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DECONSTRUCTING ECONOMIC INDICATORS: GROSS DOMESTIC PRODUCT (GDP)

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> *"While the GDP and the rest of the national income accounts may seem to be arcane concepts, they are truly among the great inventions of the twentieth century."*
>
> – Paul Samuelson and William Nordhaus (1998)

GDP is, at its essence, the total value of a country's production in a given year. The indicators derived from it, such as GDP growth and GDP per capita, are often used as KPIs or major policy objectives.

Almost everyone has heard of these three little letters. But what is often forgotten is that GDP is an estimate based on a system of accounting, not a fact of nature. As a result, there are numerous misconceptions about the role of GDP.

This note aims to clear the confusion by explaining what GDP is and what it is not.

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INTRODUCTION

For the last few decades, Gross Domestic Product (GDP) has enjoyed a preeminent position in policymaking and national planning. Though it began life in the 1930s as an economic indicator to estimate the total value of a country's production, GDP has transformed into a tool with considerable political leverage these days.

Indeed, the pursuit of high GDP growth has become akin to the holy grail for politicians, serving as a key performance indicator – a benchmark of 'success'. To add to its glamour, international organisations like the World Bank use variants of GDP, including per capita measures adjusted for population size, to compare nations' development levels.

What is often forgotten amidst all of this glorification is that GDP is not a fact of nature like gravity. Instead, it is the product of a system of accounting using a series of estimations. And as a result, it is by no means perfect. Its appropriation into politics has perpetuated even more misconceptions about the true meaning of GDP.

This note therefore aims to answer two crucial questions: what does GDP really mean and in what ways is it flawed as a metric of development?

WHAT GDP IS

Definition and measurement

> *"[GDP] squishes all of human activity into a couple of digits, like a frog jammed into a matchbox."*
>
> – David Pilling (2018)

In everyday language, GDP is synonymous with economic size. But what exactly does this imply?

Let's start with definitions. GDP is the 'total value of production'[1] in a country during a given period, most commonly a year. Production in turn is defined as 'an activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital, and goods and services to produce outputs of goods and services'.[2]

To determine this production value, there are three methods used that all yield the same outcome, but for the sake of brevity, we will consider only the *expenditure approach*.[3]

Using this approach, GDP is measured by calculating the 'total amount spent on final goods and services'[4] produced in a country.[5] This is the most common measure of GDP, and the one cited in textbooks the most often. The logic for using this method is that every purchased product was, by design, produced and sold (or fit for sale) on the market, so tracking purchases allows a country to estimate production.[6]

1. Department of Statistics Malaysia (n.d.)
2. UN (2008)
3. The other two methods are the *income approach*, which estimates the income earned from land, labour, capital and entrepreneurship, and the *output approach*, which measures the value added of goods and services produced (i.e. the difference between the value of output and intermediate goods used to produce this output).
4. OECD (2022a)
5. GDP captures all domestic production regardless of where the inputs, such as labour and capital, come from. It does not include production that takes place abroad using domestic inputs, such as migrant workers or investment from the home country. This distinguishes GDP from Gross National Income, which is described in Table 2.
6. Further, by considering only final goods and services, we eliminate double counting. The value of intermediate goods, such as raw materials, components and labour, is already embedded into the price of final products by design.

The formula is as follows (see Table 1 for a real-life example of this tabulation):

$$GDP = C + G + I + (X-M)$$

- C is (private) *consumption*, which refers to final household expenditure on durable goods, nondurable goods and services. Examples include food, rent, petrol, etc.
- G is *government spending* (or government consumption) on final goods and services. Examples include civil servant wages, public infrastructure spending, etc.
- I is *investment* (or gross capital formation), which captures business investment. Examples include buying machinery for a factory, buying equipment for an office, etc.
- X is *exports*, which captures the value of goods and services produced domestically but sold abroad.
- M is *imports*, which are subtracted because the consumption of imported goods is already counted under C, G and I and because their production took place abroad.

Each country's national statistical office compiles this data from many administrative and statistical sources,[7] including surveys of businesses and households, tax declarations as well as censuses, in line with agreed upon international standards set out in the System of National Accounts.[8]

7. Eurostat (2019)
8. See UN (2008) for more information.

Table 1: **Composition of the GDP of the US using the expenditure approach, 2021**

Category	Expenditure (USD billions)
1. Personal consumption expenditures (C)	15,741,570
a. Goods (durable and nondurable)	5,481,446
b. Services	10,260,124
2. Government consumption expenditures and gross investment (G)	4,052,735
a. Federal (defense and nondefense)	1,565,011
b. State and local	2,487,725
3. Gross private domestic investment (I)	4,119,951
a. Fixed investment (nonresidential and residential)	4,139,804
b. Change in private inventories	-19,853
4. Net exports of goods and services (X-M)	-918,171
5. Exports (X)	2,478,291
6. Imports (M)	3,396,462
Total gross domestic product (C+G+I+X-M)	**22,996,086**

Source: Bureau of Economic Analysis (2022)

The final GDP value can be expressed in *nominal* or *purchasing power parity (PPP)* terms. Nominal GDP simply gives the value of production in current market prices converted to USD[9] to allow for international comparisons. However, such a measurement does not account for differences in cost of living or exchange rate fluctuations over time.[10] Meanwhile, PPP GDP takes the local prices of goods and services into account to ensure that currencies are valued appropriately.[11]

9. That is, the exchange rate between the home country's currency and USD in the foreign exchange market either at the end of the period of interest or an average across that period.
10. To illustrate exchange rate fluctuations, assume that Malaysia's GDP in MYR stays constant between 2021 and 2022. If MYR appreciated against USD by 5% during that period, Malaysia's nominal GDP in USD would show a 5% increase due to currency fluctuations alone and not because of higher domestic economic production. Cost of living is explained in the next footnote.
11. To illustrate the difference between nominal and PPP GDP, assume that there is only one good in the economy: hamburgers. Suppose that the official market exchange rate between USD and MYR is 1:4. Suppose further that due to cost-of-living differences, a hamburger costs USD 5 in the US and MYR 10 in Malaysia, and that 100 hamburgers are produced in both countries. Thus, GDP in local prices in this fictional scenario is USD 500 in the US and MYR 1000 in Malaysia. Using nominal GDP in USD based on the market exchange rate would give us a GDP of USD 250 for Malaysia. MYR, and by extension Malaysia's nominal GDP, is therefore undervalued. If, instead, we used an exchange rate that reflected cost of living (i.e. PPP), Malaysia's GDP would be USD 500. See The Economist's Big Mac Index for more information on this concept.

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USES OF GDP

"Much like a satellite in space can survey the weather across an entire continent, so can the GDP give an overall picture of the state of the economy."

– Samuelson and Nordhaus (1998)

The economy is a complex machine with many moving parts – composed of industries, consumers, government and other agents – that all interact with one another in many different ways. Decision makers need a number to make sense of all the economic transactions that take place within and between the players. That is where GDP and its *variants* come in.

The reason for stating "and its variants" is because in static, absolute terms, GDP (as in the USD 23 trillion figure in Table 1) is not a meaningful measure. Instead, it is the metrics derived from GDP, including GDP growth and GDP per capita, that are used for policymaking and planning purposes, as Table 2 describes below.

Table 2: **The most important variants of, and metrics derived from, GDP**

Indicator	Meaning and use
GDP growth	Measures the increase in GDP from one period to another. Gives policymakers an idea of where a country is headed relative to its past performance.
GDP per capita	Measures economic output per person – obtained by dividing GDP by population. Gives policymakers an idea of standard of living compared to other countries.
GDP National Income (GNI)	Measures total output by residents of a country, both domestically and abroad. This includes income earned by residents working/investing abroad and excludes income earned by foreigners inside the country. The World Bank classifies countries by income level (e.g. high income, upper-middle income, etc.) based on GNI per capita.

i. GDP growth

GDP growth gives policymakers an idea of which economic sectors are the most productive and therefore worth prioritising as part of the national development agenda – such as high-value added manufacturing and skilled services. The indicator also informs the government and central bank's decisions on tax and interest rate policies: if the economy is growing below par, stimulus measures may be needed.[12]

The relationship between GDP growth and GDP per capita is also of interest, as the next sub-section illustrates.

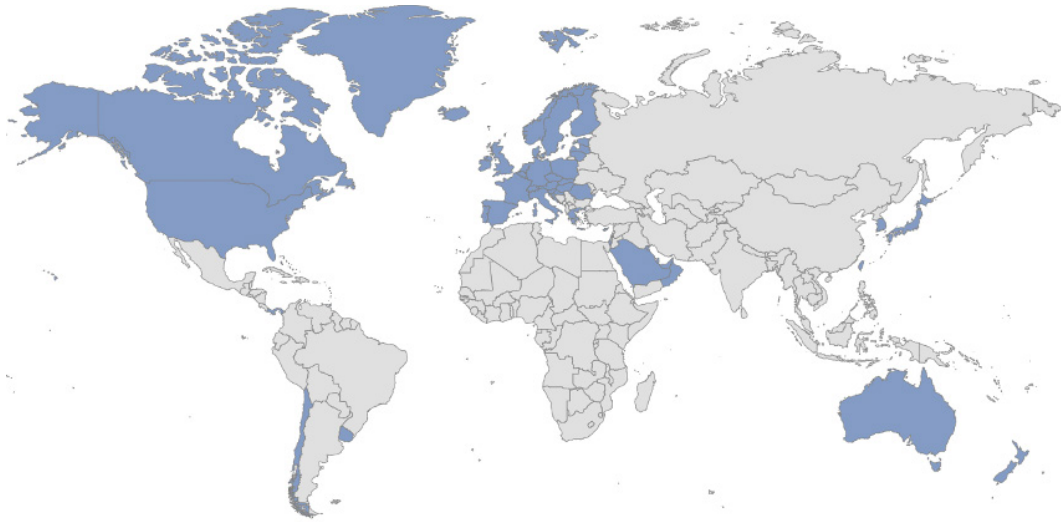
ii. GDP per capita

High GDP growth and a high GDP per capita[13] tend to be associated with increasing prosperity. From a purely arithmetic standpoint, if GDP grows faster than the population, then GDP per capita grows as well. Higher per capita output in turn is *correlated* with a better standard of living.

In this regard, the World Bank classifies nations by income level based on output per capita, with the threshold for high income defined as a GNI per capita of $13,205 or more. Accordingly, as Figure 1 below suggests, countries that fulfil this definition are mainly in Western Europe, North America and East Asia, regions which generally enjoy a higher life expectancy, lower absolute poverty and better educational outcomes than sub-Saharan Africa, Latin America and South Asia.

12. Fagan (2019)
13. This piece uses GDP and GNI per capita interchangeably. Although there are some differences between the two measurements as previously explained, with the World Bank preferring the latter to the former, ultimately they refer to the same idea conceptually and therefore the policy relevance is identical.

Figure 1: **List of high-income economies according to the World Bank**



Source: World Bank (2022a)

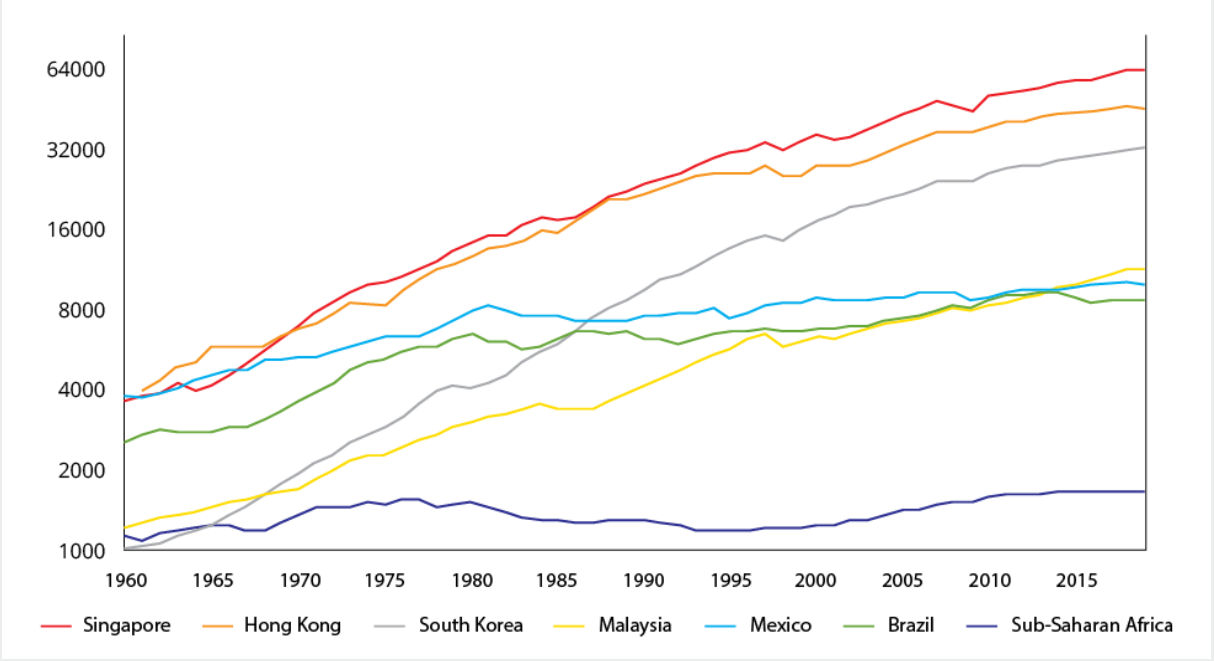
Box 1 below explores the relationship between GDP growth and GDP per capita in more detail using economic history to illustrate how the two indicators – individually and collectively – relate to development.

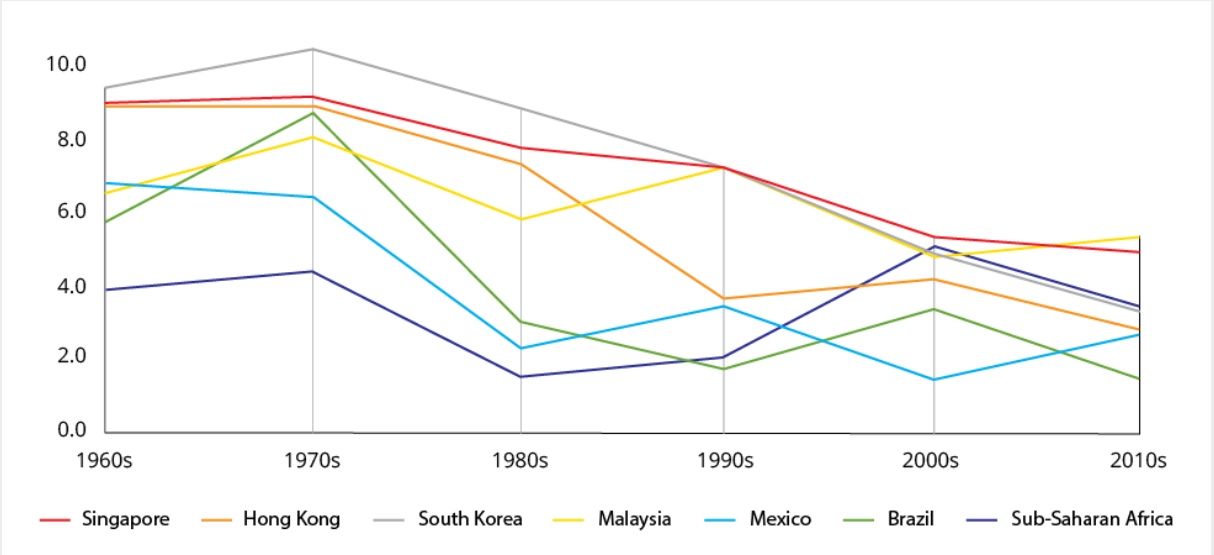
Box 1. The association between GDP growth, GDP per capita and improvements in developmental outcomes: the case of the East Asian Tigers

Economic history tells us that consistently high GDP growth often goes hand-in-hand with reductions in poverty. According to Figure 2(a) below, South Korea's GDP per capita stood at just over $1000 in 1960, ranking not only below the global average but also underperforming sub-Saharan Africa. In contrast, Mexico's income per capita that year was nearly 4 times higher at $3700, roughly on par with Singapore and Hong Kong. But through the rest of the 20th century, the three East Asian economies grew at an average rate of 7-9% per year, followed by Malaysia at just under 7% while Brazil, Mexico and sub-Saharan Africa averaged about 3-5% of GDP growth annually (see Figure 2(b)).

Compounded over time, by 2019, there was a divergence in economic outcomes, with Singapore, Hong Kong and South Korea all classified as high-income economies with GDP per capita exceeding $30000. Often referred to as the East Asian Tigers, these countries underwent rapid industrialisation and are now considered development success stories, enjoying a highly productive and educated workforce. Meanwhile, Brazil and Mexico, which had a head start in the mid-20th century, did not grow fast enough to leave the middle-income trap. At the other extreme is sub-Saharan Africa, which has remained poor since the 1960s and whose average GDP per capita still falls below $2000.

Figures 2(a) and (b): **GDP per capita (constant 2015 US$) of selected countries, 1960-2019 (top) and average GDP growth by decade (at constant 2015 prices) of the same countries, 1960s-2010s**





Source: World Bank (2022b)

Note: These figures illustrate GDP per capita and growth in constant prices (meaning the data are adjusted for inflation unlike nominal data in current prices) rather than PPP as the World Bank's database lacks PPP data for 1960-1989.

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WHAT GDP IS NOT

i. A measure of standard of living

"[A] rising tide will lift some boats, but others will run aground."

– Gene Sperling (2005)

To understand why GDP and its variants do not take inequality into account, we first need to make sense of Sperling's response to the famous Kennedy quote that "a rising tide will lift all boats".

It is important to remember that correlation does not imply causation. In other words, even though GDP growth and poverty reduction are related as we saw above, it does not mean that more growth automatically leads to lower poverty. This is because GDP does not capture the *distribution of income* across an entire population, even in per capita terms.

GDP does not acknowledge that corruption, rent seeking behaviour and other leakages can prevent economic growth from benefitting the average citizen. On its own, GDP also fails to account for urban-rural or ethnic inequality on the back of differences in productivity, wages as well as policies.

To demonstrate that GDP's explanatory power is flawed at best, we cite two real-life examples that highlight the discrepancy between GDP and standard of living, namely Equatorial Guinea (in Box 2) and Ireland (in Box 3).

Box 2. A high GDP per capita does not mean a high standard of living: the case of Equatorial Guinea

An oil-rich country in Central Africa, Equatorial Guinea has had the highest income per capita in the African mainland for many years. From 2007 to 2014, following a period of double-digit GDP growth, Equatorial Guinea became part of the World Bank's aforementioned list of high-income countries, the only mainland African nation ever to have earned that distinction.[14] At that time, the country's GDP (PPP) per capita peaked at $38000, outperforming countries like Belgium, Japan and the UK.

Today, following the global decline in oil prices in the mid-2010s which resulted in several years of economic decline, Equatorial Guinea's GDP per capita stands at over $18000 as of 2021, comparable to China, Thailand and the global average.[15] Nevertheless, it still ranks first in mainland Africa and third in the continent as a whole by income per capita after the small island nations of Seychelles and Mauritius.

However, Equatorial Guinea's development outcomes are far weaker. As of 2019, its life expectancy is just 58.7 years, well below the sub-Saharan African average of 61.5 and the mean of 69.3 for comparable middle-income countries. Education fares no better, with expected years of schooling at 9.7, underperforming sub-Saharan Africa by 0.4 years.[16] The country's poverty rate is said to be over 70%.[17]

In virtually all aspects apart from income per capita, Equatorial Guinea resembles a least developed country. Yet it is classified as an upper-middle income economy (and at one point a high income economy) precisely because of that metric. The nation is one of Africa's biggest oil producers, but oil revenues are held in the hands of the ruling elite. A cursory look at GDP and its variants would suggest that the country is doing well when socio-economic measures suggest otherwise.

Box 3. Take GDP with a grain of salt: the case of Ireland

Halfway around the world from Equatorial Guinea lies Ireland. For what it is worth, Ireland's status as a developed country is undisputed. From a socioeconomic standpoint, the average Irish person can expect to enjoy a high life expectancy (over 82 years) and satisfactory educational outcomes (expected years of schooling being nearly 19), comparable to most of Western Europe.[18]

14. World Bank (2022c)
15. World Bank (2022b)
16. UNDP (2020)
17. Holmes (2009)
18. UNdata (2021)

But where Ireland stands out is in its GDP and associated indicators. As of 2021, the economy has the third highest GDP per capita in the world at over $102,000 in PPP terms, exceeded only by the small nations of Luxembourg and Singapore. This figure is more than double that of the average across the EU and high income countries. In terms of GDP growth meanwhile, the recent statistics have raised eyebrows: in 2015, for example, Ireland registered an annual growth rate of 24%, the highest such growth rate ever recorded in an OECD country after the Second World War.[19]

Is Ireland really as rich as its GDP would suggest? The general consensus is that while Ireland is a high income economy, there are considerable distortions that push its GDP per capita and growth far above what should be expected. These can be attributed to Ireland's status as a tax haven[20] and the associated failure of GDP to distinguish between productive and non-productive economic activity.

By virtue of Ireland's low corporate tax rates and policies enabling tax avoidance, many multinational corporations (MNCs) 'redomiciled' – i.e. moving their regional headquarters, including intellectual property – to the country, especially in the 2010s. These MNC's profits, as well as the sales from the global use of their patents and other intellectual property (IP), are included in Ireland's GDP (and have contributed considerably to the country's GDP growth, especially in the 2010s).[21] What makes this inclusion contentious is that the growth, seemingly monumental on paper, was not accompanied by a proportional increase in domestic job creation, capacity building and tangible capital accumulation.[22]

Put simply, a sizable share of the so-called high growth that pushed Ireland to the very top of the GDP per capita table last decade came from a redistribution of intangible capital assets, namely IP, into Irish subsidiaries of MNCs for tax purposes.[23] It was basically an accounting artefact, and was not reflected on the ground in terms of actual economic activity or even household prosperity.[24] Indeed, despite Ireland's very high GDP per capita, its household disposable income falls below the OECD average.[25]

The case of Ireland therefore calls into question the validity of GDP as an accurate representation not just of households' standard of living but also of the underlying economic activity taking place within national borders.

19. World Bank (2022b)
20. For additional reading, see Hines (2010), ITEP (2017) and Zucman (2018).
21. In the income approach, which is the second of three methods to calculate GDP, profits (in addition to wages, rent and interest) form part of the measurement of total national income. The expenditure approach meanwhile does not have an explicit entry for profits, but theoretically this is implicitly covered through consumption (i.e. sales that contribute to revenue are part of household purchases), investment (e.g. profits are reinvested into upgrading capital) and net exports (i.e. revenue raised from the sale of domestically produced goods abroad) among others.
22. Osborne-Kinch et al (2020)
23. More specifically, it is the consumption of this fixed capital once it is legally in Irish hands, rather than the transfer of the assets per se, that contributes to GDP.
24. OECD (2015)
25. OECD (2022)

ii. A measure of welfare

> *"[...] You come to the conclusion [...] that it is a good thing to break windows, that it causes money to circulate, and that the encouragement of industry, in general, will be the result of it [...]."*
>
> – Frédéric Bastiat (1850)

As a gross measure, GDP is only concerned with output and not the means to achieve that output. GDP does not put a value on any destruction, whether environmental or otherwise, that happens along the way in pursuit of higher production.

Therefore, treating GDP (growth) as gospel can be dangerous because it may lead policymakers to understate the unmeasurable negative effects of growth, such as pollution and loss of biodiversity.

Economist Frédéric Bastiat illustrated this problem through the 'parable of the broken window'. In essence, if a household's window is broken and a repairperson is hired to restore the window to its initial state, the household is effectively increasing GDP. This is because the broken window is an income opportunity for the repairperson, who would in turn contribute to consumption by buying bread from the baker and so on.

But despite the gain in GDP, fixing the window is simply a maintenance cost that does not promote productivity or significant net welfare gains.

The parable highlights GDP's inability to take *opportunity cost* – the hidden cost of taking one action instead of the best alternative – into account. If the window had not been broken, the money that went towards fixing the window could have been spent on more welfare-enhancing and value-adding consumption or investment. Unfortunately, GDP ignores this dimension of decision making.

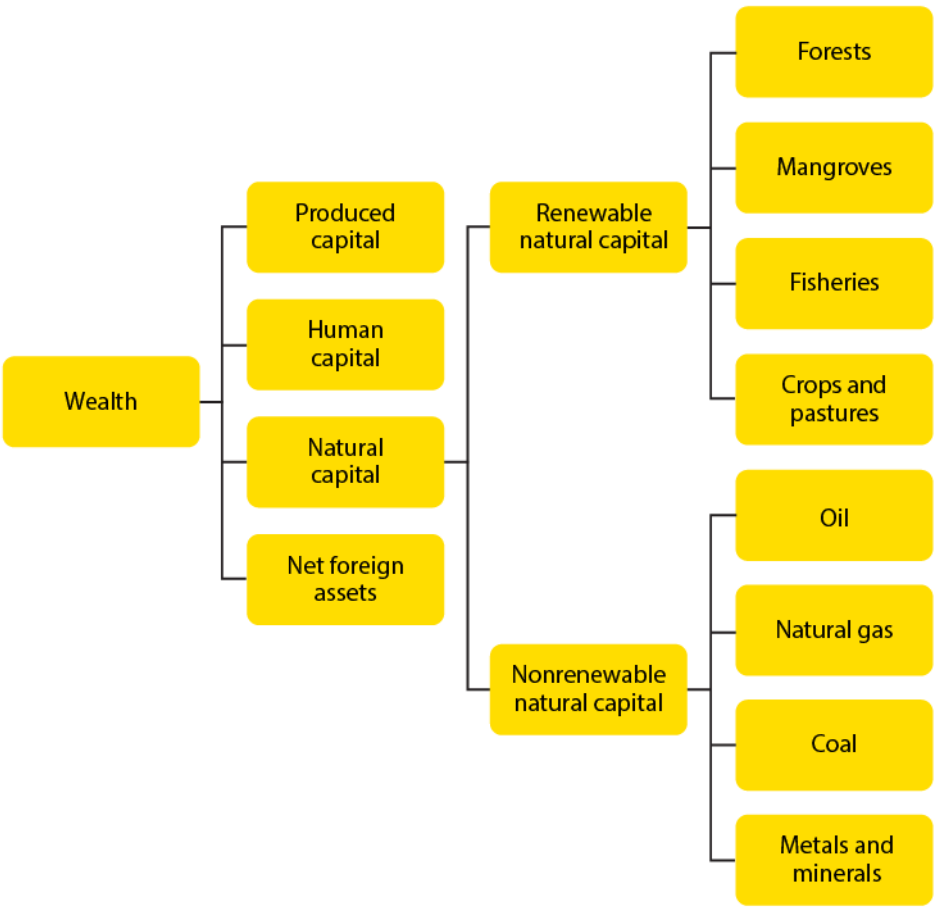
iii. A measure of wealth

> *"In many countries, GDP is increasing at the expense of total wealth and future prosperity [...] In countries where today's GDP is achieved by consuming or degrading assets over time, for example by overfishing or soil degradation, total wealth is declining."*
>
> – World Bank (2021)

To evaluate the financial health of a business, it is not enough to look at its annual profit and loss statement. The balance sheet, with its profile of assets and liabilities, is also needed to paint a better picture of what the company is worth.

Similarly, GDP only tells us the income of a country at a point in time, not its wealth or the state's ability to manage resources – assets – over time. As Figure 3 shows, the composition of wealth is much broader than just what is directly produced. National income and wealth may therefore not always rise or fall concurrently.

Figures 3: **Sources of national wealth by asset type**



Source: World Bank (2021)

GDP may grow in the short-run because of the exploitation of a non-renewable resource like oil, but if the country fails to diversify its sources of income, the eventual depletion of the resource will reduce its stock of wealth.

Indeed, the World Bank found that 26 countries recorded negative wealth per capita growth between 1995 and 2018, mostly in sub-Saharan Africa. A continuation of this trend implies that future generations will be worse off in these countries, whether due to dependence on depleting commodities with fluctuating prices or lack of investment into a wealth-generating asset like human capital (through education and healthcare) or renewable natural capital.[26]

Once again, narrowly pursuing a quick boost to GDP growth does not do a country any favours. As we have seen, GDP growth today can make a nation poorer in the future if there is no effort to promote sustainable development through the careful management of assets like human, natural and produced capital.

26. World Bank (2021)

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CONCLUSION

GDP has its place in policymaking, and it is a useful starting point for making sense of the health of an economy. But it is not the be-all and end-all. As previously pointed out, looking solely at GDP growth as a policy raison d'être can be uninformative at best and destructive at worst.

Recognising the shortcomings of GDP, many countries in recent years have begun incorporating alternative indices into their macroeconomic planning, such as the Human Development Index (HDI),[27] the Multidimensional Poverty Index (MPI)[28] and the 232 indicators comprising the United Nations' Sustainable Development Goals.

Ultimately, GDP should be considered in tandem with these and other indicators of socio-economic development that cover inequality, poverty and wealth. Only then can policymakers arrive at a more holistic picture of how the country and its people are doing.

27. HDI supplements GNI per capita with considerations of health (in terms of life expectancy) and education (years of schooling) on a normalised scale of 0 to 1. Though income per capita forms a major part of the index, the inclusion of the socio-economic dimension provides a more nuanced developmental perspective, such as in the case of Equatorial Guinea.
28. MPI captures poverty in a country using a range of indicators beyond just monetary measures of deprivation, including nutrition, child mortality, school attendance and access to utilities. In Malaysia, the 12th Malaysia Plan for 2021-25 calls for the mainstreaming of MPI in the design of programmes.

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Valuable comments and editorial assistance were provided by Frederik Paulus and Kieran Li Nair.

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