Beyond GDP : Which synthetic indicators, for which use ?

CESS conference 16/10/2024

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Insee Mesurer pour comprendre

GDP IS THE STANDARD FOR MEASURING THE ECONOMIC ACTIVITY

- Comparability over time and between countries
- Relies on a comprehensive information system : The System of National Accounts
- Very regularly published (each quarter) and commented
- 4 main uses :
  - Synthesis of the economy
  - Describes the evolution of income, purchasing power
  - Performance of public policies
  - Reference indicators used in ratios (e.g institutional use)

LIMITS TO GDP WELL IDENTIFIED

- Boundaries : domestic production ?
- GDP is not an indicator of wellbeing (although some expect it to be!)
  - Defensive expenditures : safety, environment
  - Economic activity induced by disasters
- Macroeconomic indicator, says nothing on inequality
- Measure of the current economic activity, says nothing on its sustainability

STIGLITZ-SEN-FITOUSSI REPORT (2008)

- Idea of a dashboard of indicators covering beyond GDP dimensions but :
  - Synthetic vision left to the reader
  - Difficult to interpret and to use for public decision
    - **Illustration: Wealth Indicators issued from Eva Sas law**
- Interest of connecting them with national accounts : coherence and maintenance

QUESTIONS TO BE ADRESSED :

- About what should a synthetic indicator inform us on ?
  - Tradeoff between economic activity and other dimensions
    - Indicator incorporating all dimensions (Inclusive Wealth indicator)
    - Separately focused on specific dimensions
  - Adapting the standard indicators of the SNA based on familiar concepts
  - Possible adaptation of the accounts (and their concepts):
    - Production boundary
    - New agents : introducing specific operations
- How would we estimate such indicators ?
  - Estimation method
    - Linear combination of other indicators
    - Specific computation using more disaggregated information
  - Information required
    - SNA information (not only GDP) is a full and comprehensive information system on activity (and economy)
    - Need to get information on the other dimensions and make it compatible

THE ANA PROJECT

- **Building an information system supporting the regular (yearly) production of statistics on environment and income distribution consistent with the national accounts**
  - Carbon accounts: emissions and footprint
  - Distributed national accounts (including household sector, but not only)
- **Integrating the analysis of environment or inequality and of the economic activity : Propositions of indicators**
  - Adaptation of performance indicators to greenhouse gas emission
  - Alternative measure of growth of net income accounting for differences accross households
- **Publishing and disseminating each year these statistics and analyses**
  - First publication scheduled on November 5th
- **Investing in other topics (nowcasting, human capital, …)**

01 CLIMATE-RELATED INDICATORS

RELATIONS BETWEEN EMISSIONS AND ACTIVITY

- **Cost of emitting GHG**
  - Increases of temperature, sea level, ...
  - Affects activities that depend on climate : damage costs
  - Long term effects that may last for centuries
- **Cost of not emitting GHG**
  - Activity is associated with GHG emissions
  - Attenuation policies should restrict activity : attenuation costs
  - More short-term effects
- **Effects beyond GDP :**
  - Effects on health or mortality of climate damages
  - Such considerations affect attenuation policies
- **Assessing the sustainability and the performance of an emitting economy**

ADAPTING THE ACCOUNTS FRAMEWORK

NEW FICTIVE AGENTS :

- « Climate » :
  - Produces a **« climate service »** used as an intermediary input by other sectors and households
  - Such service is deteriorated because of the increase of CO2 stock in the atmosphere : **deterioration of climate asset**
  - The loss of service value can be assessed considering the future damages induced by current emissions : **social cost of carbon**
- « Carbon regulator » :
  - Produces **« carbon emissions allowances »** used as an intermediary input by emitting sectors
  - Mitigation policies limit the total stock of carbon to be emitted : **« carbon budget »**
  - Valorisation : **shadow price of carbon,** depends on the abatement costs

VALUE TRANSFERED FROM THE OLD AGENTS TO THE NEW ONES

- Make the degradation of assets induced by GHG emissions appear :
  - Consumption of climate asset
  - Consumption of carbon budget
- Extension beyond GDP : effects of damages on households

LESSONS LEARNED FROM THIS ADAPTATION

Standard indicators of the SNA already incorporate some future damages through the asset valuation step when building national wealth accounts

- The adaptation only makes these damage costs more visible
- Value is transfered between old agents and new agents : externalities may affect prices, but not the added value or the wealth of the whole economy
- Costs are seen as consumption of assets (climate and carbon budget) : adjusting net indicators, i-e net domestic product (NDP) or net savings (NS)

– Both damage and attenuation costs should be considered

- There are GHG emissions that increase future damages : climate asset
- There are attenuation policies that limit GHG emissions : carbon budget
- Accounting rules differ with respect to sectors that emit or are victims of GHG emissions (some sectors can be both)
- This is not a marginalist interpretation (effect of a supplementary ton wrt a reference situation)

– Accounting for damages made to household (« beyond ») modifies the standard indicators

- Beyond the production boundary of SNA
- Extended consumption : closer to « well-being »

WHICH INDICATORS ?

- **GHG emissions seen as consumption of capital**
  - **Climate asset :** they degrade the climate
    - **Effect of French emissions on world Wealth : production approach, CCN-World**
    - **Effect of worlds emissions on French Wealth: income approach, CCN-Fr**
  - **Carbon budget :** they make mitigation policies more stringent, **CBC**
  - In both cases ; decrease of wealth that negatively contribute to adjustment of indicators
- **Adjusted indicators of activity : reflect the sustainability of activity a given year**
  - Net Domestic Product (NDP): GDP – Consumption of fixed capital (CFC)
    - **NDP adjusted (NDPA) : NDP – CCN-World – CBC**
  - Net Savings : Gross Disposable Income (GDI) – Final Consumption - CFC
    - **Net Savings adjusted (NSA) : Net Savings – CCN-Fr – CBC**
- **Wealth indicators**
  - « **Carbon Meter** » : cumulated deviations from the emission targets. Priced at the social cost of carbon (no compensation for the supplementary emissions)
  - **Carbon budget** priced at the shadow price of carbon. Prospective costs. Value generated by allowing emissions.
  - Stock of CO2 in the atmosphere due to past French GHG footprints, valorised at the social cost. **Climatic responsability** : Valuation of the degradation of the climate that could be imputed to France

PRICES (EXTERNAL INFORMATION)

- **Social cost of carbon : Rennert et al. (Nature, 2022)**
  - High uncertainty
  - Decomposition between within GDP and beyond GDP (mortality effects)
- **Shadow price of carbon : Quinet (2019)**
  - Based on technico-economic and macro-economic models (abatement costs)
  - Strongly dependent on the mitigation policies and their application

GHG EMISSIONS INVENTORY AND FOOTPRINT (INSEE AND SDES)

- **Production approach :**
  - Air emission accounts with monetary production and value added
- **Demand approach :**
  - Carbon footprint with monetary final demand (use of the MRIO model FIGARO)

Consumptions of Climate Capital and Budget Carbon and effects on NDP (provisional figures, illustration)

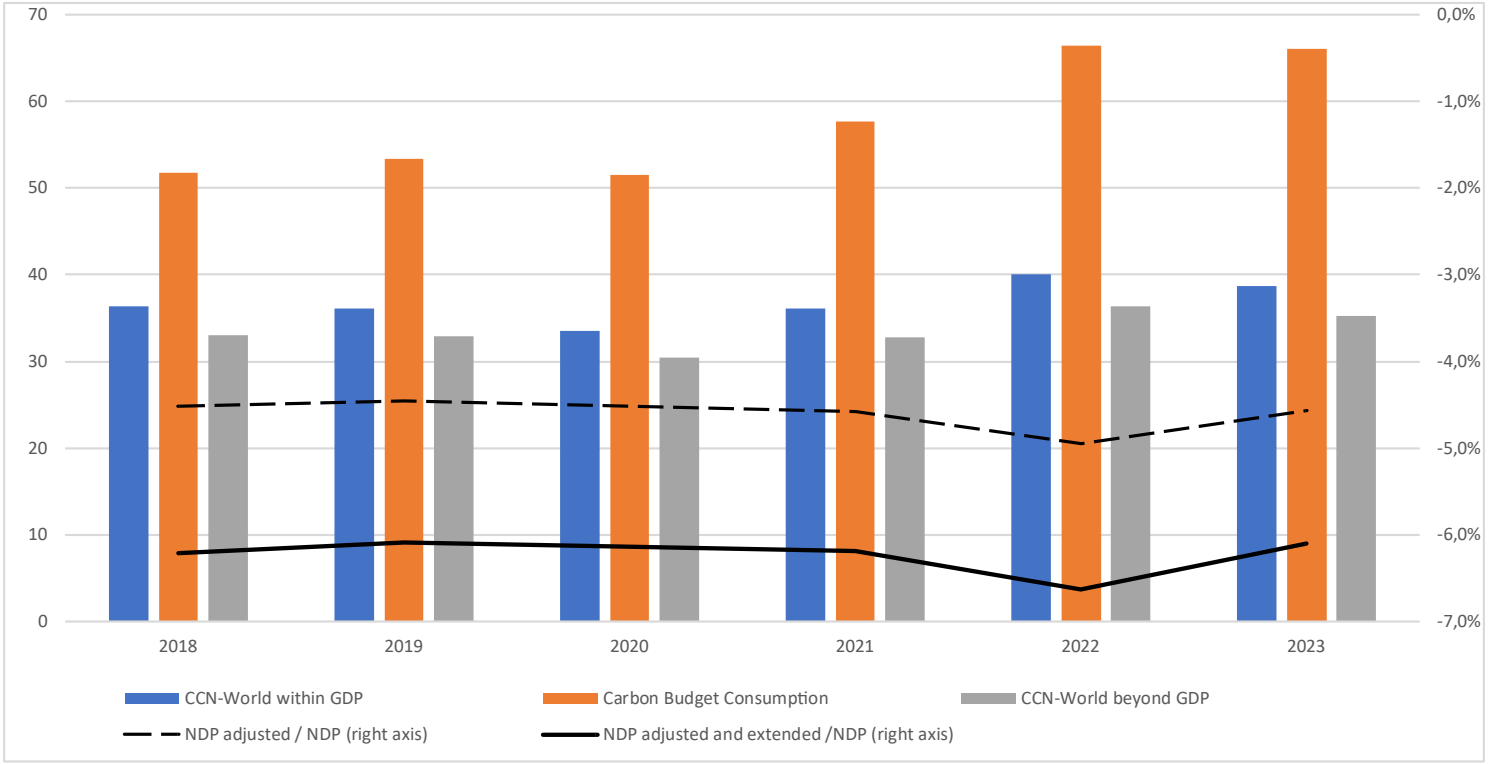
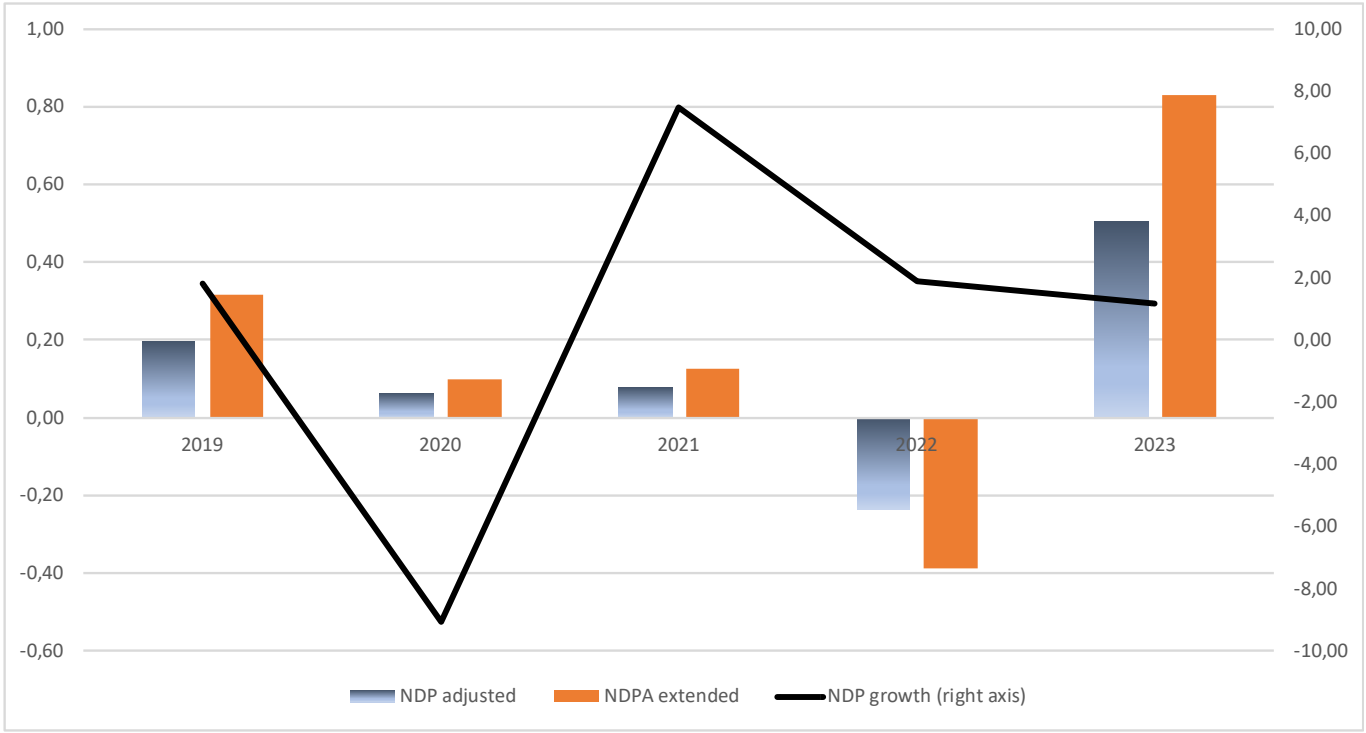


Illustration : Effect of a strong increase of emissions in 2022

GROWTH DIFFERENTIAL IN VOLUME BETWEEN NDPA AND NDP

Deviations of NDPA growth from NDP growth, in volume (provisional figures, illustration)



$$\frac{\Delta_{vol}NDPA_t}{NDPA_{t-1}} - \frac{\Delta_{vol}NDP_t}{NDP_{t-1}} = \frac{p_{t-1}^{Carb}E_{t-1}^{Fr}}{NDPA_{t-1}}\left(\frac{\Delta_{vol}NDP_t}{NDP_{t-1}} - \frac{\Delta E_t^{Fr}}{E_{t-1}^{Fr}}\right)$$

Illustration : Effect of a strong increase of emissions in 2022

OTHER SYNTHETIC INDICATORS ON CARBON

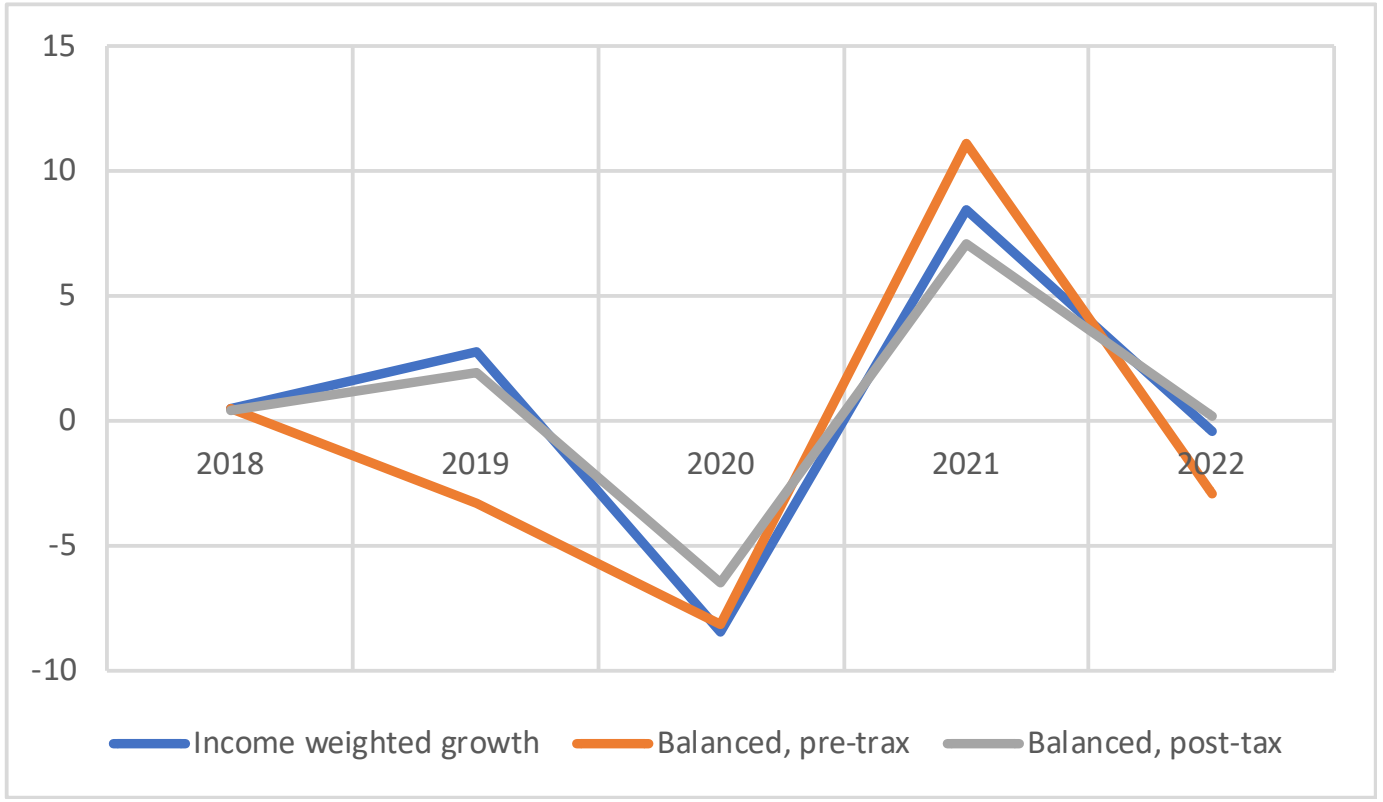
- **Net Savings :**
  - Adjusted net savings is very negative, unlike net savings
  - Sign of the incapacity of the economy to generate enough new value to compensate for its consumption of climate resources
- **Carbon meter :**
  - Valuation (at the social cost) of the excess emissions with respect to targets
  - Operational use
- **Climatic responsability**
  - Valuation of the stock of carbon for which France is « responsible » : social cost
  - Cumulative French carbon footprint since 1850
- **Carbon Budget**
  - Valuation of the remaining budget carbon using the shadow price of carbon
  - Anticipated cost of decarbonising the economy

02 INEQUALITY-RELATED INDICATORS

GETTING CLOSER TO WELL-BEING MONETARY GROWTH?

- **Which income ?**
  - Disposable income of households
  - Extended primary income : National Net Income (NNI) shared among households, pre-transfer (see « Distributional Accounts », André et al.)
  - Extended standard of living : NNI, post-tax
- **Synthetic indicators of income growth :**
  - Incidence curve : growth of income by category (Income level by decile or vingtile)
  - Possibility to build different indicators weighting categories differently :
    - **Standard Growth of the NNI per capita: income-weighted growth**
    - **Balanced growth : Equally-weighted growth (« democratic » growth)**
    - **« Inclusive » growth when giving more weight to low-income categories**
- **Remarks :**
  - The standard growth of NNI, pre or post-transfer is the same
  - Their balanced growths differ : Magnitude of enlarged redistribution
  - Comparison between two periods between household categories : They may differ

Standard (NNI) and balanced growth of pre and post transfer incomes



Provisional figures, illustration

- **2 classes of synthetic indicators presented here :**
  - « Net » type indicators, beyond the current period (carbon indicators) : sustainability
  - Granularity type indicators, beyond the average : wellbeing
- **Different questions but some common features**
  - Alternative indicators of economic performance, mitigated with different dimensions
  - An approach between analytical work and statistical production
  - Experimental statistics
  - May rely on complex modelisation or normative choices
- **A strong demand for a synthetic view :**
  - International initiatives
  - Academic work
- **To be published on November 5th**

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