

# Khan Academy

## The limitations of GDP

### Lesson overview

Alas, nothing is perfect. And GDP is no exception. As much as economists like to use GDP as a measure of output, or even as a measure of a country's well being, GDP has some limitations when trying to answer those questions. GDP leaves out some production in an economy, such as the squash your mom might grow in the backyard, or other non-marketed goods. Even though GDP is frequently used to capture the wellbeing of a society, it was never intended to do that, and as a result it leaves out important aspects of well-being like pollution or even happiness.

### Key terms

Key Terms	definition
quality of life	(sometimes called "well-being") the standard of health, happiness, security, and material comfort of an individual, a group of people, or a nation
non-market transactions	economic activity that takes place in the informal sector (from babysitting, to lawn mowing, to illegal drug sales), sometimes called the gray market or the black market economy; non-market transactions are not recorded, taxed, or officially monitored by the government. Because of this, the output and income generated is not included in the calculation of a nation's GDP.
income inequality	when a disproportionate share of a nation's income is earned by a small minority of households; for example, when the top 10% 10% 10% 10, percent of households earn 80% 80% 80% 80, percent of the total income in a country, there is a high degree of income inequality; GDP does not account for income distribution in any way.
sustainability	the ability of a system to endure indefinitely into the future; an increase in GDP will only be sustainable as long as it does not deplete natural resources too rapidly nor exploit the environment in a way that diminishes the quality of life of the nation's households over time.
economic bads	any outcome from economic activity that creates negative value for society, such as air pollution from cars that harms human health and the environment; unsustainable economic growth may diminish the quality of life of a nation's people.
real GDP per capita	the real gross domestic product of a nation, divided by the nation's population; this measure is an indication of the average income of a nation's people

<b>Key Terms</b>	<b>definition</b>
<b>depreciation of capital</b>	the decrease in the value of a nation's capital stock over time; GDP accounts for investment in new capital but does not subtract the lost value of depreciated capital. Because of this, GDP may overstate the amount of economic activity in nations with rapidly depreciating capital stocks.
<b>Human Development Index (HDI)</b>	a composite measure of nation's social and economic development developed by the United Nations that includes measures of health, wealth, and education
<b>Genuine Progress Indicator (GPI)</b>	a measure of a nation's quality of life that includes the income and output measured by gross domestic product. This measure subtracts out the costs of negative effects related to economic growth such as crime, environmental degradation, resource depletion, and the costs of climate change. GPI nets the positives and negatives of economic activity to provide a more accurate measure of a nation's quality of life than GDP alone.
<b>Happy Planet Index (HPI)</b>	a measure of a nation's quality of life that includes survey results on happiness, life expectancy at birth, the degree of inequality across society, and the ecological footprint

## Key takeaways

### The limitations of GDP

GDP is a useful indicator of a nation's economic performance, and it is the most commonly used measure of well-being. However, it has some important limitations, including:

- The exclusion of non-market transactions
- The failure to account for or represent the degree of income inequality in society
- The failure to indicate whether the nation's rate of growth is sustainable or not
- The failure to account for the costs imposed on human health and the environment of negative externalities arising from the production or consumption of the nation's output
- Treating the replacement of depreciated capital the same as the creation of new capital

Alternative indicators have been developed to provide a more well-rounded measure of a nation's quality of life by different national and international organizations. These include:

- The Human Development Index (HDI)
- The Genuine Progress Indicator (GPI)
- The Happy Planet Index (HPI)

Each of these indexes is a composite measure weighing both income and non-income variables such as life expectancy, literacy rates, environmental indicators, measures of inequality and so on. By including these variables, they provide a measure of life quality that goes beyond the narrowness of a nation's GDP value.

## Common misperceptions

- Some people mistakenly think a higher income (and larger GDP) is correlated with a higher quality of life and more happiness, but only up to a certain income level. Some studies have actually found that beyond a certain income level, additional increases in income are no longer correlated with higher quality of life. Instead, other, non-income factors (such as the equity of income distribution and access to education and health-care) are more closely correlated with a happier, healthier society.
- Some of the poorest countries in the world may actually appear poorer than they really are if we only consider their official GDP figures. If a large percentage of the workforce is employed in the informal sector, then their incomes will not be reflected in the nation's GDP. As a result, the nation's GDP will appear smaller than it would be if all economic activity were included.

## How is national income measured?

From the simple circular flow of income, we can understand that the flow of economic output reflects three interconnected flows, all of which provide useful information to measure GDP. These flows refer to:

1. The **production** of 'final' goods and services - which excludes any intermediate production, plus taxes, less subsidies [technically, called the 'output method'].
2. The **income** received by individuals and companies when they produce a good or service. [the 'income method'].
3. The **net amount spent** on purchasing these goods and services - net, meaning total 'final' spending less import spending. [the 'expenditure' method].

The three methods produce similar, but not identical results. There are several reasons for this, but the variations are largely as a result of how the statistics are gathered, and the extent to which the income flow fails to record hidden transactions.

## GDP

For the purposes of comparing a country's **standards of living** over time, and for making **international comparisons**, the output/product methods is the **base method** used.

GDP measures the market value of 'final' goods and services produced within a country, where gross means that any depreciation or capital consumption resulting from domestic (national) production is not considered – in other words gross figures are unadjusted for depreciation.

## How useful are GDP statistics?

There are two separate questions to consider when assessing the use of the GDP metric.

1. Firstly, does GDP give an accurate picture of **economic output** and activity?
2. Secondly, is GDP a useful metric for assessing **standards of living** and wider economic progress and **wellbeing**?

## Limitations of using GDP to make comparisons

Using national income data to draw conclusions about what is happening in a **single economy** over time (or **between countries**) is fraught with difficulty. The following limitations should be noted:

### Hidden transactions are missing

The problem of **hidden transactions** can affect comparisons over time, and between countries. While hidden or unrecorded transactions add value to an economy and may

improve personal living standards, they are not officially collected or recorded and, therefore, not included in raw GDP data.

This is likely to mean that countries where transactions are hidden and unrecorded, including many developing countries, have a relatively higher GDP than indicated by unadjusted GDP data. Also, over-time, countries may track transactions more effectively, and find ways to record economic activity. This means that some of the historical increase in GDP could simply arise as a result of more effective data collection. Most economies make estimates of the size of their hidden economy, but these are, estimates, never-the-less.

## **Income distribution**

GDP figures on their own make no reference to the distribution of income across a population. For example, GDP per capita is a simple (mean) **average** and gives no clue about how the average income is distributed. Incomes in one country could be more evenly distributed (or less so) over time, but this would not be included in raw national income data, and average incomes per head may remain unchanged.

This is also an important limitation when considering comparisons between countries. For example, while the average per capita GDP in India has increased considerably over the last 20 years, from around \$440 in 2000 to just over \$2000 in 1990 <sup>[3]</sup> and clearly provided benefits in terms of reduced absolute poverty and improved living standards for many, most metrics <sup>[4]</sup> of inequality suggest that over the same period inequality has risen. See the [Kuznets curve](#).

## **Quality variations**

Over time products and services improve and develop, and while every effort is made to factor this into comparisons over time, including using **identical weights** and **volumes**, many products have improved considerably over time. This means that GDP figures between 2000, and 2020 are unlikely to reflect the fact that products have changed in quality. The same point can be made with international comparisons.

## **Hours worked**

GDP figures may mask how resources are used in the process of generating output. Over a five year period, GDP could rise by 20%, but some of this could be the result of longer working hours which reduce the quality of life. The same point is relevant to international comparisons. Two countries could have an identical GDP per capita figure, but the number of **hours worked** could be quite different. Also, **working conditions** can vary considerably, meaning that comparisons are distorted.

## **Price differences make comparisons difficult**

However, when GDP statistics (or indeed any economic or financial statistic) are used for comparative purposes, they may not provide an accurate assessment of output and economic activity between countries or over time. When comparing countries in terms of price differences, problems start when GDP statistics are converted into to a common currency.

Initially, each country will compile its statistics and report the value of its **GDP in its local currency**. For example, Australia reports its GDP in Australian dollars (AUD), and Norway reports in Krona (NOK). In 2019, Norway's GNP was 3,569 billion NOK, while in the same year, Australia's GDP was worth approximately 1.4 trillion in Australia's own currency (AUD). However, **comparisons are impossible**, so the value of GDP is, by convention, converted to US dollars, using the prevailing exchange rate (or an average rate over a period of time).

For example, at a market exchange rate of US\$1 = A\$1.30, **Australia's GDP in 2019 was US\$1.08 trillion**, and for Norway, with a rate of US\$1 = 0.1137 (NOK), **Norway's GDP in US dollars was US\$405 billion**. Now, comparisons are possible, and the converted GDP, along with population figures, can provide a GDP per capita figure for both countries, which were \$55,000 for Australia, and \$75,400 for Norway (2019). [Source: [World Bank](#)].

However, for several reasons, simple conversions using the relevant market exchange rate may provide misleading results regarding the value of output.

## Purchasing Power Parity (PPP)

Results may be misleading because a US dollar might buy different quantities of comparable goods and services in the countries being compared. If a single dollar buys more in Australia than in Norway, then the purchasing power of a dollar is higher in Australia.

The solution is to adjust the market exchange rate to **eliminate the effects of price differences** in the countries compared. GDP (or other values) can then be adjusted to find a more realistic value – a process called **adjusting for PPP**.

### Hypothetical example

Price differences in countries form the basis of adjusting the exchange rate. For example, if a bottle of *Coca-Cola* costs \$1 in the US, and the same bottle costs \$AS 1.4 in Australia, then the PPP for Coca-Cola between Australia and the United States is **1.4/1**. So, for every dollar spent on a given quantity of Coca-Cola in the US, 1.4 Australian dollars would have to be spent in Australia. In Norway, the same bottle of Coca-Cola might cost the equivalent of \$2.00, hence the PPP between Norway and the US is 2.0/1 - for every dollar spent on Coca-Cola in the US, the equivalent of \$2.00 is needed in Norway.

The same process if used to construct PPPs for a wide range of products. <sup>[2]</sup>

## How does using PPPs affect international GDP listings?

When using exchange rates adjusted for PPPs, the IMF forecast for international GDPs for 2021 puts China in first position (from second, using market exchange rates) and raises India to third position (from sixth, using market exchange rates.) Russia's position also rises from eleventh to sixth.

## Exchanges rates reflect internationally traded goods

Of course, one problem with making comparisons is that current exchange rates reflect the international flows of traded goods. So, adjusting the exchange rate to consider price differences for Coca-Cola is relatively straightforward.

However, the value of output produced in a country is not just about internationally traded goods, but non-traded local goods, and especially services, such as lawyers, accountants, hairdressers, and cleaners.

The fact that local services are not internationally traded makes the use of current exchange rates much less useful for calculating GDP values and presents challenges for those create PPP adjustments.

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These issues are relevant to the first question - how useful is GDP as a narrow measure of economic growth?

## Economic wellbeing

The second question regarding the value of GDP is whether it is an **indicator of the wellbeing** of a country's citizens, and indeed, whether an increase in economic growth always generates benefits.

This was the question posed by English economist, [E J Mishan](#), who in 1965 produced a strong critique of the assumption that economic growth only brought about benefits. In his ground breaking *The Costs of Economic Growth* <sup>[6]</sup> [published in 1967] he argued that growth is likely to lead to widespread [negative externalities](#), which would reduce the value of any growth. Mishan became one of the first 'environmental economists' and his work and ideas have had a significant impact on the development of welfare economics, including the use of cost-benefit analysis.

## Environmental degradation

Since the work of Mishan, economists have widened the debate, both in terms of raising questions about the benefit of economic growth, but also the extent to which GDP should be regarded as an indicator of wellbeing.

GDP figures clearly do not include any reference to the impact of environmental degradation on the welfare of a country's citizens. As countries get richer, and GDP grows, production and consumption externalities are likely to increase. The world's biggest polluters are not only the developed 'rich' economies, but also the rapidly emerging countries including China, India and Brazil. <sup>[5]</sup>

This means that other measures, such as that of [Tobin](#) and [Nordhaus's Measure of Economics Welfare \(MEW\)](#), widen the definition of wellbeing to move away from the narrow use of unadjusted GDP figures and to include degradation of the environment. This was further developed in the [Index of Sustainable Economic Welfare \(ISEW\)](#).

## Public spending may not add to wellbeing

Public spending, which is included in the national income accounts that help generate GDP figures, may not add to the wellbeing of citizens. The case of the *Great Pyramids* in Ancient Egypt is often cited as an example of colossal spending and the use of scarce resources that benefitted a small number of Pharaohs and their administrators and had little impact on the wellbeing of the majority of Egyptian citizens.

Of course, many of the projects of the Pharaohs did benefit citizens more widely, including using gangs of slaves to dredge the Nile to ensure a continued water supply. The point here is that government spending is not, on its own, necessarily going to increase wellbeing - even taking into account the wider [multiplier effects](#) of spending.

## Other ways to track economic wellbeing

### The Genuine Progress Indicator - GPI

The **Genuine Progress Indicator (GPI)** is one of several attempts to develop a comprehensive index of the overall economic progress an economy is making and includes social and environmental categories.

There are different versions of this, and a several countries have adapted the concept to develop their own GPI. Of course, with so many versions using the GPI for comparative purposes is made difficult.

There is also the broader criticism that as economists have looked for ever wider and more comprehensive indices, and moved away from narrow GDP indicators, some categories included are increasingly hard to value.

## Conclusion

The great benefit of GDP is that it is relatively **simple** to measure, employs **common** national accounting standards, is **easy to understand**, and is **frequently measured** and published. In contrast, more comprehensive indices are complex to create, have no agreed standards, are less easy to understand, and cannot be produced on a regular basis.

When the analysis is extended to consider economic development, the [Human Development Index](#) (HDI) has been the widely accepted metric since it was launched by the United Nations Development Programme in 1990.

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