real-world economics review, issue no. 106
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On ecology and economics

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Immiserizing growth

There was a time when it was thought that the main task of economics was to assure economic growth. For example, John M. Keynes predicted that "the day is not far off when the Economic Problem will take the back seat where it belongs" (Keynes 1931: 6). Then, once scarcity has been overcome, mankind would devote most of its efforts to real problems, the problems of life and human relations (ibid,).

The impact of economic growth on the Earth environment was not an issue. This is no longer so. The ecological impact of economic activities can no longer be ignored. Ecological sustainability is an imperative if we want to preserve the planet for future generations. Ecological economics is a new subfield which addresses the challenge of introducing the ecological restrictions into economic analysis, trying to provide an integral response to the pressing environmental problems, many of them caused by economic activities.

This collides with the traditional economic point of view of a continuing and unlimited economic growth. Ecological economics introduced an opposing line of thought assuming that technology will not be able to circumvent fundamental energy and resource constraints; this, together with the collateral damage caused by economic activities, will impose that eventually economic growth would stop. Therefore, resource constraints as well as ecological damage have to be taken into consideration in any economic analysis.

The idea of immiserizing growth—an increase in aggregate national output that results in a net decline in national welfare—was first developed in the context of the theory of international trade (Bhagwati et al. 1998: 369). It can be extended to the situation where an increase in aggregate output results in environmental degradation. Given the fact that social costs differ from private costs the main issue in ecological economics is to design the restrictions which allow to internalize the environmental externalities

A key difficulty that ecological economics faces has to do with the fact that many environmental problems are characterized by a considerable degree of uncertainty about the severity of the problem and the effectiveness of possible solutions. For example, Weitzman (2011: 284) argued that "the economics of climate change consists of a very long chain of tenuous inferences fraught with big uncertainties in every link." He remarked that in this case, cost-

benefit analysis "can be fragile to the specifications of extreme tail events" (ibid.: 289). To make things worse, climate change has to do with physical and biological processes that are slow to respond to attempts at reversal (ibid.).

Anyway, if we are unsure about the existence of future limits to growth the prudent course is to assume they exist.

Robert Costanza, one of the pioneers in ecological economics, formalizes in a game theoretic format the main dilemma environmental policy design faces. He shows that this simplified game has a fairly simple 'optimal' strategy:

> "if we really do not know the state of the world then we should choose the policy that is the maximum of the minimum outcomes (i.e. the Maxi Min strategy in game theory jargon)" (Costanza 1989: 4).

This means that we analyze each policy in turn, look at what would happen in each of the possible states of the world if we pursue that policy, and pick the policy with the best outcome in the worst scenario.

It is usual to distinguish between positive and normative economics. Positive economics is supposed to study "what is," "what was," or "what will be," while normative economics has to do with "what ought to be," according to the original Hume's distinction.

For example, the discussion on the impact of some industry on the environment is an issue within the positive economics orbit. On the contrary, the discussion on what level of pollutant emission is tolerable is a normative issue; it has to do with value judgments.

For different reasons[1], fighting climate change is preeminently a normative issue involving issues of justice and equity.

Moreover, sustainable development is a multidimensional concept and very difficult to reduce to one-dimensional monetary terms. As Söderbaum (2020: 208) warns,

> "the present sustainability challenge is rather about the non-monetary aspects of development. Monetary impacts are still important but reducing analysis to its alleged monetary equivalent, so called 'monetary reductionism', is questioned."

For all these reasons, normative analysis plays a decisive role in environmental decision-making. The main contribution of positive economics is to quantify the costs of the different ecology-preserving initiatives. But the final decision will inevitably be deeply influenced by normative considerations.

[1] Detailed in chapter 4 of Beker (2023).

The trade-off between sustainability and economic growth

While continued economic growth may be ecologically unsustainable, low or negative rates of economic growth may be accompanied by adverse social impacts such as large-scale unemployment. The field of ecological macroeconomics aims to address this issue with the help of new macroeconomic models.

As Hardt and O'Neill (2017) point out, the challenge is to build macroeconomic frameworks and modeling tools to test how proposed post-growth policies could produce a stable transition and viable alternative to economic growth. In fact, most of the literature in ecological macroeconomics has as a departure point the need to manage an economy without growth.

Those who are not willing to resign to economic growth argue that using renewable energy, recycling waste, and shifting consumption from goods to services can make economic growth more environmentally friendly, what has been called "green growth." However, ecological economists are deeply skeptical about the possibility of divorcing economic growth from associated environmental impacts as promoters of "green growth" claim. In fact, no sufficient data are available for a meaningful statistical analysis that could prove or disprove the green growth hypothesis that perpetual economic growth and environmental sustainability can be reconciled.

After exhaustively reviewing the vast range of climate–economy models populating the literature, Scrieciu et al. (2013: 254) conclude:

> "Although there has been substantial analysis over the last decades on the environmental constraints to economic growth using integrated assessment modeling, economics so far has yet had little to offer in the way of model based analysis for studying the interrelationships and tradeoffs spurred by the double objective of respecting biophysical/climate thresholds and meeting ever-aspiring growth prospects. This remains an important blind spot and requires more attention from the economics profession."

Some years later, this conclusion is, unfortunately, still valid. Therefore, the above mentioned maxi-min criterion seems advisable to avoid making irreversible mistakes in this sensitive area.

In this respect, some critics have pointed to the negative results of some policies implemented to prevent some of the gloomy scenarios forecasted. For example, fears of overpopulation framed very doubtful policies, such as China's one-child policy and forced sterilization in India. Banning synthetic fertilizer and pesticide imports forced Sri Lanka's millions of farmers to go organic practically overnight with disastrous consequences that culminated in the 2022 dramatic popular uprising. These examples underline the importance of being very careful in the speed of reforms and to take always into consideration the economic and socio-political context in which they are executed as well as the possible side and unwanted effects of them.

The challenge of climate change

In the last 50 years, there has been an increasing awareness of the fact that the industrial economy has been systematically changing the ecosystems within which it is embedded ignoring most of its negative consequences.

Lately, concerns have been especially growing about the urgent need to avoid dangerous anthropogenic climate change by stabilizing the atmospheric concentration of greenhouse gases, the objective so defined by The United Nation Framework Convention on Climate Change that entered into force in 1994. The human additions to the stock of greenhouse gases in the climate system are warming the planet. Some of the consequences are that polar ice shields are melting and the sea is rising. In some regions, extreme weather events and rainfall are becoming more common while others are experiencing extreme droughts, floods, and storms increasing pest attacks and fueling wildfires.

Falling yields, rising crop failures, and famine are some other effects of adverse climate change. In 2018, the UN Intergovernmental Panel on Climate Change (IPCC) published a special report that concluded that global emissions must be halved by 2030 and reach net zero by the middle of the century. However, there is at present no agreed plan for accomplishing this. Moreover, the Glasgow Climate Pact signed in 2021 only agreed on phasing down but not phasing out coal as was included in previous negotiation drafts.

Grubler et al. (2018) present a scenario for reducing emissions in line with the Paris Agreement known as Low Energy Demand (LED), which reduces global energy consumption by 40% by 2050 and makes it much more feasible to achieve a transition to 100% clean energy. But this requires a planned reduction of the material and energy throughput of the global economy by close to 20%.

Scenarios that assume emission reduction and continuous economic growth mainly depend on the use of “negative emission” technologies such as Bio-Energy with Carbon Capture and Storage, an approach which has been associated with substantial risks and uncertainties.

For this reason, Spangenberg and Polotzek (2019: 206) recommend, to avoid a climate overshoot, that affluent countries start with a phase of de-growth and turn into a steady-state economy once the necessary reductions of resource consumption have been achieved.

Besides that, they conclude that economics has to change: “In short, economics has to be reinvented if it is to become a force for leading us away from catastrophe – rather than toward it. Taking the science of complexity on board would be a first step in this direction” (ibid.: 206).

On climate change and economics

It is well known Sir Nicholas Stern's remark that "climate change is a result of the greatest market failure the world has seen" (Goodwin 2019: 36).

Although mainstream economists admit that externalities—and negative externalities in particular—cause market failure, they assess the performance of an economy through a single metric, the Gross Domestic Product (GDP) which ignores most of the costs of environmental damage. For this reason, Stiglitz et al. (2009: 7) remark that "choices between promoting GDP and protecting the environment may be false choices, once environmental degradation is appropriately included in our measurement of economic performance." For the time being, this recommendation, however, is far from being implemented.

Economics recipe to deal with negative externalities is to internalize them. The most common way to do this is by imposing a tax. This is the preferred economics approach. For example, in a statement issued on January 17, 2019, 3,623 US economists—including 28 Nobel Laureates—asserted that the "most cost-effective lever to reduce carbon emissions" is an escalating carbon tax (Climate Leadership Council 2019). This quite unusual demonstration of discipline unity—signers include from Robert Lucas to George Akerlof—shows that it is almost a religious belief in the profession that any issue can be solved simply through the use of price signals.

However, the issue is what the proper amount of the tax is, which is not easy to estimate. In the case of the carbon tax, the signers propose that the "carbon tax should increase every year until emissions reductions goals are met."

Denmark approved a corporate carbon tax in order to reach the ambitious target of cutting greenhouse gas emissions by 70% from 1990 levels by 2030. But, in general, carbon taxes are difficult to implement because they are often regarded as being regressive as they may penalize poorer members of society.

In fact, carbon tax should be applied to those goods responsible for the majority of greenhouse gas emissions: transport fuel, electricity, heating, and food, items with an important weight in low-income family budgets. An alternative may be to consider a policy design that offsets the regressive effects by returning the revenue back to low-income households. Anyway, carbon tax has proved to be difficult to implement. In France, the Yellow Vests movement was the response to the increase in carbon tax.

For this reason, other kinds of regulation are preferred such as setting limits to the emission of air pollutants. The issue here is whether these limits are enough to prevent environmental damage. For the time being, it seems they are not, given the growing environmental degradation.

Externalities—in this case positive externalities—pose another sort of difficulty. It is the case where investment opportunities that can contribute to ecological restoration include positive externalities, such that the investor cannot capture all of the benefits; or where the return will occur over a relatively long time. In both cases, investors will be deterred by one or the other of these characteristics. For this reason, instruments like taxes, subsidies, and permits are useful to promote that sort of investment. In the same vein, Goodwin (2019) mentions Payment

for Ecosystem Services (PES) programs such as the US$1.5 billion investment made by New York City, when it paid upstate landowners and other stakeholders to engage in watershed conservation. She adds that PES programs may be used to solicit private investments in restoration; for example, those who increase the storage of carbon (or prevent its release), as compared to a benchmark, receive carbon credits that have a monetary value.

Conclusion

Social change is a serious matter. This is not the first time we are told that drastic changes in society are needed—which is beyond any doubt. But given the experience of failure that an experience of drastic social change as communist economies meant, it is advisable to take cautiously de-growth or post-growth recommendations, in particular because of the high degree of uncertainty about the real magnitude of the ecological problems and the effectiveness of possible solutions. In this respect, it is worthwhile remembering Deng Xiaoping's advice that the best way to cross a river—when you do not know the depth of the water—is by feeling the stones.

References

Bhagwati, J., Panagariya, A. and Srinivasan, T.N. (1998). *Lectures on International Trade*, 2nd ed., MIT Press. Cambridge, MA.

Climate Leadership Council. (2019). Economists' Statement on Carbon Dividends. https://clcouncil.org/economists-statement/

Costanza, R. (1989). What Is Ecological Economics? *Ecological Economics*, No. 1, pp. I–7. Elsevier Science Publishers B.V. Amsterdam.

Goodwin, J. (2019). Sophistical Refutations in the Climate Change Debates. *Journal of Argumentation in Context*, Vol. 8, No. 1, Feb, pp. 40–64.

Grubler, A., Wilson, C., Bento, N. *et al.* (2018). A low energy demand scenario for meeting the 1.5 °C target and sustainable development goals without negative emission technologies. *Nature Energy*, Vol. 3, pp. 515–527. https://doi.org/10.1038/s41560-018-0172-6

Hardt, L. and O'Neill, D.W. (2017). Ecological Macroeconomic Models: Assessing Current Developments. *Ecological Economics*, Vol. 134, April, pp. 198–211.

Keynes, J.M. (1931). *Essays in Persuasion*. Papamoa Press. New Zealand.

Scrieciu, S., Rezai, A. and Mechler, R. (2013). On the Economic Foundations of Green

Growth Discourses: The Case of Climate Change Mitigation and Macroeconomic

Dynamics in Economic Modeling. *WIREs Energy and Environment*, Vol. 2, pp. 251–268. https://doi.org/10.1002/wene.57

Söderbaum, P. (2020). Ecological Economics: Redefining Economics for Democracy and Sustainability. In V.A. Beker (ed.) *Alternative Approaches to Economic Theory*. Routledge. Abingdon, Oxon.

Spangenberg, J.H. and Polotzek, L. (2019). Like Blending Chalk and Cheese – The Impact of Standard Economics in IPCC Scenarios. *Real-World Economics Review*, No. 87, pp. 196–211.

Stiglitz, J.E., Fitoussi, J.P. and Sen, A. (2009). Report by the Commission on the Measurement of Economic Performance and Social Progress. https://ec.europa.eu/eurostat/documents/8131721/8131772/Stiglitz-Sen-Fitoussi-Commission-report.pdf

Weitzman M. L. (2011). Fat-Tailed Uncertainty in the Economics of Catastrophic Climate Change. *Review of Environmental Economics and Policy*, Vol. 5, No. 2, pp. 275–292.

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SUGGESTED CITATION:
Victor Beker, "On ecology and economics", *real-world economics review*, issue no. 106, December 2023, pp. 189–195,
http://www.paecon.net/PAEReview/issue106/Beker106

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