CHAPTER 11

GDP and Friends

1 Limitations on the National Income Concept

Probably few topics in applied economics are given more attention in the media and in public debate than the growth of 'national income', or two related concepts, namely gross national product (GNP) and gross domestic product (GDP).[1] All three concepts are approximate measures of how much income a country produces each year. Most people will have seen or heard claims about which country has the highest GDP per head, or the fastest growth rate of GDP and so on. At the same time there has been growing criticism of the national income concept as a measure of 'welfare'. In the last five decades or so all the advanced countries of the world experienced historically unprecedented rates of economic growth, so that *per capita* real incomes soon reached levels that were way above those of the prewar period. Yet this remarkable rise in prosperity, as conventionally measured, did not seem to be accompanied by a corresponding rise in people's sense of well-being or 'happiness'.

Over the first two decades after the war the most obvious changes in the quality of life were an increased awareness of environmental pollution. This included air pollution, both local and global. Water pollution also rose sharply – and often visibly – in many places. Noise – particularly noise near airports or motorways – also seemed to be on the increase. At the same time, crimes of violence were increasing in many cities of the world, as were other manifestations of social disorder, in general, or of urban deterioration, in particular.

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Of course, there had also been many improvements in aspects of welfare that are not directly reflected in GDP, such as advances in medical treatment and a dramatic increase in life expectancy, job security, leisure and the conditions of work and housing for the vast majority of working class people in the more advanced countries. And during the last two or three decades there have been some substantial improvements in local urban pollution in many cities in developed countries as a result of legislation, such as the Clean Air Acts introduced in Britain in the 1950s, and greatly increased public expenditure on methods to reduce harmful effluents into water courses. Nevertheless, people seem to be more conscious of the possible harmful effects of economic growth and ignore the great benefits that it has also brought. Few people take to heart the words of a popular 1940s song:

> You gotta accentuate the positive
> Eliminate the negative
> Latch on to the affirmative
> And don't mess with mister in between

2 Economists and the GDP-Welfare Link

The aforementioned developments naturally led many people to question the extent to which the conventional measures of national income provided a good indicator of how much we were really better off and for how much longer could any improvement be sustained. One person whose position of power enabled him to take account of the discrepancy between GDP and 'happiness' was General Surayud Chulanont, the former army chief of Thailand, who was appointed interim prime minister of that country in October 2006 and who proclaimed that 'We won't concentrate so much on the GNP numbers.... We would rather look into the indicators of people's happiness and prosperity'.[2] Indeed, given (i) recent scholarly research that claims to have identified a positive correlation between measures of 'happiness' and the extent to which people enjoyed satisfactory sex lives, and (ii) Thailand's wide reputation – deserved or not – as a country where people lead particularly satisfying sex lives, it is quite possible that the switch of emphasis would raise Thailand's ranking relative to other countries.[3] However, since the scope for technical progress in the activity regarded as being one in which Thailand had a comparative advantage is severely limited, Thailand's growth rate of happiness would probably be reduced relative to other countries. In any case, recent

political developments in that country suggest that if variables relating to political institutions could be adequately represented in the 'happiness' index, the result might be unwelcome to its rulers.

Economists are routinely accused of being misled by their alleged subservience to the national income concept. But, in fact, economists have always known that national income was not a good measure of 'welfare' in the wider sense of the word. At best national income as measured has always been recognised as being only a measure of *economic* welfare. The great economist, Pigou, pointed out in 1920 – that is, about fifty years before the critics began to point out that national product was not identical to total welfare – that 'Hence, the range of our inquiry becomes restricted to that part of social welfare that can be brought directly or indirectly into relation with the measuring-rod of money. This part of welfare may be called economic welfare' and '. . . there is no guarantee that the effects produced on the part of welfare that can be brought into relation with the measuring-rod of money may not be cancelled by effects of a contrary kind brought about in other parts, or aspects, of welfare. . . . The real objection then is, not that economic welfare is a bad index of total welfare, but that an economic cause may affect non-economic welfare in ways that cancel its effect on economic welfare'.[4]

Much later an eminent American economist, the late Arthur Okun, put the issue very clearly in writing that

> It is hard to understand how anyone could seriously believe that GNP could be converted into a meaningful indicator of total social welfare. Obviously, any number of things could make the Nation better off without raising its real GNP as measured today: we might start the list with peace, equality of opportunity, the elimination of injustice and violence, greater brotherhood among Americans of different racial and ethnic backgrounds, better understanding between parents and children and between husbands and wives, and we could go on endlessly. To suggest that GNP could become *the* indicator of social welfare is to imply that an appropriate price tag could be put on changes in all of these social factors from one year to the next . . . it is . . . asking the national income statistician to play the role of a philosopher-king, quantifying and evaluating all changes in the human scene. And it is absurd to suggest that, if the national income statistician can't do that job, the figure for GDP is not interesting. (Okun, 1971)

A few years later an official Australian government report repeated the point at length, stating that '. . . no one familiar with the construction of

estimates of what was then called the G.N.P. would think of attaching to them the significance that was being attached to them by many users'.[5]

3 Values in the GDP Concept

Quite apart from non-economic elements of total welfare, such as those mentioned by Okun earlier, there are also many technical weaknesses in the measurement of GDP that most economists know about. These include the practical difficulties of accurately measuring certain types of transaction, or the exclusion from the estimates of housewives' services, or the services that people obtain from the consumer durables that they own. Another problem is that a measure of *aggregate* GDP or national income by itself is of no interest. It is only interesting in comparison with GDP in some other period or some other country, after making allowance, of course, for differences in population. And such comparisons only make sense if proper adjustment is made for price differences. But the proper construction of index numbers for purposes of making price comparisons over time or space is also fraught with conceptual and practical difficulties. As the 'Stiglitz Commission' report points out,

> There are now many products whose quality is complex, multi-dimensional and subject to rapid change. This is obvious for goods, like cars, computers, washing machines and the like, but is even truer for services, such as medical services, educational services, information and communication technologies, research activities and financial services. In some countries and some sectors, increasing "output" is more a matter of an increase in the quality of goods produced and consumed than in the quantity.[6]

And there is no fully satisfactory method of adjusting for changes in the quality of some goods, let alone services.

There are other limitations on the welfare implications even of comparisons of aggregate GDP over time or between countries. For they do not show how total national expenditure is distributed, either among different groups of people or between different uses to which the economy's resources are put. For example, the GDP of an economy that devotes an excessive proportion of its resources to the means by which it can kill people – either specific classes of its own citizens or in the course of aggressive wars against foreigners – cannot be a good indicator of welfare of its citizens.

Furthermore, leaving aside comparisons, the measurement of aggregate GDP does not discriminate between people with respect to the differences in the welfare that they obtain from a given unit of income on account of differences in their income levels. A pound sterling accruing to a rich person is counted as having the same value as a pound to a poor person. In an early path-breaking analysis of the value judgements in welfare economics, Graaff went as far as to say we ought to dispense with the time-honoured distinction between the size and the distribution of national income since, he argued, '. . . we do not know what the size is until we know the distribution' (Graaff, 1967:92).

Another weakness in the link between GDP and economic welfare is the arbitrariness of the boundary line between those productive activities that give rise directly to *final* output (which is a measure of GDP) and those that produce *intermediate* output – that is, goods and services that are not wanted for their own sake but in order to be 'used up' in the course of some subsequent stage in the productive process. For example, some economists would subscribe to the view that a large part of public expenditures, such as general administration, law and order, and so on, are really 'inputs' into the productive system, since without them the whole productive system could not function as it does. Many household expenditures could also be considered to be intermediate products. Many people, for example, have to commute to their work, and this expense can be considered an intermediate cost related to earning a living.[7]

4 'Measurable Economic Welfare'

One response to such limitations on national income as a good measure of welfare was the pioneering attempt, by Nordhaus and Tobin in 1972, to estimate what they called 'measurable economic welfare'. For this purpose they excluded 'regrettable necessities', such as defence expenditures, as well as the estimated monetary equivalent of certain disamenities, such as those arising out of environmental damage or urbanisation and congestion. As regards the 'regrettable necessities' Nordhaus and Tobin wrote that '. . . we see no direct effect of defence expenditures on households' economic welfare. No reasonable country (or household) buys "national defence" for its own sake. If there were no war or risk of war, there would be no need for defence expenditures and no one would be the worse without them'.[8]

Of course, the same sort of reasoning applies to almost any component of GDP. Nobody would want accident and emergency departments in hospitals, or even home first-aid kits, for their own sake. They are only required because of the risk of accidents. Seat belts in automobiles are required not for their own sake, but to prevent injury in accidents. It is not possible to draw logical distinctions of the Nordhaus-Tobin kind between the purposes served by various goods. If they are wanted they are wanted, and that is the end of the matter. If there were no winters, there would be no need for winter woollies or heating expenditure; if one never had tooth-ache there would be no need to visit the dentist. For very poor people, even food, after all, is merely required in order to offset the pain of being hungry and dying of starvation. Surely it is not to be argued that in such cases the food in question (or other similar basic essentials) should *not* be included in GDP and that we should include only the more frivolous inessentials. If so, this runs quite counter to another popular view to the effect that much of the growth of GDP as measured is misleading because it includes so many of the items that we do not really *need*. In other words, some people argue that we should exclude from a welfare-oriented measure of GDP the goods that we do not really need. And others – including, apparently, Nordhaus and Tobin – argue that we should exclude the goods that we *do* really need since these are regrettable necessities.[9]

In fact, Nordhaus and Tobin gave the game away when they wrote 'Maybe all our wants are just regrettable necessities; maybe productive activity does no better than satisfy the wants which it generates; maybe our net welfare is tautologically zero'. Of course, Shakespeare made the same point three centuries earlier when he put into King Lear's mouth the words:

> O, reason not the need! Our basest beggars
> Are in the poorest thing superfluous.
> Allow not nature more than nature needs –
> Man's life is cheap as beast's.
>
> (Shakespeare, *King Lear* Act II. Sc. 4)

5 Other Measures of 'Well-Being'

One of the responses to increasing dissatisfaction with GDP as an indicator of well-being has been the development of various alternative measures of well-being or some aspects of it. Instead of attempting to adjust GDP

estimates along the Nordhaus/Tobin lines, there have been broadly two alternative approaches. One consists of indices of specific components of well-being – often known as 'social indicators' – such as longevity, or education levels, which may or may not be incorporated in some aggregate index of 'well-being'. The other is based on direct surveys of people's subjective feelings of 'well-being' or *'happiness'*. The latter approach is discussed in the next chapter. Here we shall concentrate on the former approach.

As indicated already, GDP estimates are not expected to encompass many important components of well-being that are not the subject of market activities and that cannot easily be measured as proxies for market activities. These include, for example, literacy, health indicators, standards of housing and access to public facilities, personal relationships, political freedom, leisure, and so on. Consequently various other indicators of components of what the Stiglitz Commission's report calls 'the quality of life' have been constructed.[10] This report points out '. . . the time is ripe for our measurement system to *shift emphasis from measuring economic production to measuring people's well-being'*. It goes on to say that 'But emphasising well-being is important because there appears to be an increasing gap between the information contained in aggregate GDP data and what counts for common people's well-being'.[11] The report emphasises that '. . . the information relevant to valuing quality of life goes beyond people's self-reports and perceptions to include measures of their "functionings" and freedoms'. In effect, what really matters are the capabilities of people, which is discussed in more detail in Section 6. Basically, capabilities represent the extent of people's opportunity sets and of their freedom to choose among them the life they value. The choice of relevant functionings and capabilities for any quality of life measure is a value judgement, rather than a technical exercise. But while the precise list of the features affecting quality of life inevitably rests on value judgements, there is a consensus that quality of life depends 'on people's health and education, their everyday activities (which include the right to a decent job and housing), their participation in the political process, the social and natural environment in which they live, and the factors shaping their personal and economic security'.[12]

One of the most widely quoted and most sophisticated index of some concept of well-being is the *Human Development Report*, which has been published annually by the United Nations Development Programme since 1990. These publications contain a wealth of data for most countries on

items such as education (including women's access to education), health profiles (including infant mortality rates and life expectancy), environmental conditions, a human poverty index, national income, the labour market and even a 'profile of political life'.

The *Human Development Reports* also show an aggregate 'Human Development Index' (HDI). The construction of this index has changed somewhat over the years, but basically it is a simple average of three sub-indices, namely life expectancy, education, and GDP. But all aggregative indices raise the question 'how should one weight together the constituent items?' With GDP the answer has a clear – if imperfect – conceptual basis. For the weights attached to the various component flows of goods and services entering into the total GDP figure are the prices of the goods and services concerned. And these are supposed to reflect roughly the (marginal) value attached to the goods by consumers. Countries differ with respect to how they want to distribute their expenditures between, say, hospitals, education, the preservation of law and order, the protection of the environment, investment in productive facilities and private consumption. How they choose will depend on their private and social values and the relative costs of the alternatives. GDP estimates combine these choices in a way that indicates, if imperfectly, each society's preferences and relative costs.

There is, of course, no objective basis for weighing together the components of aggregative indices of welfare or human development. The weights must reflect value judgements, which can vary from person to person. There is no objective way of weighing together, say, a change in the environmental conditions associated with a rise in local air pollution, a rise in the literacy rate, and a change in longevity. As pointed out in earlier chapters, the concept of aggregate welfare is open to serious objections if one accepts the incommensurability of plural values. If one person says that GDP constitutes two thirds of welfare, and another says it is only one third, as in the HDI estimates, they are not making positive statements about the real world; they are making statements about their value judgements.

There is also room for much discussion concerning the principles that should govern the choice of the detailed components of aggregates, such as a 'Health Profile'. For example, how far ought they to be related to 'outputs', such as the incidence of various diseases or mortality rates, as well as 'inputs', such as numbers of doctors and nurses relative to the size of the population (particularly since, in some countries, it is very debatable

how far more doctors lead to better health). There is no clear conceptual basis for avoiding double-counting as there is in national income estimates.

Nevertheless, many of the individual indicators of specific aspects of human development and welfare that have been developed over the last few decades do fill an important gap in the statistical basis for assessing different countries' levels of welfare and development. The individual indicators are often of great interest in themselves and are valuable supplements to GDP data. Conversely, although GDP may well be a bad measure of total well-being, it is an important component of it. Furthermore in most countries it will still be fairly safe to assume that large changes in 'real' (i.e. adjusted for prices changes) national income will correspond to large changes in economic welfare as well as corresponding changes in various components of GDP, such as consumption of various goods and services, public investment in the economy's infrastructure, the possibilities of devoting resources to innumerable desirable ends, such as health, education, housing and the major constituents of personal consumption, and so on. This is the case even in relatively developed countries, as is illustrated by the following example. In the twenty years following the overthrow of the communist regime in Poland, GDP increased by 78%, and life expectancy increased from 70.7 years to 75.6 years. The direction of causality was certainly not from the latter to the former since most people over the age of 70 no longer contribute to GDP.

6 Human Development and 'Capabilities'

Many of the indicators included in the HDI are indicators of the concept of 'capabilities', and vice versa. This concept, which has been developed by Amartya Sen, and to which important contributions have also been made by Martha Nussbaum and others, is applicable to a wide variety of fields, such as development economics, social policy and theories of distributive justice (as discussed in the next chapter). According to the 'Stiglitz Commission' report, the 'capability approach' conceives a person's life as a combination of various 'doings and beings', which Sen calls 'functionings', and of his or her freedom to choose among these functionings, which he calls 'capabilities'. The concept of 'capabilities' can provide a conceptual umbrella for a wide variety of non-monetary indicators that reveal how far people have opportunities to do the things they want to do and to lead the best lives they can lead subject to the constraints on their innate abilities.[13]

A person's 'doings' and 'beings' include working and enjoying leisure activities, and engaging in a rewarding social life. The distinction between these achieved 'functionings' and 'capabilities' is a distinction between the 'doings' or 'beings' that people actually achieve and the effective opportunities open to them to achieve them. Sen summarises the distinction as follows: 'The *capability* of a person reflects the alternative combinations of functionings the person can achieve and from which he or she can choose one collection. The approach is based on a view of living as a combination of various "doings and beings," with quality of life to be assessed in terms of the capability to achieve valuable functionings'.[14] Some of these capabilities may be quite elementary, such as being adequately nourished and escaping premature mortality, while others may be more complex, such as having the literacy required to participate actively in political life.

Some deficiencies in capability may not be socially determined, as, for example, in the case where some disease or food allergy makes a person '. . . unable to achieve the capability of avoiding nutritional deficiency even with an amount of the food that would suffice for others' (*op.cit.* p. 317). There is no generally agreed precise list of what variables are important in different situations. Indeed, it is generally accepted that the list of capabilities that would be relevant in the analysis of poverty in poor countries would be much more restricted than a list that would be appropriate in wealthy countries. In the former, for example, the capabilities that would be relevant would be those discussed in the operationally important pioneering concept of 'basic needs' developed notably by Paul Streeten and others at the World Bank in the early 1980s.[15] According to Martha Nussbaum, the concept of capabilities goes back even earlier; over 2,000 years earlier in fact, namely to Aristotle (Nussbaum, 2000). (But the same can be said of most contemporary ideas in ethics and political philosophy.)

Sen gives various examples of his concept of capability. One example, which is socially determined and is particularly important in poor countries, is education and basic literacy. In some countries, such as India, lack of both is particularly widespread among women. As a result not only are they deprived of opportunities in the conventional sense – for example, qualifications for certain occupations – but they are inevitably limited in their horizons and their ambitions. They may, as a result, not be as lacking in welfare as would be an educated person because they will not even share the aspirations to achieve their potential as would an educated person. 'For the welfarist, such an illiterate person need not be seen as deprived, but

from the point of view of freedom . . . the positions of the literate and the illiterate persons are not the same'.[16]

Consequently the capability approach contrasts sharply with the subjective measures of self-reported 'happiness' or 'well-being' that have been used in various surveys. For it is quite possible that, in many situations, people may feel more or less content with their life unaware of the possibility of leading a more creative and fulfilling life if they had possessed the capabilities to do so, such as education, or the absence of gender discrimination, or better healthcare and so on. The usual survey data on measures of 'happiness' or 'well-being' are essentially measures of mental states. Sen's concept of capabilities goes beyond that and encompasses some of the aspects of a person's condition that determine the mental state that he can achieve.

The capability approach has spawned a vast literature, explanatory, complementary and critical. Some writers have questioned how far it is operational given the data limitations. Indeed, from a purely conceptual point of view the notion of a 'capability' to perform some functioning is a counterfactual one. It would be difficult to find evidence to prove the causal relationship between certain capabilities and the assumed resulting functionings. In addition to disagreements over certain functionings, people will differ in the importance they would attach to different capabilities. However, further progress will no doubt be made over the years in improving the conceptual basis of the concept and its relationship to empirical data on what aspects of their lives are most valuable to people.

Contrary to the spirit of concepts such as 'capabilities', there have been some attempts to cater for the general predilection for combining social indicators into some aggregative indices that can be used to make simple comparisons between countries or over time. Major differences between countries, or over time, in such indices are probably significant, but one has to be aware of misplaced precision. And one must also be cautious in using some indices that appear to make highly contentious claims.

For example, one frequently quoted index is the 'Happy Planet Index' (HPI).[17] This does not, as the name might suggest, purport to be an index of how happy the planet Earth is by comparison with, say, Mars or other planets. The authors of this index do not attribute to planets sensations of 'happiness' that are normally associated only with sentient creatures, though they get close to it in describing their objectives as 'We work in partnership and put people and the planet first' (presumably meaning that

there was a dead heat between the two and that they actually shared first and second place).

This index is actually a ratio, for each country, of its 'Happy Life Years' and its carbon footprint. It is thus presented as a sort of index of the 'efficiency' with which a country uses up the environment in order to achieve its particular level of well-being. The numerator in the ratio, namely the figure of 'Happy Life Years' in each country, is a combination of (i) the responses people make, in four different surveys, to questions about how far the people are more or less satisfied with their lives, and (ii) life expectancy. In principle, this seems to be not a bad idea. But the difficulty – as the authors acknowledge – is that the interpretation of the surveys implies a purely subjective judgement as to what constitutes 'happiness'. The implications of this become very clear when one looks at the results. The latest results covering all the world show that the top country is Costa Rica, and the top ten countries in the index are mainly from Latin America. The highest developed country is The Netherlands, which ranks 43rd. The UK ranks 74th. Yet few people emigrate from the developed countries to the 'happy' Latin American countries, while millions of people – often at great risk to their lives – are constantly trying to emigrate from allegedly happy poor countries to rich – if less happy – countries.

This illustrates one of the psychological points made in connection with variations in 'happiness' that is discussed in more detail in Chapter 12, namely people's capacity for adaptation to their circumstances. People who have immigrated into developed countries learn to put up with the 'bad' features of modern advanced societies, such as the beautiful parks, gardens, buildings, cultural facilities, health facilities, educational facilities, not to mention the material conveniences, and do not hanker for their lost simple life in the primitive sanitary conditions in many cities, the unspoilt environment including the rain forests (and the millions of species of beetles that they contain), that they used to find in their 'happier' countries of origin. They rarely want to return, such is the power of adaptation and 'habituation' as is emphasised in some of the results discussed in the next chapter. But the apparent conflict between the 'Happy Planet Index' and patterns of international migration also highlights the ambiguity of the concept of happiness. For – leaving aside the carbon footprint – it is quite likely that the happiness measured in the numerator of the index is not the only consideration that drives people to choose their location. People also want variety, choice, opportunity and challenges.

7 Is GDP a Useful Concept?

In view of the limitations on the welfare significance of conventional GDP measures, it might be asked 'what is the point of measuring GDP at all?' Alternatives, such as extended accounts or social indicators, may require lots of value judgements, but is GDP so much better that it is worth all the cost of estimating it and all the respect accorded to it? There are three good reasons for persisting with GDP estimates.

First, as long as GDP bears a rough relationship to one 'prudential value', namely *economic* welfare, it is the *only* component of welfare that has a wide coverage and that can be measured at all in a way that bears any clear theoretical relationship to some coherent theory of individual welfare. Hence, those who believe that total welfare is something that one should try to measure – if only approximately – should welcome this measure of one of its ingredients and should not reject it simply because nobody has yet solved the problem of measuring all the others.

Second, there is, of course, always room for improvement from the point of view of the statistical coverage and accuracy with which GDP is measured. For example, there may be a case for trying to take some account, in GDP estimates, of certain ingredients of welfare that have hitherto been regarded as unmeasurable in monetary terms. Work on social indicators is to be welcomed as a supplement to the conventional GDP estimates, but they do not make GDP estimates redundant or even misleading to those who know what these estimates really mean and what the real limitations on them are.

Third, even if GDP cannot measure 'welfare', it still has its uses. As indicated earlier, changes in output have important implications for the state of the economy in general and for certain aspects of it in particular, such as how much can be spent on, say, public transport or education or health, without excessive squeezing of investment or private consumption. GDP provides an indicator of what society has available to promote these, and other, constituents of well-being. Society can choose to use it wisely or badly. Higher GDP makes it easier to spend more on policies, such as mental health, that clearly have a direct effect on happiness. But in other ways it may be badly spent. It may well be that some of the choices made by richer societies are unwise. Increasing affluence leads to greater choice and the demands that this places on people may exceed their capacity to choose wisely (Aldred, 2009; Offer, 2006). On the other hand, freedom of choice is one of the most highly treasured of human values, so that one

can make the value judgement that choice is intrinsically desirable. But whether, in fact, the increased choice that higher GDP tends to provide is worthwhile, given the other variables that affect people's 'happiness', is another value judgement that cannot be determined by any amount of measurement.

Finally, some mention must be made of 'sustainability' which is discussed in some detail in the Stiglitz Commission report. The estimates discussed previously refer only to welfare or its constituents (such as GDP) at the present point in time or in the past. But it is also important to have some idea of how far a country's level of welfare is likely to be maintained into the future. A country could enjoy a high or rising level of welfare at the cost of a substantial fall in future welfare. This could be caused by, say, a gradual depletion of its natural resource base that is not offset by increases in the stock of man-made capital and human capital. But the concept of 'sustainable development' is very difficult to pin down. It raises questions such as 'over what time period?' or 'under what circumstances?' Nevertheless, serious research has been carried out to provide some indicators of sustainability, and the Stiglitz Commission report includes a detailed survey of this research, and no attempt will be made in this book to make further comment on this survey.

8 Conclusions

Economists have always known that national income per head was not a comprehensive measure of welfare. At best it was a measure of only *economic* welfare, and there were many reasons – well-known to economists – why it was not even a flawless measure of that. Hence, the development of measures of other components of welfare has been very constructive. But the incommensurability of values means that the compilation of some aggregate index of welfare raises insuperable conceptual problems. However, social indicators (including those that relate to 'capabilities') and GDP estimates are not competitors. It is still important to work on ways of improving estimates of GDP and, in particular, of the way it changes over time. Hence, as the 'Stiglitz Commission report' points out, 'Despite deficiencies in our measures of production, we know much more about them than about well-being. Changing emphasis does not mean dismissing GDP and production measures. They emerged from concerns about market production and employment; they continue to provide answers to many important questions such as monitoring economic activity'.[18]

Notes

1. GDP measures the 'product' (i.e. the unduplicated output) in the territory of the designated country, and GNP measures the product accruing to the nationals of that country, the difference being that GNP includes net income from abroad. For many years now the focus has been on GDP, and GNP has now been dropped from official British statistics and replaced by the term 'gross national income' (GNI). 'National income', which is GNI less depreciation of capital assets, is also a common unit of reference, since it is closer to what most people will feel is their actual income (before taxes and benefits). For a full description of the relationship between these and other closely related concepts see the Office of National Statistics, 2008.
2. Reported in the *Financial Times*, 2nd October 2006:6.
3. See Blanchflower and Oswald, 2004.
4. Pigou, A.C., 1932 edn:12.
5. Australian Government Treasury, 1973.
6. This is the *Report by the Commission on the Measurement of Economic Performance and Social Progress*, Paris, 2009:11. This commission, which was set up by the then President of France, comprised Joseph Stiglitz [chair], Amartya Sen and Jean-Paul Fitoussi.
7. See a discussion of these problems in Beckerman, 1980.
8. Nordhaus and Tobin, 1972. This argument implies that, even if it is believed that there is a risk of war, people *would* be worse off without the defence expenditures. Apart from hard-line pacifists, most people would dispute this.
9. See Usher, 1973, for an important critique of the Nordhaus and Tobin adjustments to the US growth rate, and Beckerman, 1978, for a discussion of this and his own estimates of adjusted 'measurable economic welfare' for a number of countries along both the Nordhaus/Tobin lines and the Usher lines.
10. Stiglitz *et al.* 2009.
11. *Ibid*:12.
12. *Ibid*:15.
13. See a list of ten basic capabilities, in Nussbaum, 2000.
14. Sen,1993:31. See also his 'Capability and Well-Being', in Sen and Nussbaum (eds.), 1993.
15. Streeten *et al.*, 1981; Streeten, 1984.
16. Sen, 1984:319.
17. This is produced by the New Economics Foundation.
18. Stiglitz, J., Sen, A., and Fitoussi, J.-P., 2009:para. 21.