

## **SPECIAL PANEL:**

### **Ecological Macroeconomics**

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#### **Panel abstract:**

GDP growth is an unquestioned imperative for macroeconomists throughout the world. This is understandable in less developed countries where rising labor productivity is deemed as necessary condition for the alleviation of poverty and the advancement of development. However, even in the OECD countries macroeconomists see growth as a socially stabilizing necessity. The pathway to growth for the last 250 years has been increasing energy use.

For the past years and decades IPCC and many other scientists have been pointing towards the unsustainability of this process given important ecological boundaries. Climate change may bring us close to one of these boundaries, and it is estimated that in order to contain global warming within 2°C above pre-industrial levels, per-capita emissions in developed nations must be reduced by 80-95% by 2050.

While neoclassical macroeconomics assumes that setting caps and price signals are sufficient to steer the economy towards a sustainable pattern of growth, others believe that such a transition is fundamental, requiring serious rethinking of the growth paradigm and associated standard economic assumptions. Ecological economists have been focusing on these issues, but have paid little attention to macroeconomic relationships. The aim of the proposed session is to continue making steps towards combining ecological and macroeconomic thinking.

#### **“Modeling the Great Transition”**

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#### **Abstract:**

The purpose of this paper is to introduce the first version of the Great Transition (GT) model. The GT model is being developed at the New Economics Foundation as part of the Great Transition Initiative, a wider effort of research aimed at envisioning a new economic system – more sustainable, fair and stable – and seeking the appropriate policies to manage the transition.

The need for a new economic system stems from the multiple crises that are affecting the current one, of which the financial crisis that burst through in 2008 and the consequent crisis of sovereign debt are presently the most critical. This has to be added to the deep environmental emergency driven by the increasing scarcity of resources and climate change, to the stagnation of wellbeing levels in advanced economies and to the strong inequality in the distribution of income and wealth. The economic crisis has

also shown the inherent limitations of the dominating economic theories, which have been unable to predict the crisis and currently appear to be incapable of conceiving credible solutions to restore stability and employment.

The gravity of the situation has led many – in governments, universities and civil society – to seek for alternative economic strategies and for new tools for analysis. We want to contribute to this debate by building a sound and reliable macroeconomic model of the UK economy, to be used as policy-analysis tool in the pursuit of a new economic system, characterized by high levels of prosperity and wellbeing, a just distribution of resources and a low impact on our environment.

The final output of the research (due for May 2012) work will be a comprehensive macro model of the UK economy, capable of offering scenario-based simulations of societal and economic interactions. The model is made of a “core” unit, containing all the relevant economic sectors of the UK system (the process of production and consumption, the dynamics of employment and investment, the role of the government and the main features of the mechanisms of credit creation), and a range of sub-models that can be integrated to the core one in order to analyze specific issues.

In particular, we intend to concentrate the future modelling work on three main topics:

- Environmental limits. One of the main purposes of the complete model is to analyze the functioning of a market economy when considered as inserted in a bigger framework constituted by the surrounding environment. We sketch the interactions between the economic systems and the environment by concentrating the analysis on energy (energy consumption and energy prices, energetic efficiency and the diffusion of renewable sources of energy) and climate (adopting a framework similar to Integrated Assessment Models).
- Well-being and non-monetised outputs. The underlying goal of the model is to demonstrate how a transition can be made to a low-carbon economy that respects environmental limits but maintains high levels of wellbeing. Given the macroeconomic framework that we use, we build an index of societal wellbeing, capable of capturing a set of variables which we consider important for good social functioning (e.g. income level, employment, amount of polluting emissions, an index of inequality, etc.).
- Finance. It is our intention to capture the dynamics of credit creation and the interactions of the banking sector with the rest of the economic system, as these topics turn out to be crucial when imagining how an alternative economic system could work.
- Social policies. The model is intended to be used to analyze some important socio-economic variables. In particular, it is our intention to include: a) distributional issues; and b) changes in work hours.

The model is being developed using system dynamics methodology, and simulated up to 2050. System dynamics is particularly apt to grasp the functioning of the multiple connections and feedbacks that exist between different sectors of the economic system, allowing for a larger analytical power than most of the widespread macroeconomic theories and methods.

We will aim, in a finished version of the model, to present it interactively, providing a user-friendly interface through which the users can simulate different policy choices, impose potential shocks and test different assumptions on calibrated parameters. In this sense, the model is likely to serve educational purposes for the less experienced public and to stimulate alternative thinking in trained economists.

## **Ecological Macroeconomics: An Application to Climate Change**

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**Abstract:**

Ecological economics has neglected the macroeconomic level in its analysis. While most of its thinking stems from the recognition of biophysical limits, economic investigations have mostly been limited to empirical studies and measurement of increasing resource use. We argue that the macroeconomy is an important determinant of the economy and its interactions with the environment and demonstrate how many of the current debates about economic growth within the ecological economics' community can be accommodated within our framework. These include discussions on exergy, degrowth, sustainable consumption, the rebound effect, and multi-criteria analysis. We do so by presenting the cornerstones of a complete and consistent macroeconomic model of economic growth. Ecological macroeconomics is an elusive concept, but in using climate change as a point in case, we hope to make our conceptual theorizing more concrete.

The application to climate change also allows us to work out the difference of our approach to the widely used neoclassical models of economic growth. These models assume that markets are functioning sufficiently well to ensure the clearing of all markets at all times. In their stronger variant, neoclassical models of economic growth additionally assume that prices correctly reflect intertemporal scarcity, thereby steering the economy to the first best solution. In the context of climate change this assumption is particularly problematic, because one can argue that agents are unable to form rational expectations about highly uncertain future climate damages (Ackerman et al. 2009; Weitzman, 2009). In the past, the constraining expectations structure induced much of the debate on climate economics to focus on the concept of discounting and the realm of moral philosophy. In recent years the focus of analyses has shifted to various forms of market imperfections and failures, both static and intertemporal.

Ecological economics, while taking a broad based, inter- and transdisciplinary perspective, has approached the issue of climate change and of natural systems, more generally, mostly from a microeconomic perspective. Individual actions and choices have been interlinked with environmental system's dynamics leading to coupled socio-ecological system's analyses. Our suggested macroeconomic modeling framework extends this type of research by taking a systems perspective in both socio-economic and natural systems' analysis. We propose a challenge to conventional climate economics different from the ones mentioned above. Instead of adopting a supply-side approach to the macroeconomy, we argue that a demand-driven model of economic growth is better suited for the study of the social transformation necessary to achieve sustainability. In particular, we are able to shed light on such key issues as sustainable consumption, reduced working time, and the rebound effect when confronting the social imperative of growth and investment to ensure socially necessary employment levels with the limits of biophysical systems.

Starting out from the familiar textbook macroeconomic model which centers on the investment-saving relation, we add endogenous technical change. Increased labor productivity in turn causes energy use to increase which leads to deteriorating environmental quality. We argue that this view of the economy is more consistent with thinking respecting earth-system boundaries and absolute limits to growth, thinking which has importantly been coined by ecological economists. The framework we present in this paper provides a consistent structure to analyze the implications of policies advocated on the microeconomic level in the aggregate. In addition, in the absence of rational expectations the behavior of the macroeconomy can be simulated much in the way that large Integrated Assessment Model are,

making such a model a natural candidate for the representation of the (energy) demand side in such larger models.

After briefly reviewing prominent integrated economic assessment models used in the analysis of climate change, we identify potential weaknesses in methodological assumptions usually made and their implications for policy responses to climate change. We then demonstrate how ecological policy proposals can be analyzed in macroeconomic terms, raising questions unseen at the microeconomic level. We also suggest the relationship between per capita income, and labor and energy productivity as the relevant node between growth and the accumulation of greenhouse gases (GHG).

## **“Economic Growth, Inequality, and Welfare”**

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### **Abstract:**

The last several decades witnessed a cascade of new technologies and institutional transitions that fostered a period of robust economic growth. Although income growth is often interpreted as a measure of rising social welfare, ecological economists have long argued that the process of growth generates a wide array of social and environmental costs that serve to decouple the relationship between welfare and material prosperity. A landmark study by Daly and Cobb (1989), for example, evaluated economic trends in the United States between 1950 and 1986. Although per capita income rose by 2.0% per year during this period of analysis, an adjusted welfare measure – the Index of Sustainable Economic Welfare (ISEW) – increased by just 1.0% per year. More recent data support an even stronger conclusion: In a broad range of industrialized nations, the ISEW reached a maximum during the 1970s and 1980s with a subsequent downturn or plateau (Jackson and Symne, 1996; Lawn, 2003; Talberth et al., 2006).

A decoupling between growth and welfare is supported by data on people’s subjective life satisfaction, which has remained largely unchanged since World War II in the high-income societies of Europe, North America, and Japan (see Kahneman et al., 1999; Layard, 2005). Nevertheless, important questions remain concerning the theories and methods employed in this area of research. For example, although the ISEW adjusts personal consumption to account for a wide range of effects, Neumayer (1999) shows that the disparity between this indicator and standard measures of economic growth is dominated by just two factors: (a) the environmental costs imposed by greenhouse gas emissions; and (b) the social costs imposed by rising economic inequality. Moreover, Neumayer notes that the ISEW’s approach to valuing inequality are ad hoc, grounded in neither a formal theory of welfare measurement nor in empirical research on society’s willingness to allocate scarce resources to reduce the gap between the rich and the poor.

There is no question that rising inequality poses important issues that should be addressed in a suitably specified welfare index. In the United States, for example, high-income households have witnessed large increases in purchasing power in recent decades with much smaller increases for middle- and low-income households. One key point is that the share of income paid to the top 1% of households increased from 7% to 16% between 1979 and 2007. This observation is linked to structural changes in the economy that have been brought about by technological change and globalization. These changes

have resulted in “winner-takes-all” economy in which the gains of growth are directed disproportionately to highly skilled professionals (Frank and Cook, 1996).

To address the methodological challenge set forth by Neumayer, the present analysis derives a theoretically and empirically sound method for adjusting a standard measure of average income to account for inequality, abstracting away from the other social and environmental costs addressed by the ISEW and related indicators. Based on U.S. data for the period 1979 through 2007, the results show that the insights derived from the analysis of trends in the ISEW are qualitatively correct. In the calculations presented below, average income rose at an annual rate of 1.8% per year, while our adjusted measure grew at a rate of just 0.6%. Accounting for additional costs such as the social cost of carbon dioxide emissions would lead to a wider gap between growth and welfare.

## “What is Degrowth? From an activist slogan to a social movement “

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### **Abstract:**

As a project of voluntary societal shrinking of production and consumption for social justice and ecological sustainability, degrowth (“*décroissance*” in French) was launched into the political arena by activists and intellectuals at the beginning of the 21st century. It quickly became a slogan against economic growth (Bernard et al. 2003) and a diversified social movement.

The present article offers a short history of degrowth and comprehensive description of its currents of thought and strategies of action, demonstrating its transformation into a social movement. Finally this will enable us to improve the basic definition of degrowth.

While the concept of sustainable development is based on a false consensus (Hornborg, 2009), degrowth does not aspire to be adopted as a common goal by the OECD or the European Commission. The idea of socially sustainable degrowth (Schneider, 2010a), or simply degrowth, was born as a proposal for a radical change. The contemporary context of neo-liberal capitalism appeared -at least until the economic crisis of 2008- as a post-political condition, meaning a political formation that forecloses the political and prevents the politicization of particular demands (Swyngedouw, 2007). Within this context, degrowth is an attempt to re-politicize the debate about the much needed socio-ecological transition or metamorphosis, in order to affirm an alternative representation of the world as well as affirming its dissidence with the current representations. For instance, degrowth confronts development, the unquestioned consensus that economic growth represents progress. The universal goal of uniform development, in its Western sense, was not open to debate until the writings of Arturo Escobar, Wolfgang Sachs and others in the 1980s. Development was presented as the only possible path, a hegemonic concept and politics (Rist, 2008). Degrowth also challenges other ideologies such as “green growth”, and the belief that economic growth continuously improves well-being, resource availability, democracy, and justice.

Degrowth confronts dominant paradigms in social sciences, such as neoclassical economics, but is not a paradigm in Kuhn’s sense, as “universally recognized scientific achievements that, for a time, provide model problems and solutions for a community of researchers” (Kuhn, 1962: x). However, building from

Herman Daly's "steady state economy", a new ecological macroeconomics without growth is being developed (Victor, 2008; Jackson, 2011). There is a confluence with degrowth, and it might be that a new paradigm in economics finally takes root. This has not happened yet. The degrowth movement in France and Italy finds support in Georgescu-Roegen (Herman Daly's mentor) but also, as we shall see, with many other authors who do not belong to ecological economics.

Some refer to degrowth as an ideology, as a 'system of ideas and values'. However this position remains too simplistic, or at least premature, to explain the heterogeneity of sources and strategies of degrowth. We shall show that degrowth is a comprehensive vision and set of ideas constituted by concerns, goals, strategies and actions.

Degrowth, in its 21st century meaning, as introduced by activists who perceived it as a voluntary societal reduction of production and consumption, quickly became an interpretative frame for a new social movement. Social movement, here, is meant as a mechanism through which actors engage in collective action. In particular degrowth actors are involved in conflictive relations with clearly identified opponents, linked by dense informal networks and sharing a distinct collective identity (Della Porta and Diani, 2006). Enemies of cars and advertisements, supporters of cyclist and pedestrian rights, partisans of organic agriculture, critics of urban sprawl, friends of solar energy, sponsors of local currencies, have started seeing degrowth as an appropriate common representative frame of their world view. Since 2001, degrowth has become a drainage basin where different streams of critical ideas and political action have converged.

Starting as an innovative activist slogan, degrowth became an interpretative frame that enabled a politicization through the two framing tasks of diagnosis and prognosis. The diagnosis mobilized multiple sources (or streams of thought) and the prognosis multiple strategies engaged a wide range of actors. These processes will be described in detail. The degrowth frame has been able to mobilize people concerned with the limits of the present growth paradigm. The possibility of degrowth becoming a concept that aids the inception of a new socio-economic paradigm will also be discussed.

In what follows, Section II considers how social movement theory can be considered relevant to the emergence of degrowth. Section III presents the history of degrowth as a notion and social movement, and Sections IV and V propose a comprehensive description of its currents of thought and strategies of action, in order to reach a common definition of degrowth. Section VI draws the conclusions.