



HAL
open science

Gross domestic product, as an indicator of the comparative power of major countries

Jacques Fontanel

► **To cite this version:**

Jacques Fontanel. Gross domestic product, as an indicator of the comparative power of major countries. 2019. hal-02265576

HAL Id: hal-02265576

<https://hal.univ-grenoble-alpes.fr/hal-02265576v1>

Preprint submitted on 10 Aug 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Gross domestic product, as an indicator of the comparative power of major countries

Jacques Fontanel

**Pré publication
August 2019**

Summary : GDP is often used to compare the power of states. Firstly, GDP is not a concept that aggregates all the power of a country, especially since its construction is no longer adapted to the new demands of an overexploited and polluted land. Secondly, chronological and international estimates lead to inaccurate interpretations of the strength of states. If China has a GDP equivalent to that of the United States, except for the population, it is far behind all other criteria (well being, technology, science, education, military strength, power of the national currency, in particular) compared not only with the United States, but also to Europe. We need to restore the content of GDP to today's economic and environmental conditions and to define new complementary concepts that take into account national security, social cohesion, education, health, the maintenance of biodiversity and the ability to innovate.

Words : State power, well-being, environment, international comparisons, leadership

GDP is the most widely used economic aggregate for comparing, in time and space, positive or negative developments in the national economy. It is a very important instrument in the analysis of international relations and even in the definition of policies. International experts, aware of the growing importance of the weight of the economy in the power of states, often refer to this indicator, which is frequently commented by the media, economists, political scientists and citizens. International statistics influence international politics and national public actions. Within the UN, its weight is important to determine the classification of countries according to their degree of development (BRICS, emerging countries, developing countries). However, his employment has extended well beyond his field of origin. GDP is a statistical construction that does not fail to question, given the weight given to the market economy and the omission of elements as important as pollution, climate or volunteer work. If its definition is well regulated, the habitual use of it leads the rulers to give it excessive importance in the preparation of their decisions. The economic aggregate itself does not lack conceptual simplifications, but above all it makes forget the negative aspects of this national production on the natural and human heritages. The neglect of ecological and environmental issues is worrying, particularly with regard to the depletion of soils and subsoil, the scarcity of clean air, democratic freedoms, citizen solidarity or cultural influence. In fact, a country with a high level of GDP may also experience a weakening of its power, soft power and potential for development in the years to come, with the scarcity of its natural resources, new health problems related to air pollution or the

conflicting redistribution of income. The power and well being of a country are relative concepts, the measures of which are the subject of many hypotheses¹. How to analyze the power and well-being of a population when, within a country, social, economic, regional or gender inequalities are strongly dissonant?

The gross domestic product (GDP) is a useful indicator for expressing the importance of the economic activity of agents residing in the territorial framework of the States. However, it gives no indication of the quality of the well-being of its population, the ultimate efficiency of its production system or the collapse of the collective goods that constitute the air or the pure water, the natural resources or still the violence of the production system for the citizens. These "shortcomings to the reality of the production system" as well as the frequent use of GDP outside its normal scope of meaning, raise the question of whether it is possible and how to get out of the analytic and political hold this indicator.

I. The interest and the limits of GDP

GDP is the aggregate of the goods and services producing activity of producing units residing in a country. It quantifies the total value of wealth production created by economic agents by adding up the annual added values of all resident economic actors in a country, based on information provided by companies and public administrations. Real GDP (eliminating the effects of inflation) per capita does not refer to the productive and redistributive inequalities of economic actors, but it gives a rough indication of the potential standard of living of each resident. However, GDP limits are both technical and conceptual.

1. Technical limits.

GDP mainly calculates legal merchant goods and services. Public non-market services provided by the State (public health, education, security or justice) are estimated on the basis of public expenditure allocated to their operation. In many countries, however, these services provided by the market are more expensive (including education and health). At the same level of activity and competence, the estimate of service output is higher if it is carried out in the private commercial sector. As the private health system is more expensive than the public service for a quality that can be considered equivalent, the level of privatization increases the GDP, without the services rendered being significantly different. In the same way, how to value the final expenditure of security, without which all the productions are threatened².

The underground economy, especially "black" work, remunerated in "cash" or on a "barter" basis, is legal but not declared activities. Depending on the country, the share of

¹ Aben, J., Fontanel, J. (2018), Military expenditure as a proxy for State's power, *Defence and Peace Economics*, forwardSmithing.

² These expenses must be considered as a final product (that of peace and respect for collective rules) and not as intermediate consumption. See: Fontanel, J. (2016) La sécurité économique et sociétale : pour une conceptualisation humaniste multidimensionnelle, *PSEI*, Paix et Sécurité Européenne et Internationale, n° 3. <http://revel.unice.fr/psei/>. Fontanel, J. (2015), La base des données des dépenses militaires recueillie par l'Organisation des Nations Unies : origine et évolution. United Nations Standardized Instrument for Reporting Military Expenditure (2015) In *PSEI*, Paix et sécurité européenne et internationale, <http://revel.unice.fr/psei/>. Fontanel, J., Corvaisier-Drouart, B. (2014), For a General Concept of Economic and Human Security, in R. Bellais (Ed.), *The Evolving Boundaries of Defence : An Assessment of Recent Shifts in Defence Activities*, Emerald, Bingley. Fontanel, J. (2010), Concept élargi de la sécurité économique, in *Politique Economique de la Sécurité Internationale*, Ed. Jacques Fontanel, L'Harmattan,

the underground economy varies. It is very high in emerging and developing countries³. It should be possible to include it, as barter activities become a hypothesis of action that is developing in certain regions. Their estimation is problematic. On the other hand, should we include in the GDP an estimate of "illegal" activities, estimated by the States between 1 and 5% of GDP? Some states do this for drug trafficking, prostitution, counterfeiting or the resale of stolen vehicles; others do not do it.

GDP is not calculated by an external authority, independent and on a homogeneous, agreed basis. Estimates of GDP are often based on statistical conventions, based on statements made by economic agents, all of which can be falsified. The information provided must accurately reflect economic activity and question the level of manipulation of states to promote their economy. These two conditions are far from being met, especially for the GDP of China whose inflation of the figure reflects a political will power of the Empire.

Companies are also involved. They do not fail to use the interstices of globalization to provide the statistical information that suits them, including tax. The fragmentation of production has led to the growth of international networks of production and exchange that are transforming the realization of national comparative advantages. The globalization of production chains has disrupted international trade and distorts statistics on the added value actually produced in each country concerned. The published figures are often triturated according to the well-understood interests of the multinational company protected by the famous "business secret". Transparency is not a managerial quality in the face of tax or social charges. Companies optimize their tax and mandatory benefits by showing the maximum value added in the most attractive countries, the lowest tax, or the best in terms of aid and subsidies, as are still today Ireland, the Netherlands or Luxembourg in Europe. Tax evasion and optimization also leads to real changes in figures, in particular by the specific location of patent property rights⁴.

Inter-temporal comparisons of GDP need to take into account inflation and price indices to obtain a more realistic estimate of a country's real growth rate. The choice and calculation of the appropriate price index is subject to assumptions about the products and services selected by the statisticians. The selected products and services are the subject of specific analyzes, but the selected sample may be subject to pressure from the public authorities to enhance their economic action. Trade unions sometimes questioned the relevance of this index. Taking into account the rules defined by international organizations may limit, in time and space, a form of tampering with figures for political purposes.

International comparisons raise the problem of a homogeneous definition of GDP and the application of exchange rates. When, following a speculative attack, the euro falls by 10% against the dollar, its statistical expression leads to a 10% reduction in the GDP of all countries of the euro zone compared to that of the United States. Shortly after, a new configuration of speculative tensions changes can reverse the process. In addition, many states, including China, are accused of committing to monetary exchange rate policies in order to reap the benefits of trade. Several statistical instruments have been put in place to limit this statistical hazard, with strong consequences for governors' assessments of the state of their national economy. Exchange rates depend mainly on international commercial and financial transactions, while national currencies have their direct discharge power directly related to market transactions within the national soil or

³ Bensahel L. & Fontanel J. (2006). *L'économie souterraine : l'exemple de la Russie*, L'Harmattan.

⁴ Fontanel, J. (2016), *Paradis fiscaux, pays filous. La fuite organisée des impôts vers les pays complices*, L'Harmattan, Paris.

currency area. In this context, the exchange rate is the result of international trade, and initially only indirectly affects national markets.

The purchasing power parity system is often used to reduce the effects of monetary developments on international markets. It consists of defining a basket of significant products, valuing it in the currencies of each zone and thus determining the "true" value of the exchange rate, excluding the monetary and financial system. But this procedure is not without flaws. Which basket of products should be chosen, given that the purchases (and their structure) made in one country do not necessarily correspond to those of another country? If we retain a US "standard" basket, the dollar value in purchasing power parity will be undervalued relative to other currencies. It is not certain that the Big Mac, which can be chosen in the collective basket, is a satisfactory choice for Benin or countries rather open to vegetarianism⁵. In addition, the prices of products are subject to constant changes, linked to the diversity of brands or ingredients, but also to periods of inflationary tensions, very heterogeneous from country to country. Applying the purchasing power parity method often brings a new perception of the economy of a country, but differences with constant exchange rate methods question the use of statistics. However, the calculation of GDP in PPP highlights the gross value added produced by a country in its capacity to satisfy, in a global way, the well-being of a country, considering the importance of the cost of living. It reflects the quality of the potential life of a country, but it is not intended to highlight access to economic power. It does not provide reliable information on the functioning of an economic system that values precariousness, inequality and power relations between buyers and suppliers. Used inappropriately, its calculation makes it possible to value the reduction of costs (wages included, without social assistance), as a factor of increase of the PPPs.

2. Conceptual limits

One must be aware of the implicit assumptions of GDP. In international and inter-temporal comparisons, the GDP applies the hypothetical rule "all things being equal". This means that all goods and services are also useful, be it bread or drugs, health care or the sale of rifles. There are no "negative services", those who squander the scarce resources or pollute the atmosphere. GDP measures mainly billed activities, whether positive or negative. Self-production and self-consumption (gardens, orchards, farms, DIY, repair of various materials), volunteering (association, sports club), altruistic activities of the solidarity economy (free software, donations and free book exchanges) are poorly or poorly taken into account. The exchange of a few hours of lessons against the repair of a bike, a "baby sitting" evening against a day of help to start a business, makes the purely monetary analysis less efficient, while improving the living conditions of people. Domestic work also escapes GDP⁶.

Can all financial speculation activities be really "productive"? In most cases, are they not transactions that change the distribution of income or wealth more than GDP? Are not advertising activities more intermediate consumption than real collective production?

⁵ It has even been proposed to create a fictional exchange rate on the basis of the famous MacDo. The BMI (Big Mac Index) was, however, considered a good indicator of the level of the value of currencies relative to each other, local currencies having all been converted at the exchange rate of the day. BMI is used as a "shadow exchange rate" to check, on a daily basis, whether or not currencies are overvalued. Cf. Donsimoni, M., Fontanel, J. (2019), *Les ambiguïtés de la mesure de la puissance économique par les parités de pouvoir d'achat*, Annuaire Français des Relations Internationales, Paris.

⁶ It does not include housekeeping, childcare, and child rearing or support activities. If a mother temporarily abandons her work to look after her children, she reduces the GDP. When she is replaced by a nurse and takes it back, she increases it.

GDP ignores the quality of the activities it counts; it produces no indicator of "sustainability" to meet the endowments of future generations. It is indifferent to the social and human conditions of the mode of production, to the reduction of heritage over arable land, to the impoverishment of raw materials or energy resources of the subsoil, to the degradation or to the improvement of air quality or inequalities in income and wealth. More seriously, as soon as production is established, it does not differentiate between a nuisance and a wealth. However, among the goods produced, there are "Bads" (nuisance or inconvenience), whose definitions remain complex and conventional. Since this is not its role, GDP makes no reference to the conservation of natural heritage. This one is supposed constant and free. Patrimonial accounting only intervenes indirectly in the choices of the agents of the market economy, because they are guided mainly by immediate profits. The exploitation of energy resources until their definitive disappearance in one or two centuries considerably increases the value of the GDP of the producing states (economy of rent), but the natural reserves of the Earth disappear for the future generations.

GDP depends on national and international laws. Should we accept shale gas or oil? What are their real costs in the long run? Shale gas and oil are banned from production in some countries while others, including the United States, produce and sell it for export. The destruction of tropical forests, in order to produce plants for agro-fuels, increases the national GDP of the countries concerned, without any regard for the ecological and humanitarian disaster that it represents. GDP includes positively highly polluting productions that favor diseases such as cancer. In this case, it will even develop three activities: the wealth produced in the commercial world by the initial productive activity, the merchandising of anti-polluting measures and the increase of health expenditure. Everything that sells is considered a factor of wealth.

Finally, one should consider the importance of a country's stocks of economic, natural and human wealth, non-reproducible capital such as the value of land, net "reproducible" productive capital, the overall level of education, and of the health capital of the population. But GDP does not explain income and wealth inequality, relative or absolute poverty, or equality of opportunity within a society. Expenses related to domestic, industrial or road accidents have a positive impact on the activities of doctors, physiotherapists, hospitals, garages or coachbuilders; they will increase the GDP. Conversely, the decline in car accidents may weaken the benchmark as it reduces heavy medical care and car purchases. We should count the "bads". Given its total indifference to the content and effects of what is produced, the increase in GDP can accommodate forms of violence (forced labor), racism (apartheid) or slavery. A high GDP and strong growth can perfectly coexist with deplorable living conditions, a very important pollution and a very uneven distribution of the income. The "median" fortune of the Global Wealth Data Book and some indicators of the human development index (life expectancy, education level), despite their own shortcomings, are more relevant. The end justifies all means.

In fact, GDP remains an interesting chronological indicator, to which the interpretation of it is questionable. It is too much like the power indicator of an economy. Thus, consider that, in purchasing power parities, China has a GDP equivalent to that of the United States cannot fail to surprise. The impression is that the manipulation of figures gives a distorted picture of the comparative economic and social development of countries. The famous G2 (USA-China) still remains very unbalanced if one wants, besides that of the GDP, to retain the military and geostrategic power, the respective weight of the dollar and the yuan, and the real standard of living of the inhabitants. The power of Russia depends mainly on the prices of raw materials and energy. Their decline

or increase is not always due to the dynamism of the country; it is due to the market situation, speculation, the organization of negotiations between the OPEC countries, the economic war of a producing country (such as Iran or Iraq), or changes in agreements relating to climate or the environment. Competitiveness indices (including World Economic Forum and International Institute for Management Development (IMD) indexes, Global Dynamism Index) are sometimes complementary, although tax havens are taking advantage of the international system to develop a policy of beggar -thy-neighbor. In addition, GDP growth may be a mirage that hides a future economic crisis.

It should be renewed to highlight the "bad", even create a new indicator that would really highlight the positive production developed by a country, to compel the government to take into account the negative factors of the growth of productive forces at all costs and especially at any price.

Economists and economists value the consistency of GDP content, in order to feed their calculations and equations over the long term. It's a leap forward. However, it will also be necessary to modify the content of GDP to give it a more representative meaning of the economic and social power of a country.

II. How to define the power of a country

GDP and per capita GDP do not always provide the signals needed to prevent major economic, social and political crises in time. They should not be used as unique, versatile, indiscriminate "markers" in comparisons of current or potential economic and political power of a country relative to that of other states. The question asked is not a simple matter of experts; it goes well beyond. Other indicators should provide additional information, so as to improve the analysis of the concrete economic and human situation and improve decisions on the basis of shared information and democratically defined common objectives.

1. A first approximation of the potential power of a country

GDP and its evolution provides interesting information on a country's capacity to produce, satisfy solvent demand and potentially provide public goods to citizens⁷. However, many other quantitative and above all qualitative factors may upset the initial appreciation of the economic strength of a country by the sum of the added values of goods and services produced each year. The analysis of the GDP must be associated with them and be put back to its right place. This consideration avoids, as many political scientists have done too quickly, to make China a power equivalent and potentially greater than that of the United States. Power, efficiency, well-being and even wealth are notions that are also of the qualitative order. And, although of a very ordinary use, they remain vague, imprecise, little elaborated.

There are several components of power - economic, cultural, military, political, and so on. The margins of appreciation are large. Most studies are satisfied with approximations that will have considerable implications for the analysis and practical organization of

⁷ Barre, R., Fontanel, J. (1989), *Les fondements de la politique économique*, PUG, Grenoble. The choice of the importance to be given to public goods depends on the policy of the States. GDP cannot indicate the importance of this choice with regard to private activities. However, potentially, a state with high levels of GDP can potentially develop important public services for national security, education, health or income redistribution.

international relations⁸. The concept of military power is based, for example, on the indicator of military expenditures and numbers (military, tanks, airplanes, missiles, nuclear weapons, etc.), without reference to strategies, the capacity to use weapons and the adequacy between the available instruments and the defined security objectives. GDP has a significant advantage; it is considered, artificially, as a synthetic indicator of the economic strength of a country, which leads the analyst to exaggerate its explanatory potential. The United States (the largest GDP in the world) and China (the largest GDP growth among the major powers) earn an explanation of the world centered on GDP. If we take again the principles of the global power, the United States has the assets of the hyper power, with an accentuated leadership in the fields of the economic development, the scientific research, the importance of its national military forces and NATO, an increasingly influential "soft power" (accelerated by the rise of GAFAM⁹) and a dominant English-language culture. On these points, China is dominant only in terms of the size of its population. It is also largely dominated by the European Union in the indicators of economic development, the role of its currency, scientific research or its cultural or even political influence. However, the indicators do not value the power of the European Union¹⁰, which suffers from the relative fragility of its governance and its dependence on collective security. The power of a country is also expressed by its security potential. GDP and the percentage of military spending relative to GDP are important indicators for expressing the ability of a country or group of countries to acquire the required security means. However, strategies may make more or less optimal use of money available to national defense, including the existence of a nuclear deterrent or force projection capability. The security of a country is at least as important an indicator as GDP in defining its power¹¹.

2. Proposals for new indicators

In 1932, Simon Kuznets developed the concept of GDP to measure the economic effects of the Great Depression on the US economy. In this way he emphasized the efficiency of the production system. He had also wondered about the calculation of the measure of well-being (welfare). He was aware of the shortcomings of his new aggregate, but the demands of reconstruction after the 1929 crisis prevailed in order to construct an indicator of economic activity immediately (and therefore economically) useful. As soon as it was conceptualized, Simon Kuznets cautioned economists and political scientists against the risks of misuse, as growth-enhancing factors are not socially acceptable factors¹². National accountants propose the calculation of welfare indicators, through

⁸ The concept of military power is based, for example, on the indicator of military expenditures and numbers (military, tanks, airplanes, etc.), without reference to strategies, the capacity to use weapons and the adequacy between available instruments and the defined security objectives.

⁹ Fontanel, J., Sushcheva, N. (2019), *la Puissance des GAFAM : réalités, apports et dangers*, Annuaire Français des Relations Internationales, AFRI, Paris

¹⁰ JF Guilhaudis (2017) *Relations internationales contemporaines*, Lexis Nexis

¹¹ Aben, J., Fontanel, J. (2018), Military expenditure as a proxy for State's power, *Defence and Peace Economics*. [Coulomb, F., Fontanel, J. \(2006\), Mondialisation, guerre économique et souveraineté nationale, in Question politique en économie internationale, La Découverte, Paris.](#) Coulomb, F., Fontanel, J. (2011). *War and Capitalism. The Marketing of War in the Age of the Neo-Militarism*, New York et Londres, Routledge

¹² Coyle, D. (2014) Is GDP still useful?, *Better Life Index*, May 16, <http://www.oecdbetterlifeindex.org/blog/is-gdp-still-useful.htm>

satellite accounts that take into account the social dimensions of an economy, but their media and political impact remains too low.

In 1973, James Tobin and William Nordhaus¹³, builders of the first GDP-inspired monetary well-being indicator, proposed the introduction of two new concepts. The "regrettable goods" develop negative collective amenities. "Defensive expenses" are paid activities that are intended only to repair the damage caused by other productive activities. In fact, any production does not result in an improvement of the collective economic and social situation. Certain market activities, generating regrettable property, threaten the collective well-being. It is then necessary to incur defensive or restorative expenses. These expenditures do not really produce added value, they do not participate in the final product to be valued in the GDP; they must be considered as intermediate consumption. This analysis was not pursued because market interests prevailed. In addition, "regrettable property" or "defensive expenses" are not always immediately perceived as such. Negative effects sometimes appear only retroactively due to new scientific studies or they depend on particular conditions of concentration to be the object of such recognition.

Osberg and Sharpquie¹⁴ developed an index of well-being (IBE), using several criteria such as market and non-market current consumption flows, wealth stocks (tangible goods, durable consumer goods, accumulation of human and social capital, environmental costs) or the distribution of income (inequality, economic poverty, precariousness). It highlights the gap between GDP per capita and the index of well-being. In this study, after twenty years of economic growth at the end of the twentieth century, the British people's private and collective well-being remained almost constant, while GDP grew by 300% in current national currency units.

The Human Development Indicator proposed since 1990 by the UNDP, proposes a more centered analysis on the man and its development. It includes several criteria, such as the health and longevity of men (measured by life expectancy at birth), knowledge or level of education (average length of schooling or decision-making capacity), standard of living (per capita gross income in purchasing power parity) and the satisfaction of basic material needs such as access to healthy food, clean water, decent housing, good hygiene and medical care. However, these indicators do not always lend themselves to rectilinear interpretation and they always omit values that are not part of an indisputable quantitative analysis. They give interesting results, but sometimes difficult to interpret. The BIP 40 sought to broaden this concept¹⁵, but INSEE declined to participate in this analysis because of the questionable reliability of the statistics provided. Similar attempts have been made, but they have not received much attention when they have not been stopped for lack of support and rigor.

The United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEA), in a very interesting, because more comprehensive, works to define an indicator that takes into account the effects on the environment, to calculate a Gross Domestic Product Green and to build an Economic Environmental Accounting System

¹³ Nordhaus W., Tobin J., (1973), « Is Growth Obsolete? » in, *The Measurement of Economic and Social Performance, Studies in Income and Wealth*, National Bureau of Economic Research, vol.38, 1973.

¹⁴ Lars Osberg et Andrew Sharpe, « [Une évaluation de l'indicateur de bien-être économique dans les pays de l'OCDE](#) », Séminaire de la DARES, 15 Octobre 2002. OCDE, *Du bien-être des nations, le rôle du capital humain et social*. Paris. 2001. Sharpe A., Méda. D, Jany-Catrice F. et Perret B (2003), "Débat sur l'indice de bien-être économique", *Travail et Emploi*, n° 93, Janvier 2003.

¹⁵ Duval, G., Marcus, V. (2002), Le BIP 40, un baromètre des inégalités et de la pauvreté, *Alternatives économiques*, n°202, Avril.

(SEEA) an international standard for the year 2012¹⁶ and to promote its implementation in the countries.

The Economic, Social and Environmental Council (CESE)¹⁷ and France Stratégie¹⁸ propose the presentation of ten indicators in addition to the GDP to serve as a support annexed to the draft budget law.

Table 1 - Summary of the 10 additional indicators to GDP proposed by the EESC and France Stratégie¹⁹.

Topic	Indicators
Income inequalities	Ratio of the income mass held by the richest 10% and the poorest 10%
Climate, Energy	Carbon footprint
Resource Management	Waste recycling Rate
Biodiversity	Birds abundance index
Employment	Employment rate of labor force (15-64 years)
Investment	Physical and intangible productive assets in% of Net Domestic Product
Financial capital	Debt of different non-financial economic agents (general government, enterprises, households) compared to GDP
Education	Higher education graduation rate among 25-34 year olds
Health	Healthy life expectancy at birth
Well-being	Satisfaction of life

Income inequality is an economic and political problem, it fuels demands and frustrations, sometimes leads to the waste of collective resources. The "sustainability" of income distribution is an important political factor, as it is an element of regulation of social conflicts. Taking into account environmental effects, natural resource management or biodiversity is interesting, even if the indicators that represent them would require more scientific analyzes.

Access to employment is important in the economic and social situation of a country, but it is also necessary to define real, non-precarious jobs and the social protection of the unemployed. Investment measures the accumulation of means of production transmitted from one generation to the next. The investment rate calculates tangible and intangible assets based on the net domestic product.

The highlighting of the public debt (government debt) is probably not always preferred; we must also take into account the private debt (businesses and households). In 2015, France's public debt was close to the value of its GDP, but private corporate debt accounted for more than 60% compared with 55% of GDP for households. In

¹⁶ Nations Unies (2016), Cadre central du Système de Comptabilité économique et environnementale 2012, https://unstats.un.org/unsd/envaccounting/searev/cf_trans/seca_cf_final_fr.pdf

¹⁷ CESE is an advisory body made up of social representatives (employers, unions, associations).

¹⁸ France Stratégie is an organization attached to the Prime Minister, it makes recommendations to the government.

¹⁹ CESE, France Stratégie (2015), Le CESE et France Stratégie proposent 10 indicateurs phares complémentaires au PIB. <http://www.lecese.fr/content/le-cese-et-france-strat-gie-proposent-10-indicateurs-phares-compl-mentaires-au-pib>

comparison, the United Kingdom had a higher debt (85.8%) for households and less (54.7%) for businesses²⁰.

The quality of the education system also measures the level of progress of a country. The choice of the rate of higher education graduates among 25-34 year olds reflects an "elitist" perception of the indicator. Literacy rates or reading ability of 11-year-olds would likely be equally relevant indicators. Similarly, the number of researchers and their ability to produce scientific discoveries or commercial patents is a reflection of a real appreciation of the human potential for the national economy and technological advances.

Life expectancy in good health (no activity limitations and no disability) provides important information that reflects both the consideration of health needs and the ability to protect the bodies and minds of citizens. Finally, the indicator of satisfaction with one's life is subjective and evolving according to periods of stress or national or international calm.

This analysis is a good starting point. However, it seems that other elements should also be taken into account, such as inequalities in wealth²¹ and income, but also the country's openness to the outside world, its degree of dependence on international trade²² and growth, the quality of its diplomatic relations or the strength of its common security alliances²³.

Conclusions

The single or dominant reference to GDP is dangerous. GDP was better adapted to the reality of the period during which it was conceived the very idea of economic development, of indefinite growth and "catching up" for developing countries, is called into question with the concept of development "sustainable." "American-style" economic growth, consuming too much raw materials and too polluting, can not be an objective for other national economies, without even highlighting the unresolved issues of today's climate, excessive social inequalities or the rapid appearance of new rarities. Economic actors must no longer be encouraged to go in the direction of a form of unsustainable growth. It is necessary to have indicators on democratic freedoms, citizen solidarity, cultural influence, the rise of the digital economy and artificial intelligence. It is also of primary importance to count the least, the "Bads" and their costs, such as the definitive disappearance of certain raw materials, the influence of pollution on the persons concerned and, in international relations, their effects on neighboring countries.

²⁰ Banque de France, Taux d'endettement des agents non financiers. Comparaisons internationales, Stat Info, 2^e Trimestre 2015. https://www.banque-france.fr/uploads/tx_bdfstatistiquescaendrier/2015-T2-stat-info-taux-d-endettement-des-anf-comparaisons-internationales.pdf

²¹ A hundred people have the wealth of half of the world's poorest population. At the end of 2017, Oxfam actually considers that there are only eight people (Bill Gates, Amancio Ortega, Warren Buffet, Carlos Slim, Jeff Bezos, Mark Zuckerberg, Larry Ellison, and Michael Bloomberg) who have such wealth compared to 62 in 2015 and 355 in 2013. On the other hand, it is very difficult to measure the financial importance of a wealth, as the prices of its components change rapidly over time.

²² Fontanel, J. (2014), Le commerce international est-il facteur de paix, ? *Politique étrangère*, Paris.

²³ Smith, R., Fontanel, J. (2008), International security, defence economics and the power of Nations, in Fontanel, J & Chatterji M (Ed.), *War, Peace and Security*, Emerald Group Publishing. UK. Fontanel, J., Hébert, J-P, Samson, I. (2008), The birth of the Political Economy or the Economy in the heart of Politics : mercantilism, *Defence and Peace Economics*, 19.31. 2008. JF Guilhaudis, Alliances, coalitions, organismes de sécurité collective in *PSEI*, n° 1, 2015 et n° 4, 2016.

Bibliography

- Aben, J., Fontanel, J. (2019), Military expenditure as a proxy for State's power, *Defence and Peace Economics*
- Banque de France (2015), Taux d'endettement des agents non financiers. Comparaisons internationales, Stat Info, 2^e Trimestre 2015. https://www.banque-france.fr/uploads/tx_bdfstatistiquescalendrier/2015-T2-stat-info-taux-d-endettement-des-anf-comparaisons-internationales.pdf
- Barre, R., Fontanel, J. (1989), *Les fondements de la politique économique*, PUG, Oresses Universitaires de Grenoble, Grenoble.
- Bensahel, L., & Fontanel, J. (2006). *L'économie souterraine : L'exemple de la Russie*. Editions L'Harmattan.
- CESE, France Stratégie (2015), Le CESE et France Stratégie proposent 10 indicateurs phares complémentaires au PIB. <http://www.lecese.fr/content/le-cese-et-france-strategie-proposent-10-indicateurs-phares-compl-mentaires-au-pib>
- Coulomb, F., Fontanel, J. (2006), Mondialisation, guerre économique et souveraineté nationale, in *Question politique en économie internationale*, La Découverte, Paris
- Coulomb, F., & Fontanel, J. (2011). *War and Capitalism. The Marketing of War in the Age of the Neo-Militarism*, New York, London, Routledge
- Coyle, D. (2014) Is GDP still useful?, *Better Life Index*, May 16, <http://www.oecdbetterlifeindex.org/blog/is-gdp-still-useful.htm>
- Donsimoni, M., Fontanel, J. (2019), Les ambiguïtés de la mesure de la puissance économique par les parités de pouvoir d'achat, *Annuaire Français des Relations Internationales*, Paris.
- Duval, G., Marcus, V. (2002), Le BIP 40, un baromètre des inégalités et de la pauvreté, *Alternatives économiques*, n°202, Avril.
- Fontanel, J., Hébert, J-P, Samson, I. (2008), The birth of the Political Economy or the Economy in the heart of Politics : Mercantilism, *Defence and Peace Economics*, 19.31. 2008
- Fontanel, J. (2010), Concept élargi de la sécurité économique, in *Politique Economique de la Sécurité Internationale*, Ed. Jacques Fontanel, L'Harmattan, Paris.
- Fontanel, J. (2010), *Politique Economique de la Sécurité internationale*, L'Harmattan, Paris.
- Fontanel, J. (2014), *Le commerce international est-il facteur de paix ? Politique étrangère*, Paris.
- Fontanel, J., Corvaisier-Drouart, B. (2014), For a General Concept of Economic and Human Security, in R. Bellais (Ed.), *The Evolving Boundaries of Defence : An Assessment of Recent Shifts in Defence Activities*, Emerald, Bingley.
- Fontanel, J. (2015), La base des données des dépenses militaires recueillie par l'Organisation des Nations Unies : origine et évolution. *United Nations Standardized Instrument for Reporting Military Expenditure (2015)* In *Paix et sécurité européenne et internationale*, <http://revel.unice.fr/psei/>
- Fontanel, J. (2016), *Paradis fiscaux, pays filous. La fuite organisée des impôts vers les pays complices*, L'Harmattan, Paris.
- Fontanel, J. (2016) *La sécurité économique et sociétale : pour une conceptualisation humaniste multidimensionnelle*, PSEI, *Politique de Sécurité Européenne et Internationale*, n° 3. <http://revel.unice.fr/psei/>.
- Fontanel, J., Guilhaudis, J-F. (2019) Les effets pervers de l'usage du PIB pour la décision politique et les relations internationales. Comment en sortir ? *Annuaire Français des Relations Internationales*, AFRI, Paris.

Fontanel, J., Sushcheva, N. (2019), *la Puissance des GAFAM : réalités, apports et dangers*, Annuaire Français des Relations Internationales, AFRI, Paris ;

Guilhaudis, J-F. (2015, 2016), *Alliances, coalitions, organismes de sécurité collective in PSEI (Paix et Sécurité européennes et internationales)*, n° 1, 2015 et n° 4, 2016.

Guilhaudis, J.F., Fontanel, J (2017), *Le PIB, Indicateur, Totem et mauvais marqueur*, in Guilhaudis, J.F. (2017), *Relations internationales contemporaines*, 4^e édition augmentée, Lexis Nexis, Paris.

Guilhaudis, J.F. (2017), *Relations internationales contemporaines*, 4^e édition augmentée, Lexis Nexis, Paris.

Nations Unies (2016), *Cadre central du Système de Comptabilité économique et environnementale 2012*,

https://unstats.un.org/unsd/envaccounting/seearev/cf_trans/seea_cf_final_fr.pdf

Nordhaus W., Tobin J., « *Is Growth Obsolete ?* » in , *The Measurement of Economic and Social Performance, Studies in Income and Wealth*, National Bureau of Economic Research, vol.38, 1973.

OCDE (2001), *Du bien-être des nations, le rôle du capital humain et social*. Paris. 2001.

Osberg, L. & et A.Sharpe, « *Une évaluation de l'indicateur de bien-être économique dans les pays de l'OCDE* », Séminaire de la DARES, 15 Octobre 2002.

Sharpe A., Méda. D, Jany-Catrice F. et Perret B (2003), "Débat sur l'indice de bien-être économique", *Travail et Emploi*, n° 93, Janvier 2003.

Smith, R., Fontanel, J. (2008), *International security, defence economics and the power of Nations*, in Fontanel, J & Chatterji M (Ed.), *War, Peace and Security*, Emerald Group Publishing. UK .