

## **AGGREGATE MEASURES OF WELFARE BASED ON PERSONAL CONSUMPTION**

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### **INTRODUCTION**

Economic growth is generally understood as something that makes us better off. Finding out whether such conventional wisdom is true assumes that we are able to define what it means to be better off and we are able to measure it. In economics, the concept of **welfare** can roughly represent it. Economists think that welfare is derived from consumption of goods and services, but most of them do recognize that material consumption is not the only aspect of welfare. Though economists would agree on this general conclusion they have not devised a “welfare function” that would be generally accepted. When constructing a measure of welfare, economists usually start with consumption of goods and services and add and deduct items that are thought to affect welfare in a positive or negative way. Deciding which items to include in a **measure of welfare** is a controversial issue, but it is not the only one. Though we may be pretty sure that some particular item should be considered, such as leisure for example, we will have to overcome problems with defining, measuring and valuing this item in monetary terms.

This paper deals with the aggregate measures of welfare based on personal consumption. In the first part, I point out the deficiencies of gross domestic product (GDP) as a measure of welfare. Then, two measures that were specifically constructed to measure welfare are analyzed. The final part discusses conceptual issues associated with personal consumption as a basis for measures of welfare. I inquire here whether personal consumption may be justified to serve this purpose. A concluding remark is given to the concept of welfare in economics.

## GROSS DOMESTIC PRODUCT

One of the most commonly used measures of economic activity is **gross domestic product**, which represents the market value of all final goods and services produced in the territory of a given country in a year. GDP and other aggregate measures were specifically developed to measure economic activity. Simon Kuznets, one of the founders of national accounts statistics, was afraid that these indicators may be misinterpreted as measures of welfare. Already in the 1930s he warned in a report to the US Congress that the “welfare of a nation can ... scarcely be inferred from a measurement of national income” (Kuznets 1934, 7). However, his warning was disregarded and GDP has been generally interpreted as a measure of welfare.

There are three broad types of deficiencies of GDP as a measure of welfare. First, GDP is a measure of production, while welfare is associated with consumption.<sup>1</sup> Goods and services produced in the current year (and therefore included in GDP) may be consumed both now and in the future, and the part that is consumed in the future does not contribute to current welfare.<sup>2</sup> On the other hand, some goods and services bought in the past do contribute to current welfare though they are not included in the current GDP. Second, GDP does not embrace externalities. For example, as a side effect of its production, a factory may cause the quality of drinking water to deteriorate in a town. This cost is external to the factory, but it is internal from the point of town inhabitants (or, more generally, from the point of society). Value that was added to the production by the factory is included in GDP, but the loss of welfare from deterioration of the quality of drinking water caused by the production is not.<sup>3</sup> Third, GDP includes only market transactions, excluding everything outside the official market framework. As a typical example, “production” for one’s own household (eg. cooking, childcare, house repair) is not included, though there is no reason why it should not contribute to welfare as opposed to production traded in the market. More generally speaking, welfare is not derived from market transactions only. Some non-market activities or phenomena, such as the amount of leisure, distribution of income in the society or a rate of crime, may contribute to welfare as well.

## MEASURE OF ECONOMIC WELFARE

Since the 1960s, some authors have argued that continuing economic growth might not be desirable since it would no longer increase welfare (e.g. Mishan, 1967). If these critics were right, it would make no sense to promote economic growth which should be reflected in a government policy. Economists William Nordhaus and James Tobin (1973) decided to find out whether such criticism was justified. In a seminal article *Is growth obsolete?*, they focused on the relationship between economic growth and welfare. For this purpose they constructed a new indicator of welfare and called it a **measure of economic welfare** (MEW). The measure was based on gross national product (GNP) to which Nordhaus and Tobin made three types of adjustments.

First, the authors had to reclassify GNP expenditures as consumption, investment, and intermediate expenditures, since only consumption contributes to welfare. They started with deduction of capital depreciation since output required to offset it does not directly contribute to welfare. They arrived at what economists call net national product (NNP). Further, many durable goods are counted as final consumption in NNP, though they are in fact capital that provides its service in future years. Nordhaus and Tobin therefore deducted purchases of durable goods from NNP. Government purchases were reclassified as well, for example, education and health expenditures were treated as capital investment. Then, the authors subtracted those expenditures that do not directly contribute to welfare, but have intermediate or instrumental nature. These may be both private (eg. the costs of commuting to work) and government (eg. national defense or road maintenance). Second, the value of leisure and non-market production was imputed since both of these contribute to welfare. Imputations were made also for services of those items that were classified as capital rather than final consumption. Third, Nordhaus and Tobin noted that economic growth may generate external costs that are not reflected in GNP. They thought that these “disamenities” are mostly related to urbanization, so subtraction was made for these costs.<sup>4</sup>

The main aim of Nordhaus and Tobin was not just to create some measure of welfare. MEW was a tool to find out whether there had been a sufficient correlation between economic growth and welfare, and therefore whether economic growth was still a good policy to pursue. They applied MEW to the US economy for the period of 1929–1965 and found that while NNP per capita was growing 1.7% on average, MEW per capita only 1.1%.<sup>5</sup> Yet, the

growth rate of MEW per capita was enough for them to conclude (Nordhaus and Tobin 1973, 521 and 532): “The progress indicated by conventional national accounts is not just a myth that evaporates when a welfare-oriented measure is substituted. ...Although GNP and other national income aggregates are imperfect measures of welfare, the broad picture of secular progress which they convey remains after correction of their most obvious deficiencies.” This conclusion was questioned by Daly and Cobb (1994) using the numbers of Nordhaus and Tobin. Dividing their period 1929–1965 into two halves, they found that the correlation between GNP per capita and MEW per capita fell substantially in the second period (1947–1965). While GNP per capita was rising 2.2% annually, MEW per capita by 0.4% only.<sup>6</sup> As Herman Daly (1996, 151) later put it: “This suggests that GNP growth at this stage of U.S. history may be a quite inefficient way of improving economic welfare – certainly less efficient than in the past.”

## INDEX OF SUSTAINABLE ECONOMIC WELFARE

At the end of the 1980s, economist Herman Daly and theologian John Cobb decided to develop a new measure of welfare embracing the sustainability dimension. They started with reviewing the results of Nordhaus and Tobin and then constructed their own indicator called **index of sustainable economic welfare** (ISEW). They first applied it to the United States but since then, the ISEW has been computed for several countries.<sup>7</sup> The studies employed different methodologies, and there are probably no two of them that have used exactly the same procedure. However, though they differ they all start with personal consumption which is adjusted by items that affect welfare and/or sustainability. I will not describe the complete methodology of ISEW which can be found in the original work by Daly and Cobb (revised version 1994) or more recent studies (eg. Talberth et al. 2007). Here, I should mention three important differences between Nordhaus and Tobin’s MEW and Daly and Cobb’s ISEW. First, ISEW is more comprehensive, embracing more items than MEW. For example, personal consumption is weighted by index of income inequality, subtraction is made for many types of environmental costs, and more expenditures are classified (and therefore deducted) as defensive. Second, ISEW does not include imputation for leisure. Third, since “S” in ISEW stands for “sustainable” it includes items that affect sustainability, such

as depletion of non-renewable resources and long-term damages caused by climate change.

Daly and Cobb calculated ISEW for the US economy in the period 1950–1990. In the whole period and in each decade, GNP per capita was growing more than ISEW per capita. More importantly, while there was a relatively high correlation between GNP per capita and ISEW per capita during the 1950s and 1960s, the correlation has weakened since the 1970s. Comparing the growth rates of GNP per capita and ISEW per capita for three decades since the 1960s, the former has been decreasing very modestly (2.64%, 2.04%, 1.82%), while the latter has been falling more intensively, ending with a negative growth rate in the 1980s (1.57%, 0.21%, -0.43%). If ISEW is a credible measure of sustainable economic welfare (whatever that could mean), then it seems that at least since the 1970s the growth of GNP has not been a good policy to achieve sustainable economic welfare. However, there are two problems associated with this proposition.

First, ISEW has been criticized regarding what items it includes and excludes, as well as how they are calculated. It is not the aim of this paper to discuss these issues, but I should say that the assumptions used for calculation of some items are indeed questionable. More importantly, it has been argued that ISEW is methodologically inconsistent. As Neumayer (1999, 95) put it: “The problem with the ISEW is not so much the imperfections of its components – in some way or other every social indicator is imperfect. The problem rather is that it promises to measure something, namely current welfare and sustainability that cannot reliably be measured in one indicator.” The integration of welfare and sustainability into one indicator is problematic since these concepts are quite distinct and there is no clear relationship between them. There are items in ISEW that affect welfare but not sustainability and vice versa. Then, the interpretation of such indicator is difficult indeed. As Neumayer (2004, 5) further noted: “A rising indicator could mean rising welfare and sustainability, rising welfare and a decline in sustainability (that is less in value terms than the rise in welfare) or falling welfare and a rise in sustainability (that is more in value terms than the fall in welfare). Which one is not clear. The lesson is that one needs two separate indicators to trace two distinct concepts.” I agree with Neumayer that **welfare and sustainability** should not be integrated into one indicator. However, it should be noted that this discussion focuses on current welfare. If we expand our definition of

welfare to include both current and future generations, then this conclusion may no longer hold true.

## **PERSONAL CONSUMPTION AS A BASIS OF WELFARE**

In economics, welfare is usually understood as utility or satisfaction derived mainly from consumption of goods and services. This seems intuitively correct and most of the authors attempting to construct a measure of economic welfare stay within this framework. In 1976, Fred Hirsch argued that human satisfaction depends on the consumption of both ordinary goods and “positional” goods. The value of these goods resides rather in their relative ranking in comparison to its substitutes than in their absolute quality. These goods may change in time and place. For example, a car is not a positional good in a society where most households own a car. However, though affordability and the absolute quality of cars may improve over time, some cars are always better than others. A person having a car may derive welfare both from the absolute quality of the car and relative ranking of the car in comparison with cars of his neighbors or countrymen. It is not clear to what extent people derive utility from absolute and relative values respectively, and this may differ with changing circumstances. British philosopher John Stuart Mill (1907) argued a hundred years ago that human satisfaction is determined by a relative rather than absolute amount of wealth: “Men do not desire to be rich, but to be richer than other men.” Though Mill’s remark is about wealth, a similar conclusion could be made for consumption. The general increase of consumption in society may add to welfare only to the extent of absolute value. However, if most welfare is derived from the relative value, as Mill argued, then rising consumption would contribute to welfare only minimally.<sup>8</sup>

Taking this to extreme, it would make no sense to measure welfare by the absolute amount of personal consumption. However, the argument that welfare is not related to the level of consumption at all runs counter to the real life experience of most people and can also be refuted theoretically. Given an option to choose between being wealthier than average in a poorer society and less wealthy than average in a wealthier society, we may possibly choose the first one, though in absolute terms we would be less wealthy than with the second option. However, if the first situation would not allow us to satisfy even basic needs, it is right to suppose that we would choose

the second option. Yet, this cannot be an argument for rich countries where the basic needs of most people are satisfied. However, given an option to choose between two wealthy societies where our relative position would be the same, most of us would choose the more affluent one.<sup>9</sup> This can serve as a theoretical foundation that allows us to start with personal consumption when constructing a measure of welfare.

Having said that, there are reasons why this conclusion should be handled with care. I have argued that personal consumption is what people value and therefore may be justified as a basis for measuring welfare. However, this is not to say that it is perfect or the only criterion of welfare. First, it is reasonable to assume that there are diminishing returns to consumption. Higher consumption may make us still better off, but the increase of welfare may not be as large as the increase in consumption would suggest. Second, there are two approaches to welfare in economics depending on whether welfare of a person is inferred from his behavior or subjectively judged by that person. According to the standard economic approach, individual welfare is objectively observable from behavior. That this behavior is traditionally taken as consumption and leisure does not mean it is the only behavior that makes people better off. Third, there is a second approach to welfare that has remained almost unexplored by economists until relatively recently. This approach, often called **happiness** or subjective well-being, is based on subjective judgments that people make of their lives. Instead of inferring welfare from people's behavior, they are asked in surveys how satisfied they are with their lives or how happy they are. It is not unusual that empirical results for welfare (as measured by indicators based on personal consumption) and happiness (as measured by subjective judgments) do not move in the same direction or by the same distance. For example, a general increase of income in a society is reflected in higher consumption though people may not judge themselves to be happier than before (see side note number eight). The relation between welfare and happiness is more complicated than this and it is not my intention to resolve it in this paper. What I want to point out here, however, is that the conclusion that personal consumption is justified as a basis for measuring welfare refers only to the first approach to welfare.

## CONCLUSION

GDP is not a measure of welfare and it was never intended to be so. As a response to critics claiming that economic growth was no longer desirable policy, Nordhaus and Tobin constructed MEW and argued that there still had been a sufficient correlation between economic growth and welfare. Daly and Cobb questioned their results on the grounds that this correlation got much weaker in the latter part of the period analyzed by Nordhaus and Tobin. Then ISEW was constructed by Daly and Cobb to show that economic growth had no longer been increasing sustainable economic welfare. Though most of the ISEW studies confirmed this hypothesis, there are important conceptual problems related to ISEW. I agree with Neumayer that current welfare and sustainability should not be integrated into a single-number indicator since the results do not have clear informative value. Finally, I have argued that consumption is still what people value and therefore may be used as a basis for measuring welfare. It should be noted, however, that there is another approach to welfare that may be perceived as complementary to the dominant concept based on observable behavior.

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## Notes

- <sup>1</sup> Strictly speaking, GDP is a measure of value added rather than production. However, what is important here is the distinction between production and consumption.
- <sup>2</sup> In economics, welfare can be understood either as current (instantaneous) welfare or intertemporal welfare. According to the first approach, production can be counted as welfare only to the extent of its consumption in the present period. Intertemporal welfare is a wider concept, embracing both current and future welfare. GDP, therefore, cannot be a measure of current welfare since it includes both current and future welfare (or “consumption” and “investment” as they are called in national accounts). The term welfare used in this article should be understood as current welfare only.
- <sup>3</sup> The same situation can be handled with the concept of defensive expenditures. Town inhabitants may decide to “defend” themselves against the welfare loss by spending money on water filters or bottles with drinking water. Rather than increasing welfare, these expenditures merely restore the former level of welfare. Therefore, what is deducted from GDP is not externality itself, but the defensive expenditures that were made in reaction to the damage. Conceptually it is more correct to deduct externalities because defensive expenditures may either underestimate or overestimate the loss of welfare. In practice it is easier to work with defensive expenditures since they are, unlike externalities, revealed in markets. The relation between externalities

and defensive expenditures is more complicated than that, and this discussion would go beyond the scope of this paper.

- <sup>4</sup> Nordhaus and Tobin made a distinction between externalities and intermediate expenditures. Some expenditures classified by the authors as intermediate are what economists now call defensive expenditures.
- <sup>5</sup> Nordhaus and Tobin calculated several variants of MEW based on different assumptions about the impact of technological progress on leisure and non-market production. Numbers in this paper are from their preferred variant of MEW which assumed that the productivity of household work had increased with the real wage while the productivity of leisure had remained constant.
- <sup>6</sup> For consistency with other studies, Daly and Cobb compared MEW with GNP rather than with NNP as Nordhaus and Tobin. The differences are not large enough to significantly affect the above-mentioned conclusions.
- <sup>7</sup> Also, some authors decided to rename it as genuine progress indicator (GPI), and today both names are used in studies. In this paper, I use the term ISEW to represent all measures that were constructed based on the original ISEW by Daly and Cobb.
- <sup>8</sup> A similar conclusion can be inferred from the “Easterlin paradox” for happiness. Richard Easterlin found that happiness does not increase with rising income as we would expect. As Easterlin (1995, 44) explains: “Today, as in the past, within a country at a given time those with higher incomes are, on average, happier. However, raising the incomes of all does not increase the happiness of all. This is because the material norms on which judgments of well-being are based increase in the same proportion as the actual income of the society.”
- <sup>9</sup> In a methodology paper for a genuine progress indicator, Anielski and Rowe (1999, 2) have argued that increasing material goods and services beyond a certain limit may leave us “empty and devoid of some greater meaning of life” (but they nevertheless based their measure on personal consumption). Though we may be sympathetic to such an argument, I guess that most people would still choose to live in a high-consuming society.