Here the same problem arises as in real estate valuation. If a building is supposed to "depreciate" through normal ageing than a 50-year-old structure will have little residual value. On the other hand, the steady march of inflation makes a 50-year-old building very valuable indeed. In fact, if the concept of "replacement cost" is used then a building will steadily appreciate as the cost of materials and labour increases.

Finally, there is the problem of quality. An 11th century Norman Castle belongs to the cultural patrimony of Britain and cannot be evaluated in a significant way either by the "depreciation" or the "replacement cost" methods. Both miss the point completely. The depreciation is irrelevant and the replacement cost infite.

In spite of these problems even an approximate measure of accumulation/depletion is worthy of consideration since it provides a much more meaningful measure of a country's potential than current income. This is certainly the case for an individual and is equally true for a nation. A high-income nation living on its depletable oil-resources like Saudi Arabia, may be much more vulnerable than a low-income nation with immense potential (such as China). The accumulation-index should be computed for the society as a whole but an ultimate refinement would include who actually holds the wealth since that fact is of immense importance in development. This could lead to the construction of a distribution-index not just of income, which already exists, but of accumulated wealth which does not.

Additionally, one must take into account indication of ecological damage, whereby the final price of the product would reflect the full social cost of repairing ecological damage caused by its production.

A further indicator for the model, which presently does not exist, concerns performance indicators for public bureaus in the information sectors, such as surveys, education and public policy research. These are distinguished from the public bureaus sectors, such as the fire and police departments, whose success or failure can be precisely measured. In order to avoid squandering of public funds, what is needed is an adequate output based performance indicator, whereas present indicators are input-based, i.e. governments measure their performance by how much they spend, not only by how much they actually achieve.

The best known indicator of aggregate economic performance is the unemployment rate, yet this rate is frequently misleading. Some people who are technically in the ranks of the unemployed are actually engaged in very productive and rewarding occupations. The growth of an 'informal economy' not mediated by market mechanism has been identified. In this informal, non-

commercial economy many people are either self-employed or involved in barter-type exchanges within their community. Similarly in Third World countries, the non-commercial, traditional sector occupies a great part of the population. The members of the informal economy may be technically unemployed but by no means unhappy.

Some wage-earners are actually involved in fictitious jobs and their marginal productivity is zero. Recent studies in the OECD countries have shown an important proportion of marginal product. One study suggested that if 20 percent of the white-collar workers stayed home, no one would notice their absence and total production would stay constant.

An increase in unemployment is now frequently the result of technological change which substitutes capital for labour. This is not automatically deleterious to the social good. On the contrary, the freeing of human resources from menial occupations must be welcomed if it imposes no hardship.

Getting the job done

A goal oriented society intent on satisfying basic needs will seek to get the job done rather than create fictitious jobs. To achieve this goal an indicator is needed to show to what extent the job is being done. Present unemployment indicators do not reveal this kind of information.

The notion of development was, is and will probably remain hazy and not easy to define. It is evident that 'development' will mean different things to different people and a precise definition must remain site-specific, culture-specific and time-specific. To reflect this built-in ambivalence, we propose that only the subject (whether an individual, an ethic group or a notion) be the ultimate decider of what is and what not development. Whatever in the mind of a people represents improvement, progress, an advance of collective welfare, may be viewed as development. Whatever, on the contrary, and in spite of so-called objective indicators of wealth, is considered a regression or the status quo cannot be termed 'development'.

This view of development has important implications. First and foremost, it emphasises that it is above all a perception not necessarily an objective reality. Second, it confirms that sovereignty of the people involved in deciding what their social goals are or should be. Third, it is relativistic, in the sense that a series of events for Nation A at a certain time in history may be construed as development, while the same series of events for Nation B, or even for Nation A at a different time in history is perceived otherwise. Fourth and lastly, it places a heavy burden on social scientists to discover and measure what people want.

So the ultimate indicator of development is one of collective subjective satisfaction. To arrive at such an indicator, we propose two direct routes, which are deceptively simply. The first attempts to measure positive satisfaction while the second measures dissatisfaction.

The principal method for obtaining a satisfaction-indicator is the direct one of polling, particularly in Western industrialised countries. In countries where polling is not a part of the culture, more subtle techniques may be used to discover how people of a specific culture subjectively estimate the degree of satisfaction a given society provides.

A variant of the positive-satisfaction indicator is the dissatisfaction indicator. The logical opposite of satisfaction, perceived dissatisfaction could be a measure of "illfare" — discomfort or social unhappiness. It is proposed here as an alternative to the satisfaction indicator on the grounds that, in some cultures, people are more likely to communicate their dissatisfaction than their satisfaction. Complaints seem, for good or ill, a more popular subject for social communication than blessings. Therefore, a 'complaint function' may be envisioned which would have to be minimized in order for development to take place. Can the subjective satisfaction or dissatisfaction indicators ever be given a quantitative expression? As a cardinal measure we believe not. As an ordinal or comparative measure we believe such quantification to be possible. Taking a base year and assigning to it the index number 100, we can then ask the relevant citizens' groups to evaluate their own progress or regression as a percentage of this base-year figure. Since the citizens are giving a quantitative measure to the increase or decrease of their satisfaction, it can be perceived as meaningful to them. The indicator is as precise as the citizen's perception but, it might well be asked, who might wish for further precision?

The subjective satisfaction/dissatisfaction index must then be aggregated from the individual's perception to that of society. Such aggregation presents considerable theoretical problems but once, absolute precision is not particularly desirable. If, for instance, the averaged perceived change in satisfaction, for whatever reason, of a polled population sample is, say, 80 percent of what it was in the base year, this statistic is not meaningless. It signifies a certain malaise which must be rectified. Since international comparisons are not attempted the quantitative measure might yield some significant insight into a nation's self-evaluation.

Whatever its defect, such an index is still an improvement on so-called 'objective' indicators since, in the final analysis, the source of error, if any, lies with the subject not with the 'infinite wisdom' of the social scientist.

We have attempted to construct a bridge between the GPID philosophy emphasising human and social development with reformed and recast economically-based indicators. The case for the construction of this bridge at the level of indicators is simple: it benefits both sides. Economic indicators may now become meaningful rather than misleading and superficial, and the GPID philosophy may now be translated into a language, which for good or for ill, is still "spoken" by most decision makers, development planners, journalists and concerned citizens. While whole-heartedly supporting the invention of a new language symbolized in the proposed "GPID disctionary",

we also believe that this new language should be translated into the old ones.

The goal here is to outline an area of research in this field of reformed indicators rather than offer a finished product. Much more thought must be given to the implications of the proposed approach. In addition, a feasibility study of each of the proposed indicators must be attempted, especially the major one which is the value-weighted GNP. But the general approach appears reasonable: produce objective and subjective indicators of development goals and processes using modified statistics.

Development then is like the pleasurable sensation of good music. It is subjective satisfaction which either exists or does not. It is measured by the last indicator proposed. The first five, on the other hand, are objective indicators measuring the hardware and the software which could be instrumental in producing the "good music".

It is these five which can best be put together by modifying and re-structuring existing economically-based indicators not to the exclusion of other approaches but in order to translate the richness of the GPID in a language that is meaningful to all.