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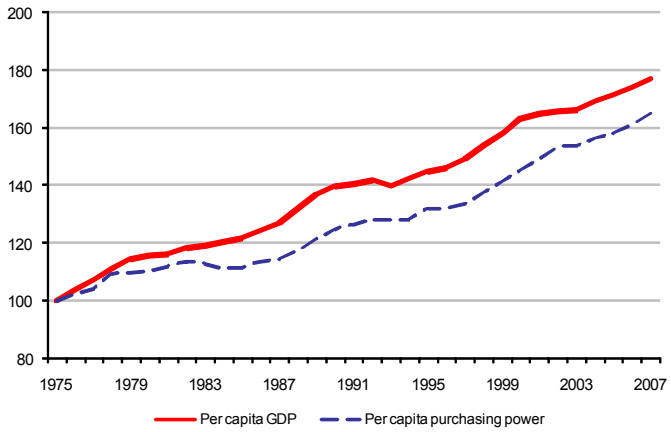
Measuring economic performance and social progress: the findings of the Stiglitz-Sen-Fitoussi Commission

This study was prepared under the authority of the Treasury and Economic Policy General Directorate and does not necessarily reflect the position of the Ministry for the Economy, Industry and Employment.

- GDP cannot be regarded as the sole indicator of economic performance and social progress. This is the underlying finding of the Stiglitz Commission, which has made an unprecedented effort to study the entire body of theoretical and empirical literature devoted to measuring economic performance, quality of life, and environmental sustainability.
- As an indicator of economic performance, GDP is in need of refinement. This notably involves taking the public services performed by the State, e.g. education, healthcare, etc., more fully into account. In addition, GDP fails to capture essential dimensions of economic performance, such as the depreciation of capital, households' standards of living, and inequalities. Specific indicators are needed in order to capture these dimensions. To measure living standards in particular, one needs to bring out the household perspective, from which it is possible to close the gap between objective measurements and public perceptions of them.
- Social progress should not be measured from a purely material standpoint. Quality of life also depends on non-economic factors such as health, social ties, environmental conditions, the individual's subjective perceptions, etc. There is a need to develop indicators that would give us a clearer view of these aspects.
- Finally, economic performance and social progress need to be assessed in terms of sustainability, i.e. measured against the well-being of future generations. The environmental dimension is essential. Many studies seek to measure the sustainability of our economies, although much remains to be done to derive a coherent methodology from them.
- These findings are formulated in the Commission's twelve recommendations, and it is important that they should now be implemented. The success of this project implies concerted action on the part of the international organisations and national statistics offices.

Per capita GDP and per capita purchasing power in France between 1975 and 2007 (base 100 in 1975)



Source: INSEE

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DIRECTION GÉNÉRALE DU TRÉSOR ET DE LA POLITIQUE ÉCONOMIQUE

The Commission on the Measurement of Economic Performance and Social Progress[1] presented its findings to the French President on 14 September 2009. The Commission's key messages are briefly rehearsed here. We then discuss the measures required to allow us to reap their full benefits.

1. As an instrument for measuring economic performance, GDP needs refining, and it needs to be supplemented by the concepts of Net Domestic Product and Net National Disposable Income

1.1 GDP is indispensable as a measure of economic performance

GDP is indispensable as a measure of economic performance because it has two major advantages. First, it belongs within an internationally standardised accounting framework. Second, it is a synthetic concept, widely recognised and used.

Nevertheless, the method of calculating GDP is suited primarily to measuring market output. This is because it is constructed by aggregating quantities that are theoretically non-summable (e.g. apples and oranges), by assigning a price to them. The measurement of GDP is therefore inherently beset by methodological difficulties given that the price of goods is hard to identify (as in the case of certain market services), or when there is no price for them (as in the case of free public services).

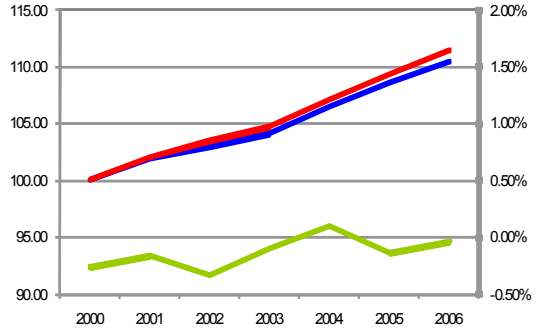
1.2 The measurement of GDP needs to be improved in order to account more fully for non-market output, public services especially

A first step towards improving the measurement of GDP concerns the measurement of services. It is hard to identify the volume and price of market services, especially for the purpose of capturing the quality of the service rendered: for example, in retail sales services, how does one account for dimensions such as the shop's accessibility, or the choice of goods on offer, etc.? This question is all the more problematic now that services play an increasingly important role in contemporary economies: in France, for example, and according to the measurement methodology normally used, the value of market and non-market services represented 78% of total value added in 2008, versus 47% in 1950.

The measurement of public services (healthcare, education, etc.) poses a particular problem, since some of these are provided free of charge. National accounting systems commonly use the input approach: the value of the output of these services is considered to be equal to the cost of the factors used to produce them (e.g. teachers' wages in the case of education). The drawback of this approach is that it ignores productivity gains or improvements in the service rendered. For example, an improvement in the quality of education will not show up in the volume of output thus measured, in the short term at least. A results- or products-based approach, known as the output approach, would be preferable, even if it runs into methodological difficulties and the need for detailed data. In all european countries, the measurement of education and healthcare is based on an output approach. This is not the case for other countries, the United States for example, or other market activities.

The impact on GDP of a switch from an input to an output approach is not insignificant: Atkinson (2005) shows that the United Kingdom grew at an average annual rate of 3% between 1995 and 2003 under an input approach, and by 2.75% per year on average under an output approach. The same exercise applied to France for the period 2000-2006 yields an average annual growth rate of 2.0% under an input approach, versus 2.15% under an output approach (see Chart 1).

Chart 1: Value added in France between 2000 and 2006, depending on the method used to measure non-market value added (100: year 2000)



Key: blue: output approach; red: input approach (left-hand scale); green: difference in annual rate of growth in value added (right-hand scale).
Interpretation: in 2006, value added under the output method was 1.1% higher than its 2000 level, versus 1.2% for value added under the input method.

Source: Stiglitz Commission

Finally, methodological problems also arise in the case of "defensive" spending, i.e. spending required in order to maintain society's level of consumption and keep it functioning at the same level: for example the cost of transport between home and work, or spending on prisons. The status of these expenditures, currently treated as final consumption expenditures for the purposes of measuring GDP, remains to be determined. Some defensive expenditures could be treated as intermediate consumption and hence eliminated from GDP. Others could be regarded as investments.

1.3 GDP alone cannot encapsulate economic performance: it is therefore necessary to look to other existing indicators that reflect dimensions not represented in GDP, and particular to concepts closer to economic agents

1.3.1 Taking all forms of capital depreciation (physical and environmental capital) into account in order to reason in terms of net orders of magnitude

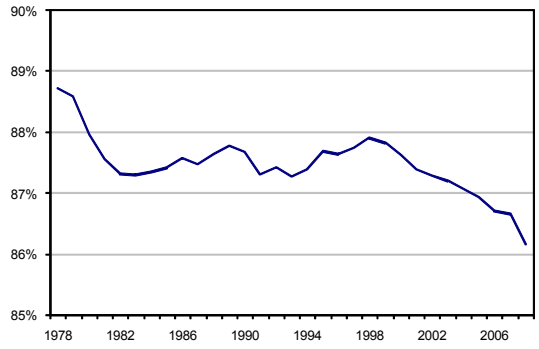
GDP is a gross measure that does not capture the depreciation of the stock of physical capital. Yet it is important to account for capital depreciation from the standpoint of final consumption, since the need to replace capital stock reduces the amount available for consumption. Net domestic product (NDP) measures domestic output, net of depreciation of the stock of physical capital. When the structure of production is relatively unchanged over time, GDP and NDP growth rates move more or less in step with each other. But this is less so when the rate of deprecia-

(1) http://www.stiglitz-sen-fitoussi.fr/en/index.htm

tion of the stock of physical capital changes, as has been the case over the past few years, for example, owing to the deployment of computers and information and communication technologies (ICT), which have a shorter average life than that of other capital goods. In France, for example, the depreciation of physical capital increased faster than GDP between 1995 and 2008. Consequently, NDP grew less rapidly than GDP over the period (+2.0% annually for NDP, compared with +2.1% for GDP). More generally, the share of NDP in GDP in France has declined since the end of the 1970s, from nearly 89% to around 86%. The decline has been visible above all since the end of the 1990s (see Chart 2).

The Commission recommends broadening the concept of depreciation to all forms of capital, to environmental capital especially (i.e. the environment and natural resources). The methodological questions are many, and these are already the subject of international studies and attempts at harmonisation[2].

Chart 2: Share in money terms of net domestic product (NDP) in gross domestic product (GDP)



Interpretation: in 1989, NDP in current euros represented 87.8% of GDP in current euros.

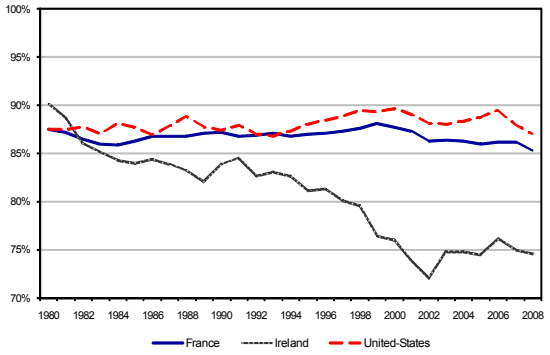
Sources: Insee - National Accounts, base 2000

1.3.2 Emphasising income rather than output would provide a fuller description of economic performance

From the standpoint of final consumers (households, public administrations, etc.), economic performance is better captured by the concept of income rather than by that of output, underlying GDP. That is because income can be seen as a material outcome of economic performance.

The income of the economy as a whole is represented by the concept of net national disposable income (NNDI)[3]. This represents the sum of income flows into an economy. When a share of an economy's income flows outward, NNDI is less than GDP (see Chart 3). The change in NNDI relative to that of GDP also tells us something. In Ireland, for example, the share of NNDI in GDP has fallen since the beginning of the 1990s. This is a result of the high level of foreign investment in Ireland, which has contributed to GDP growth but not to that of NNDI. The change in NNDI describes more satisfactorily than GDP what domestic agents, households especially, ultimately receive in return for their output.

Chart 3: Net national disposable income as a share of GDP in France, the United States and Ireland between 1980 and 2008



Interpretation: in 2002, net national disposable income represented 72.2% of GDP in Ireland, versus 86.4% in France and 88.1% in the United States.

Source: OECD Annual National Accounts

2. Disposable income is preferable to GDP as a measure of household living standards, but it needs to be supplemented by taking into account households' domestic output, transfers in kind, and inequalities between households: averages are not enough

2.1 A first step towards taking the household's perspective into account is to use the notion of adjusted disposable income

Household disposable income is an integral part of the national accounts. This is the amount that households are able to consume or save each month. The concept of purchasing power is directly linked to it, since it refers to the amount of income available to households deflated by the consumer price index.

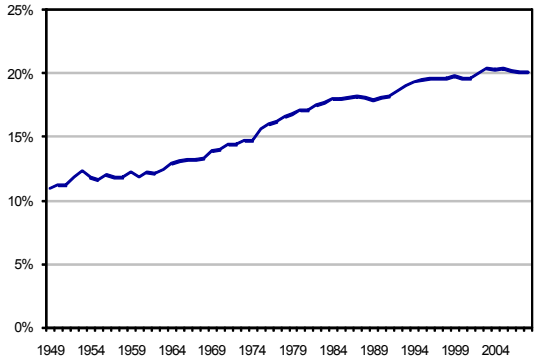
2.1.1 Adjusted disposable income includes social transfers in kind paid to households

Household disposable income must include the transfers in kind provided by the State (namely health and education services, social work, and so forth), even though these could be interpreted as additional household income flows. To account for these, national accounts construct an adjusted disposable income, which is equal to household disposable income plus social benefits in kind provided by the State. This concept serves notably to make the measurement of disposable income independent of whether health and education services are privately or publicity financed, and permits international comparisons of living standards. In France, social transfers in kind have accounted for a growing share of adjusted disposable income since the 1950s (see Chart 4).

(2) On this subject see the International Handbook on Integrated Environmental and Economic Accounting (SEEA, 2003).

(3) GDP, which represents the sum of value added in the different sectors of the economy, differs from NNDI on two main points: 1/ GDP is "gross", not "net", which means that it makes no allowance for capital depreciation (capital goods, housing, etc.). 2/ It is "domestic", not "national", and thus takes into account income flows between countries.

Chart 4: Share of social transfers in kind in household disposable income in France



Interpretation: In 2008, social transfers in kind represented 20.1% of adjusted household disposable income in current euros.

Sources: Insee - National Accounts base 2000

2.1.2 Accounting for households' domestic output

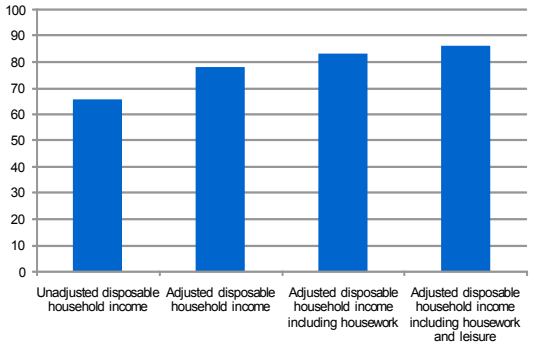
Although the concept of income is more relevant than GDP in assessing living standards, it still fails to capture whether services provided by members of one household to each other. Yet the volume of this informal domestic production is insignificant: though hard to measure, it is estimated at around 35% of GDP for France, and 30% of GDP for the United States. The trend in modern economies is for an increasing share of domestic output to be shifted to the market sector; cooking, for example, is replaced by eating in restaurants; domestic work or childcare are other examples. This leads to an increase in market output and hence in total output, even though this increase is artificial since it results purely from a change in the place of production and in no way to an improvement in living standards (Deaton, 2005).

2.1.3 Putting a value on leisure

Seen from this angle, taking domestic output into account raises the question of how to put a value on leisure. Intuitively, two households with the same income but different amounts of leisure time do not have the same standard of living. The notion of including the value of leisure in household income is an old one, consistent with microeconomic theory, which places greater emphasis on households' well-being than on their income (Nordhaus and Tobin, 1973), but it raises genuine issues of method and measurement. Nevertheless, it can significantly alter assessments of living standards.

Chart 5 illustrates the foregoing by comparing France and the United States according to different notions of income. In 2005, real per capita disposable income in France represented slightly over 65% of per capita income in the United States. This figure rises to nearly 80% if we look at adjusted disposable income, i.e. when we include social transfers in kind paid to households. It exceeds 82% when domestic output is added in, and rises above 85% if one also includes the value of leisure. In other words, the broader the notion of income, the smaller the gap between French and American per capita income.

Chart 5: Gross real per capita disposable income in France in 2005, depending on the different notions of income considered (United States = 100)



Interpretation: in 2005, gross real adjusted per capita income in France was equal to 65% of its US equivalent. The ratio was nearly 80% for adjusted disposable income, 82% for adjusted disposable household income including housework, and more than 85% for adjusted disposable household income including housework and leisure.

Source: Stiglitz Commission

2.2 The heterogeneity of households is a key dimension in measuring living standards, requiring that we cease to reason in terms of averages, focusing instead on the distribution of income and wealth

One reason frequently put forward to account for the gap between measurements of living standards and households' perceptions of them is that households' livings standards are heterogeneous. This is because the concepts commonly used to assess living standards are mean values ascribed to an individual assumed to reflect the population as a whole, but which fail to account for disparities between situations. Several attempts have been made to take these disparities into account (Cowell, 2002). The main approaches listed by the Commission are:

- Reasoning in terms of medians: contrary to average income, the median income[4] tells us something about the distribution of income. In particular, the gap between average income and median income sheds light on whether inequalities are widening or not;
- Choosing an appropriate unit of measurement: calculating income at household level rather than at that of the individual better reflects reality as perceived by households. It also captures more accurately the heterogeneity of household size. One commonly used unit is the consumption unit, which helps to take into account economies of scale achieved within a household[5].
- Taking consumption patterns into account: disparities in consumption patterns are a factor of inequality and help to accentuate the gap between measured living standards and the household's perceptions of them. In particular, differences in the consumption patterns imply differences in consumer prices. The use of differentiated price indexes can help to capture this dimension.
- Calculating household accounts by category. Insee carried out an exercise of this kind for the year 2003 in

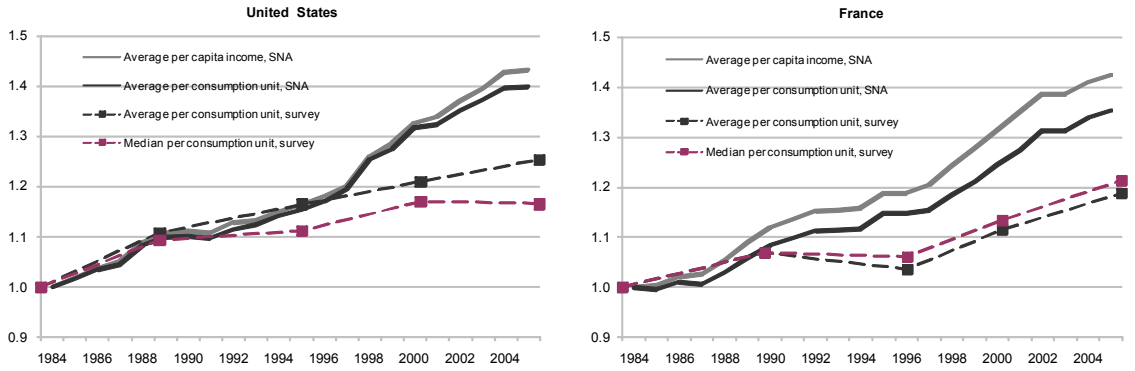
(4) The median income is defined as the level of income dividing the population into two equal parts, 50% of the population having an income above the median, and 50% below.

(5) The most widely-used definition of a unit of consumption (UC) is the one known as the OECD definition: it consists in counting the first adult in the household as 1 unit of consumption, the other people in the household aged 14 or over as 0.5 unit each, and people under 14 as 0.3 unit each.

France, comparing data from the national accounts with micro-economic data concerning households (Accardo et al., 2009). It was found, for example, that the disposable income of the wealthiest 20% of the population was five times greater than for the 20% least well off, half of the latter group's income consisting of welfare benefits.

Chart 6 illustrates some of the foregoing concepts. In France, average income per capita and per unit of consumption diverge from the early-1980s onwards, reflecting a decline in household size. In the United States, average and median incomes tend to diverge from the mid-1990s onwards, reflecting widening income inequalities in that country.

Chart 6: Trends in average and median household income, per capita and per unit of consumption, between 1984 and 2005



Interpretation: in 2005, the average per capita income in France was 1.42% greater than its value in 1984, compared with 1.43% in the United States.

Source: Stiglitz Commission

3. Quality of life should not be overlooked: it can be captured by a body of existing indicators

If GDP is an imperfect measurement of living standards, it is even less suitable for assessing social progress or the sense of well-being. Admittedly there is a positive correlation between subjective well-being and per capita GDP. Nevertheless, it would be an over-simplification to limit the assessment of well-being to that of per capita GDP. Many dimensions affecting well-being fall outside the scope of GDP, above all because they are non-economic. The concept of quality of life encompasses all of the factors that affect perceptions of well-being. The determinants of quality of life have been the subject of a vast field of academic research stretching over many years, inspired notably by the work of Sen. Now we need to put the findings of this research into practice, in institutional and economic policy terms.

3.1 Several objective factors affecting quality of life can be measured and compiled into one or more indicators

The factors that go to make up the quality of life can be determined according to Sen's "capability" approach (1987). Capabilities refer to individual's capacity to choose among different states and actions (functional capabilities) in their lives. They are seen as intrinsic determinants of the quality of life. According to this approach, measuring quality of life entails identifying these factors, together with the means to evaluate them (see Table 1).

Table 1: Objective features shaping quality of life and associated indicators

Objective features shaping quality of life	Metrics and indicators
Health	- Death, morbidity rates
Education	- School enrolment, educational expenditure, school resources - Graduation rates, completed years of schooling, literacy levels, - Measures of competencies
Personal activities - Paid work - Unpaid work - Travel to and from work - Leisure time	- Work time, discrimination, training opportunities, etc. - Number of hours spent travelling to work, cost of transport, - Number of leisure hours, quality of leisure
Political representation and governance	- Democratic participation - Existence of free media - Constitutionally-enshrined guarantees - Independent judicial system
Social ties	- Membership of associations and organisations - Voluntary work - Relations with relatives and neighbours
Environmental conditions	- Premature deaths due to atmospheric pollution - Accession to water and environmental-related services - Exposure to harmful levels of noise or pollution
Personal insecurity	- Victimisation surveys - Domestic violence, violence due to armed conflicts taken into account
Economic insecurity	- Risk of loss of job in near future - Proportion of persons without health insurance - Measurement of old-age related economic risk

These various dimensions of the quality of life raise the question of how to aggregate them. As the Commission points out, this is the greatest challenge when assessing the quality of life. The commonest method is the one illustrated by the UNDP's Human Development Index (HDI)[6]. The HDI aggregates three magnitudes (the logarithm of GDP, life expectancy, and literacy rate) by an arithmetical mean. In this type of approach, however, controversy surrounds the choice of indicators, their treatment (logarithm of level, rates, etc.), and weightings. In addition, the aggregated magnitudes represent averages for each country; in particular, they do not taken into account the distribution of these dimensions within the population. Rather than try to summarise the greatest possible quantity of information within a synthetic indicator, the Commission suggests using a series of measures, each representing an aspect of the quality of life.

3.2 Perceptions of quality of life are another subjective element that needs to be measured at the level of the individual

Another dimension of the quality of life to be borne in mind is the fact that it is purely subjective, having to do with people's psychology, personal experience, etc. Here, quality of life is measured at the level of the individual via survey data. Generally, it is not easy to reach clear conclusions or to make international comparisons with this type of approach. Nevertheless, the use of subjective data does highlight interesting aspects of the quality of life. Examples include the Easterlin paradox, namely the gap observed in the United States in the 1970s between subjective well-being and GDP growth rate. More recently, subjective data have pinpointed the high cost of unemployment in terms of subjective well-being: the unemployed feel less satisfied than people in work (Clark and Oswald, 1994). In a similar vein, even for an identical income, people of working age report being less satisfied than younger or older age groups (see for example for France, Afsa and Marcus, 2008). Well-being after all, depends on objective and subjective factors, some of them identifiable, some unobservable, which is why subjective measurements of the quality of life remain confined within the academic sphere, for the time being.

3.3 Other aspects of the measurement of the quality of life that argue in favour of using a range of indicators rather than composite indicators

Finally, several questions relating to the measurement of the quality of life embrace all of the foregoing dimensions. The first concerns inequality with regard to the quality of life. This is because, while each of the aforementioned aspects affects the quality of life, its distribution within the population also plays a role. We have already discussed the means of analysing income dispersal and income or wealth inequalities. However, what holds for economic magnitudes is less clear in the case of non-monetary aspects. Even when it is possible, a discussion in terms of distribution around the mean can prove to be irrelevant, as in the case of the distribution of life expectancy, for example. It is important to carry out specific measurements of inequalities for each non-monetary dimension of the quality of life, giving all inequalities equal weighting.

The second question concerns the linkage between the dimensions of quality of life. The aforementioned dimensions are not independent of each other. They may influence each other (for example, education can influence one's state of health). Although these links have been little-measured as yet, their identification would make an invaluable contribution to public policy.

4. The measurement of the sustainability of social progress including environmental progress: much still remains to be done

One essential dimension of the measurement of economic performance and social progress concerns the notion of sustainability. This notion transcends the framework of the preceding sections since it introduces the dimension of time: each generation has to bequeath following ones a global capital at least equal to the one inherited from previous ones. Sustainability is therefore not a static notion but a dynamic one. This applies to environmental questions in the first place, with reference to natural resources in particular. Sustainability can then be broadened to all forms of capital, not only to natural capital but also to physical as well as human capital.

A vast field of study has been devoted to the measurement of economic and environmental sustainability, and the literature has given rise to a wide array of measurement instruments, including dashboards, composite indices, adjusted GDP, and so forth (see Table 2). Each of these adequately captures one or more the dimensions of sustainability but overlooks the others. Finally, none of them appears to be capable of analysing sustainability as a whole.

The shortcomings of existing instruments bear witness to the complexity of the question of sustainability and there is no lack of issues to ponder. The first need is to arrive at a precise definition of the notion of sustainability. This necessarily implies comparing a desirable state (of consumption, for example) with the existing situation. Measurements that fail to integrate this comparative aspect are therefore unsuitable. We also need to consider the possibility of combining all of the dimensions of sustainability (economic, environmental, etc.) into a single measure. Over and beyond the methodological problems this raises, this approach would correspond to the concept of "weak" sustainability, meaning that the various dimensions of sustainability can be mutually offsetting. "Strong" sustainability, on the other hand, claims that each dimension is important in its own right because there are threshold beyond which the over-consumption of a type of capital, environmental or human, is irreversible; compensation between capital compoments will be unable. In particular, the instruments of the type "dashboard" or "adjusted net saving" seem more relevant than composite indices or green GDP to measure sustainability on a satisfactory way.

Faced with these methodological and conceptual uncertainties, the Commission suggests what it terms a pragmatic approach, consisting in using a monetary indicator for economic sustainability, and various physical indicators for environmental sustainability. But most of the work has yet to be done.

(6) See the UNDP's website devoted to the HDI: http://hdr.undp.org/en/statistics/indices/hdi/

Table 2: Some measurement instruments of economic and environmental sustainability

Type of instrument	Description and examples	Advantages	Shortcomings
Dashboard	- A set of indicators	- Takes into account many dimensions of sustainability	- Information is highly heterogeneous
Composite indices	- Osberg and Shape index of economic well-being - Index of environmental sustainability (IES) - Index of environmental performance (IEP)	- Synthetic	- Ambiguous results - The underlying notion of sustainability is not clearly defined
Adjusted or green GDP	-Nordhaus and Tobin index of sustainable economic welfare (ISEW) - Green GDP	- Derived from traditional notion of GDP - Uses an extended national accounting framework (satellite environmental account)	- Problems relating to valuation of outputs (e.g. polluting emissions) - Notion of sustainability poorly-defined
Adjusted net saving	Concept of saving expanded to all types of wealth (physical, human, natural)	- Change from a logic of flows to one of stocks, more consistent with notion of sustainability	- Problem of putting a value on different forms of capital - Low weight given to major environmental damage (CO2 emissions)
Ecological footprint	Land surface area needed to maintain pace of consumption	- Instrument explicitly based on notion of sustainability	- Saving and technological progress play no role - Instrument better-suited to global than to national level

5. Improving the measurement of economic performance and social progress implies concerted action within the international forums and national governments

5.1 Emphasis should be placed on an approach via a dashboard consisting of a wide array of economic and social indicators, some of which exist already, while others have yet to be constructed

The institutional and political implementation of the Commission's findings needs to be based on a four-point approach:

1. Working to improve the measurement of GDP itself, via the measurement of public services, defensive expenditures, taking domestic output into account, placing a value on leisure, etc.
2. Making parallel use of alternative indicators relating to economic dimensions not reflected in GDP, particularly regarding the household's point of view and questions of inequalities. Some of these indicators exist already, such as net domestic product, national disposable income, household disposable income, adjusted disposable income, median income, etc. Others still remain to be built from scratch, in particular ones capable of integrating the environmental dimension;
3. Proposing specific indicators reflecting non-economic dimensions of social progress, namely those relative to quality of life;
4. Abandoning the idea of a single indicator of economic and social performance in favour of the concept of a "dashboard" comprising a limited series of well-chosen indicators, GDP included, encompassing an array of dimensions and providing a vision at once rich and synthetic of the state of the economy and society, like a car dashboard with dials (for performance) and warning lights to indicate inequalities, sustainability, and so forth.

5.2 The success of this project depends on the involvement of all international forums and a major effort on the part of national statistics systems

The Commission's findings are intended to spark political debate and give rise to executive decisions by international bodies and national authorities. Several international institutions have already expressed their keen interest in this work programme:

- the OECD forum on the measurement of progress that took place in Busan (South Korea) at the end of October focused attention at the Stiglitz commission;
- the European Commission has launched a project to create an environmental index and is contemplating a change in the legislative framework in order to come up with a environmental sustainability dashboard in 2010;
- the International Labour Organisation has emphasised the value of taking the non-economic dimensions of the quality of life and inequalities between households into account;
- the IMF has endorsed the need for batteries of indicators in order to measure the economic and social state of a society.

National statistics systems need to make a considerable effort to modify-or rather vastly enrich-their national accounting frameworks by creating satellite accounts, by harnessing survey data, in particular. Measuring non-market activities more effectively, taking account of inequalities and non-economic dimensions of the quality of life, building satellite environmental accounts-all these are complex exercises that demand resources and means.

France has pledged to implement the Commission's twelve recommendations and to promote the project on the international stage. **Christine Lagarde, Minister of Economy, Industry and Employment has thus asked the OECD that it implements international methodological standards consistent with the recommendations of the Stiglitz Commission**. All of the international organisations, supra-national and national institutions should become involved. The debate on this theme will be placed on the agenda of forthcoming international meetings and gatherings. The issue is urgent, because of the current financial crisis as well as the growing gap between objective measurements and people's subjective perceptions. The project's success should lead to a change in mentalities and in our visions of the world. This change is inconceivable without a concerted effort on the part of all of the partners concerned.

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*The author would like to thank the INSEE services for their careful review.

Box 1: **Brief recapitulation of methodological principles guiding thinking on the measurement of well-being running through the Commission's twelve recommendations**

- Moving from the notion of output to one of income: this implies measuring material well-being from the standpoint of income and consumption rather than production (recommendation 1). This notably entails emphasising the household perspective (recommendation 2). The measurement of income ought also to take non-market activities into account (recommendation 4).
- Moving from reasoning in terms of flows to reasoning in terms of stocks: Society should be described in terms of stocks and flows, as for a company balance sheet (recommendation 3). For households, this means accounting for the value of their assets in measuring living standards. For businesses, it means measuring the stock of physical (and human) capital. From the standpoint of sustainability, we need to add in the stock of natural capital.
- Allowing for the diversity of situations: this implies moving from a conceptual framework based on the mean to a framework that encompasses the diversity of situations. In measuring living standards, this in turn means giving consideration to distributions of income, wealth, and structures of consumption (recommendation 4). In assessing the quality of life, it is necessary to take into consideration the many dimensions of the quality of life and their distribution within society (recommendation 7). From the point of view of sustainability, the various aspects of sustainability must be taken into account, and they must be given equal weighting (this is the concept of "strong" sustainability).
- Emphasising the quality of life: the measurement of well-being should not be confined to material well-being. Quality of life depends on non-economic factors. It is important to develop the measurement of objective factors such as health, education, and environmental conditions (recommendation 6) and the measurement of subjective factors (recommendation 10). Consideration should also be given to the linkage between these various aspects of the quality of life (recommendation 8). Synthetic indicators of the quality of life could then be developed (recommendation 9).
- Adopting a pragmatic approach to the measurement of sustainability: sustainability should be measured by means of a dashboard of indicators of economic sustainability (recommendation 11). In the present state of our knowledge, tracking environment sustainability demands specific measures supported by physical indicators (recommendation 12).

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