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Further Reading:

McGrath, L., Hynes, S., & McHale J. (2019). Augmenting the World Bank's estimates; Ireland's Genuine Savings through boom and bust. *Ecological Economics*, 165

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Accounting for Ireland's natural capital and measuring sustainable development

Environmental economists offer what is arguably the most internally consistent theory of sustainable development. A sustainable development path is one that maintains welfare opportunities for future generations. An economy's "genuine savings" (GS) represent changes to the productive capacity of the economy and thus indicate the capacity for the generation of future well-being. GS goes "*beyond GDP"* by including important assets omitted in the conventional national accounts. GS is a measure, in monetary terms, of the change in the value of the stocks of natural (clean air, natural resources) produced (machines and infrastructure) and human (knowledge) capital on an annual basis. Empirical applications have shown GS to be a good forward-looking indicator of well-being. GS has gained international recognition through the World Bank who publish estimates for most countries. This paper presents augmented estimates of Irish GS by constructing a time-series predominantly from national data sources and includes characteristics omitted by the World Bank (peat depletion, forestry growth, agricultural land value and air pollution) and examines technological advancement, transboundary pollution, climate change and population growth.

Research Findings

Neither "Celtic tiger" growth, from the mid-1990s to the mid 2000's, nor the economic downturn from 2008-2010, appear to coincide with unsustainable development. Pre-tiger, the Irish economy signals unsustainability through low or negative savings from 1990-1995. Our GS estimates are considerably lower than the World Bank's and contrary to the GS literature show that a well-developed economy can signal unsustainable development. Our results are driven by remarkable damages from local air pollution, primarily sulphur dioxide, in the early 1990s. During the economic boom period we find evidence to suggest a transition away from an unsustainable path as rapid economic development *and* rapid declines in environmental degradation occurred concurrently.

Policy Implications

There are often calls for a curtailment of economic growth to *"save the environment,"* our results reinforce the suggestion that what matters is not economic growth per se, but the way economic growth is secured. In the Irish case, it appears that total pollution damages were declining substantially while rapid levels of economic growth were secured. Our results demonstrate the potentially large benefits attainable from pollution reductions and provide a reminder that a system of regulations prioritising one particular problem such as carbon dioxide emissions at the expense of other damaging local air pollutants may result in misguided public policy. The measurement of genuine savings provides a valuable framework for aggregate assessments where such trade-offs are involved. In terms of sustainability assessments, governments and statistical agencies should be cognisant of the theoretical literature suggesting that changes in the economy's broadly defined productive capacity should be the focus. The European Union (EU) aims for sustainable development and currently monitors progress with a set of 100 indicators spilt between economic, social and environment based on the United Nations Sustainable Development Goals. These indicators are clearly important but fail to provide clear information to aid in the determination of whether or not the EU is on a sustainable development path.

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