

Contribution to Beyond GDP, “Virtual Indicator Expo”

<http://www.beyond-gdp.eu>

Name of the indicator/method: **Adjusted Net Saving (ANS) as percentage of GNI**

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What is Adjusted Net Saving?

Adjusted net saving (ANS) measures the true rate of saving in an economy after taking into account investments in human capital, depletion of natural resources and damages caused by pollution. Adjusted net saving, known informally as genuine saving, is an indicator that aims to assess an economy’s sustainability based on the concepts of extended national accounts.

Positive savings allow wealth to grow over time thus ensuring that future generations enjoy at least as many opportunities as current generations. In this sense, adjusted net saving seeks to offer policymakers who have committed their countries to a “sustainable” development pathway, an indicator to track their progress in this endeavor.

Adjusted net saving is derived from the standard national accounting measure of gross saving by making four adjustments:

- (i) consumption of fixed capital is deducted to obtain net national saving;
- (ii) current public expenditure on education is added to account for investment in human capital;
- (iii) estimates of the depletion of a variety of natural resources are deducted to reflect the decline in asset values associated with extraction and depletion;
- (iv) deductions are made for damages from carbon dioxide and particulate emissions.

Gross national saving – Consumption of fixed capital = **Net National Saving**

Net National Saving + Education Expenditure – Energy depletion – Mineral depletion – Net forest depletion – Damage from carbon dioxide emissions – Damage from particulate emissions = **Adjusted Net Saving**

The indicator is measured in percentage by dividing ANS by Gross National Income (GNI).

The Need for Adjusted Net Saving

Saving is a core aspect of development. Without the creation of a surplus for investment, there is no way for countries to escape a state of low-level subsistence. Resource dependence complicates the measurement of the saving effort because depletion of natural resources is not visible in standard national accounts. The same is true for pollution damages to existing assets.

Adjusted net saving overcomes this problem by measuring the change in value of a specified set of assets, excluding capital gains. If a country's net saving is positive and the accounting includes a sufficiently broad range of assets, economic theory suggests that the present value of wellbeing is increasing. Conversely, persistently negative adjusted net saving indicates that an economy is on an unsustainable path.

In addition to serving as an indicator of sustainability, adjusted net saving has several other advantages as a policy indicator.

- **It presents resource and environmental issues within a framework that finance and development planning ministries can understand.**
- **It reinforces the need to boost domestic savings, and hence the need for sound macroeconomic policies.**
- **It highlights the fiscal aspects of environment and natural resource management, since collecting resource royalties and charging pollution taxes are basic ways to ensure efficient use of environmental resources.**

History of the Indicator

The publication of the Brundtland Commission report in 1987 introduced a critical new dimension to our conception of economic development by raising the issue of sustainability of development. The United Nations Conference on Environment and Development (the Rio Conference) in 1992 helped to cement this understanding and prompted most countries to commit to achieving sustainable development. Achieving sustainable development is at heart a process of creating and maintaining wealth.

Wealth is more than the value of produced assets. It includes natural resources, healthy ecosystems, and human resources. The measurement of comprehensive wealth falls entirely in the realm of integrated economic and environmental accounting and suggests that expanding our traditional national accounting measures of savings and wealth could be an important step in guiding policies for sustainable development.

The idea that saving, or changes in wealth, is crucial for sustainability was already present in *Blueprint for a Green Economy* (Pearce et al (1989)). But it is in Pearce and Atkinson (1993) that the concept is introduced formally.

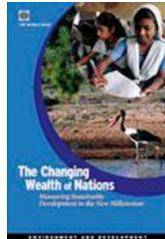
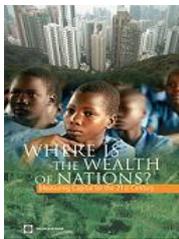
Pearce and Atkinson combine published estimates of depletion and degradation for 20 countries with standard national accounting data to examine true savings behavior. By this measure many countries appear to be unsustainable because their gross savings are less than the combined sum of conventional capital depreciation and natural resource depletion.

Hamilton and Clemens (1999) provide a theoretical foundation and empirical evidence showing that levels of saving are negative in a wide range of countries when the environment and natural resources are included in the savings measure. Negative genuine saving is

more than a theoretical possibility, therefore, and the evidence is that many countries particularly in Sub-Saharan Africa are being progressively impoverished as a result of poor government policies.

The World Bank has a 40-year time series of ANS estimates which has permitted empirical tests of whether net saving today does in fact translate into future increases in wellbeing. Ferreira and Vincent (2005) show that this relationship holds if the sample is limited to developing countries only; Ferreira *et al.* (2008) show that these results can be extended to incorporate the wealth-diluting effects of population growth.

Today, the World Bank publishes two important sources of indicators that provide an annual snapshot of progress in the developing world: [The Little Green Data Book](#) and [The World Development Indicators](#). These indicators allow us to assess the scope of the problems we face and measure progress in solving them. Both set of publications feature the ANS indicator.



As part of this reporting effort, the World Bank launched two flagship publications: [Where is the Wealth of Nations? Measuring Capital for the 21st Century](#) (World Bank, 2006), which offers estimates of total wealth, including produced capital, natural resources, the value of human skills and capabilities, and updated measures of saving; and [The Changing Wealth of Nations: Measuring Sustainable Development for the New Millennium](#) (World Bank, 2011), which provides updates for the 150 countries and extends the dataset to see how wealth changes over time.

Challenges

We should be cautious in interpreting a positive adjusted net saving rate. Some important assets from the analysis are omitted for methodological and empirical reasons, which may mean that saving rates are only apparently positive. Challenges include:

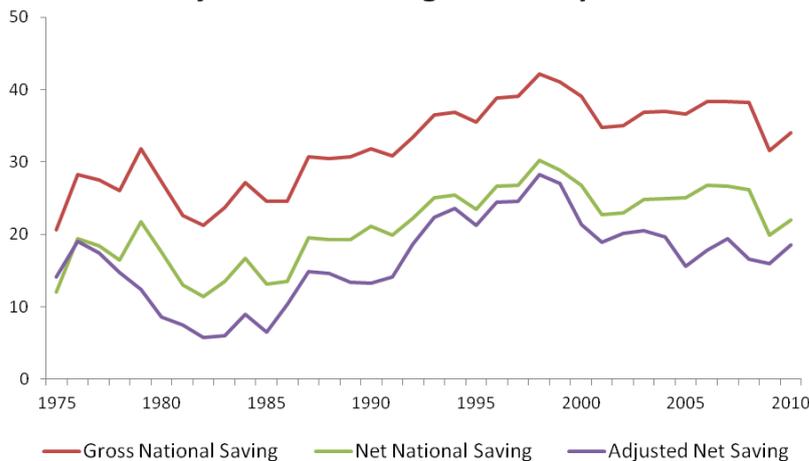
- Lack of data for some resources (i.e., ground water, land degradation, fish stocks, diamonds, and certain other minerals)
- Lack of agreed methodology for some ecosystem services (e.g., how can we put a value on biodiversity)
- Measurement errors

The Path to Sustainability

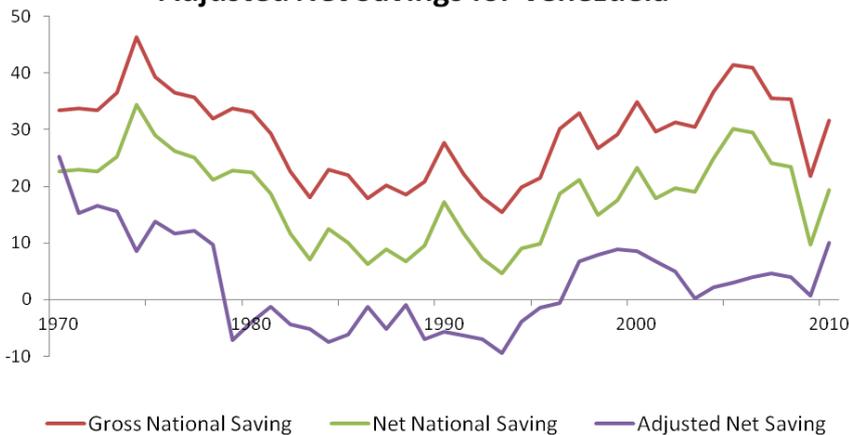
The following graphs illustrate the directions Malaysia and Venezuela are taking on the path to sustainable development.

In Malaysia, positive saving has been associated with substantial growth leading the country to become an important example of success in East Asia. In Venezuela, negative saving rates have been associated with a poor rate of economic growth. In the 1980's and 1990's, the country has experienced one of the slowest growth rates in Latin America.

Adjusted Net Savings for Malaysia



Adjusted Net Savings for Venezuela



*Download the latest ANS data [here](#).

Next Steps

A number of efforts are currently underway to strengthen the measurement of adjusted net saving. The team will embark on a scoping out study for a new benchmarking of the database, to address data and methodology issues such as:

- Updating methods to estimate energy and mineral extraction costs and their evolution over time. This is necessary to correctly measure the value of energy and mineral resource depletion, which constitute a major deduction to saving and a large source of rents for many developing countries. Extraction costs are not usually available and must be estimated using scattered data from extractive companies.
- Adjusting for population growth. While negative saving rates are an indication of unsustainability, positive saving rates may be masking a potential source of

unsustainability if population is growing fast enough. Population growth dilutes the effect of capital accumulation as it increases the number of people that share the country's total wealth. Estimates of changes in wealth per capita are presented in World Bank (2006). Numbers for Ghana, for example, show that it is possible to have positive ANS but declining wealth per person.

- Improving estimates of the investments in human capital. ANS treats public education expenditures as an addition to the saving effort. However, current expenditure of \$1 on education does not necessarily yield \$1 of human capital. The calculation should capture the varying effectiveness of education expenditure, include private expenditure, and value the depreciation of human capital.

Additional Resources:

- [Environmental Economics and Indicators](#), World Bank

- [Wealth Accounting and Ecosystem Services \(WAVES\) Partnership](#)

This World Bank-facilitated global partnership aims to promote sustainable development by ensuring that the national accounts used to measure and plan for economic growth include the value of natural resources.

- World Bank data are available for download at data.worldbank.org.

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