



“Summary of article by Kirk Hamilton and Michael Clemens: Are We Saving Enough for the Future?” in Frontier Issues in Economic Thought, Volume 6: A Survey of Sustainable Development. Island Press: Washington DC, 2001. pp. 37-41

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This article applies the concept of environmentally adjusted accounting to measures of savings and investment. Adjusting savings measures to reflect environmental depletion fits well with many of the traditional concerns of development economics, including the savings-investment gap and the importance of investment finance for development.¹ "Developing 'greener' national accounts holds the additional promise of treating environmental problems within a framework that the key economic ministries in any government will understand." (7) This framework may help to bridge the gap between environmental ministries and economic ministries. In addition, broader development concerns can be included in adjusted savings and investment measures by taking account of investment in human capital.

Genuine Saving

Genuine saving is defined as the true rate of saving in a nation after due account is taken of the depletion of natural resources and the damages caused by pollution. The policy implications of such a measurement are straightforward: negative rates of genuine saving must eventually lead to declining well-being. To correct negative or inadequate genuine saving, a variety of interventions are possible, including macroeconomic policy, environmental policy, and human resource policy.

The commonly used measure of wealth accumulation is *gross saving*: GNP minus public and private consumption. Gross saving is equivalent to gross domestic investment less net foreign borrowing. A more accurate measure is *net saving*, or gross saving minus the value of depreciation of produced assets. *Genuine saving* is obtained by subtracting the value of resource depletion and pollution damages from net savings.

Resource depletion is measured as the total rents on resource extraction and harvest. Rent is defined as the difference between the value of production at world prices and the total costs of production. For renewable resources, net depletion (harvest minus new growth) is calculated. For pollution costs, the adjustment represents pollution emissions valued at their marginal social cost. It is often difficult to obtain country-specific estimates for pollution damages, and the general estimates presented here use carbon dioxide emissions as a proxy for other pollutants. Some important ecological values, such as biodiversity and watershed protection, are not

included due to difficulty of estimation, and the value of soil erosion is also omitted for the same reason.

To take account of human capital investment, the concept of *extended domestic investment* is introduced. In this formulation, current educational expenditures such as teachers' salaries and textbooks are treated as investment. (This differs from the standard accounts which include only capital expenditures such as school building construction as investment.) A complete valuation of human capital would be extremely complex; this approach serves as a first approximation.

These two broad categories of adjustments to standard savings accounts move the figures in opposite directions. To examine their separate impacts, regional trends are first discussed using only the depletion and degradation adjustments. Then the calculations are modified by the introduction of extended domestic investment, which gives a revised genuine savings estimate including both environmental depreciation and human resource investment.

Regional Trends in Genuine Saving

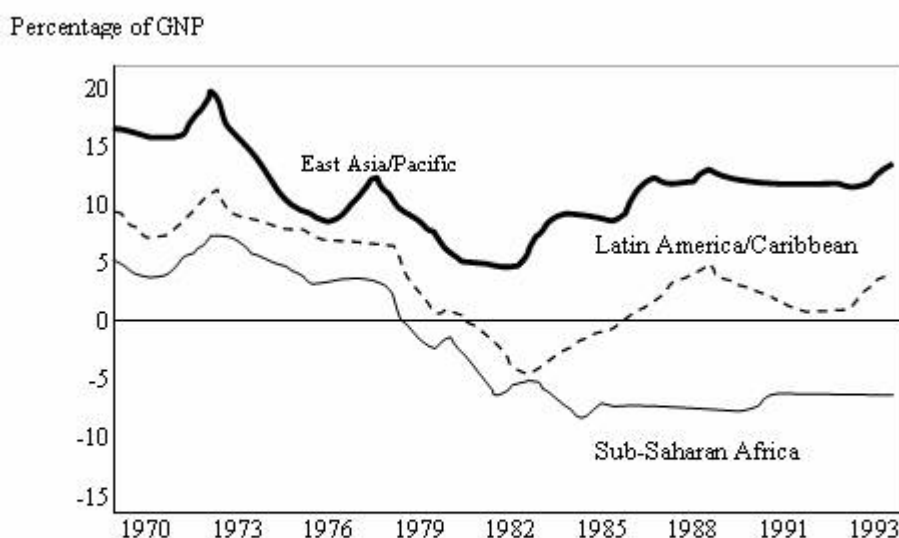


Figure I.2. Genuine Savings Rates by Region, 1970-1993: East Asia/Pacific, Latin America/Caribbean, Sub-Saharan Africa.

An analysis of regional trends in genuine saving (Figure I.2) reveals a remarkable pattern in Sub-Saharan Africa: genuine savings rates rarely exceeded 5% during the 1970s, and after that plunged into the negative range, where they have remained ever since. These negative rates have been accompanied by persistently low regional indicators of human welfare, including education, nutrition, and medical care.² In Latin America and the Caribbean, genuine savings declined from 8-9% of GNP in the 1970s, falling into the negative range during the 1980s debt crisis. They have since recovered into a low positive range, below 5% of GNP.

In contrast, the East Asia and Pacific region has shown generally strong rates of genuine savings, recently exceeding 15% of GNP. High-growth economies such as China (including Hong Kong), the Republic of Korea, Singapore, Thailand, and Taiwan dominate these regional statistics. Indonesian and Malaysian rates are lower, on a par with some of the higher Latin American rates. Lao People's Democratic Republic, Papua New Guinea, and Vietnam have negative genuine savings, but have recently been improving towards the positive range.

Percentage of GNP

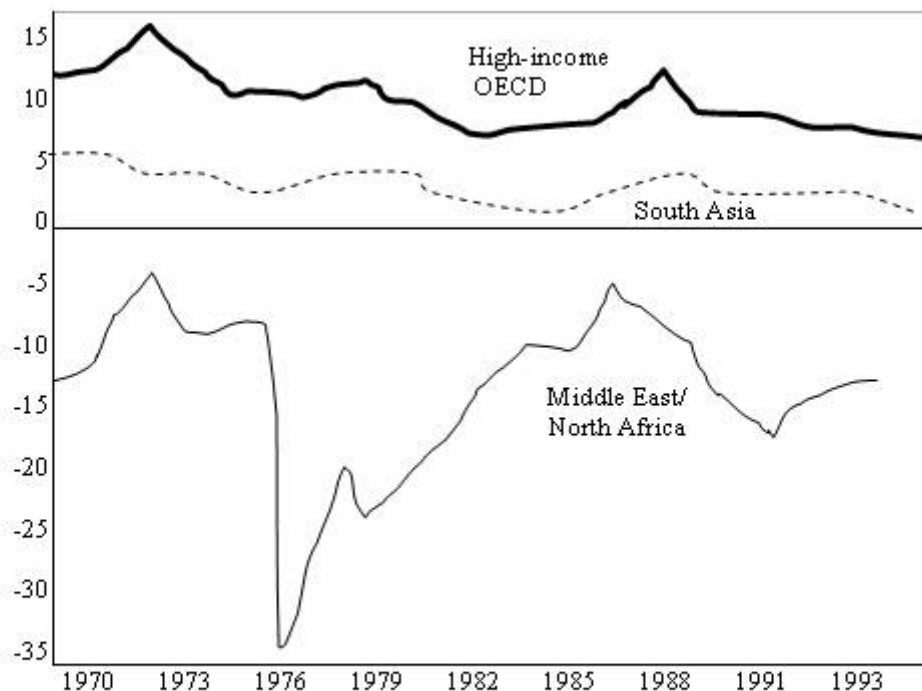


Figure I.3. Genuine Savings Rates by Region, 1970-1993: High Income OECD, South Asia, Middle East/North Africa.

In the Middle East and North Africa, genuine savings are consistently negative, indicating that the enormous rents from crude oil exports have been only partly invested, with a large portion being spent on imported food and manufactures. Modestly positive saving by Algeria, Egypt, Israel, Morocco, and Tunisia has not offset the large negative genuine savings rates of the major oil exporters.

In South Asia, near-zero genuine savings in Bangladesh and Nepal have been offset by positive genuine savings of close to 10% in India, giving a net positive rate for the region. High-income OECD (Organization for Economic Cooperation and Development) countries have genuine savings of around 10%, buoyed by high investment and lack of natural resource dependence. Western Europe and Japan are the biggest savers at 10-15%, while more resource-intensive economies such as Australia, Canada, and the United States achieved only 1-3% rates.

Investing in Human Capital

The world's nations spend trillions of dollars every year on investment in human capital through their education systems. If the notion of wealth is expanded to include human capital, educational spending, including current spending, must be counted as investment. Making this adjustment increases the genuine savings measure for economies such as Chile, where current educational expenditures represent about 3.1 percent of GNP. Using this approach, about one third of Chile's adjusted genuine savings of around 10% can be attributed to education.

Introducing human capital investment into the picture accentuates the differences between high and low-saving countries. The disparities between low, medium, and high income countries become more marked when educational investments are considered (Figure I.4). Adding human capital investment markedly improves regional genuine savings measures; even Sub-Saharan African rates, while remaining negative, are closer to zero.

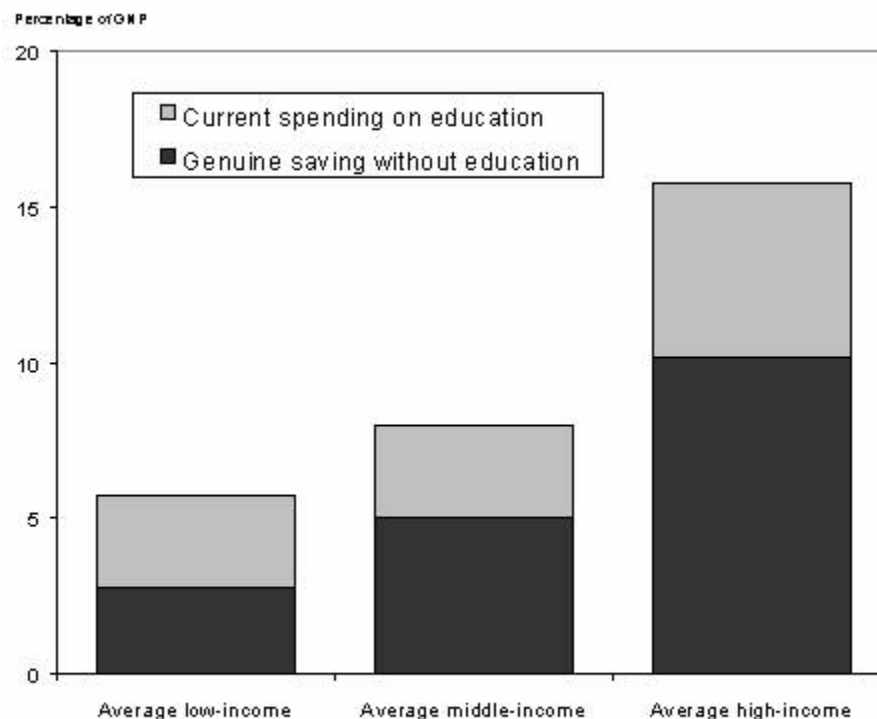


Figure I.4. Contribution of Current Education Expenditures to Genuine Saving

Policy Implications

The main impact of the genuine savings calculation is to reveal the extent to which resource-rich countries have been consuming, as opposed to saving, natural resource rents. This is consistent with economic evidence that growth rates have been weaker in resource-intensive economies.³ For these countries to improve their performance, changes are needed in both macroeconomic and environmental policies. A key issue is the reinvestment of natural resource rents collected through government royalties. Some of the highest-quality outlets for public investment are in

human capital. Ministries of finance and human resources can use genuine savings measures to help guide public investment policy.

For resource ministries, efficient resource extraction and harvest, security of tenure for producers, and capture of rents through resource royalties should be high priorities. For environment ministries, the challenge is to reduce pollution damages. In India, for example, 1991 pollution damages were calculated at roughly 2.5% of GNP, lowering genuine savings rates from 10.5% to 8%.

“The bottom line in the analysis of genuine saving is that policies leading to persistently negative savings rates must entail, eventually, declines in welfare. The intuition, or hope, that greening the national accounts could influence policies for sustainable development has taken some time to be realized, but the analysis of saving and wealth holds out this possibility. This analysis also emphasizes that the key economic ministries, the human resources ministry, and the resource and environmental ministries all have important policy levers at their command if the goal is to achieve sustainable development.” (16)

Notes

1. D. W. Pearce and G. Atkinson (1993).
2. World Bank (1996).
3. J.D. Sachs and A.M. Warner (1995).