



Thursday 29 April 2010

« Decision Making and Risks in Complex Environments »

A joint event of the Coordinate Action "Global System Dynamics and Policies" (GSD) - a project funded by the Future & Emerging Technologies division of the European Commission -, the *Plan Pluri-Formations* Complex systems in social sciences, Ecole des Hautes Etudes en Sciences Sociales (EHESS), and the Institut des Systèmes Complexes Paris – Ile-de-France (ISC-PIF).

This one-day workshop intends to be the first of a series of events addressing issues in policy making in complex environments, with particular emphasis on systemic risks, on the ability (or not) to form expectations on the consequences of policies, on policy assessment and regulation issues. The general goal is to promote both interdisciplinary scientific studies, and interactions between the academic and the nonacademic worlds. The topics that will be discussed will not be limited to any specific domain: they may concern climate change, environmental management, health (pandemics) and other social issues, the global economy, financial markets, etc.

For the present workshop, the invited speakers are two (mathematical) economists and two (theoretical) physicists, and the talks will concern the impact of climate change on the economy, the dynamics of recession and recovery after a shock, and the (un)stability of the financial market. In addition, a nonacademic representative will present the related concerns of decision-makers in the private sector. There will be time for discussions, during long coffee breaks and during lunch taken at the workshop location.

Program

9:30-10:30 **Antoine Mandel**

[Univ. Paris 1 Panthéon-Sorbonne *and* Potsdam Institute for Climate Impact Research]

"Towards a multi-agent approach of climate policy assessment"

Abstract: Lagom generiC is a multi-agent model for representing economic systems over a time horizon of one to several decades. The model is based on a set of agents including firms, households, a financial system, a government, and the rest of the world. Economic activity is simulated by virtual agents producing, exchanging and consuming goods, as well as negotiating labour contracts or credits. The agents perform these actions and interactions based on beliefs, technologies, and prices, which evolve according to rules of thumb, imitation and mutation mechanisms. Stochastic components in the interactions of agents lead to a probabilistic exploration of the set of economic trajectories.

Unlike many currently employed models in climate economics, which search for a single 'optimal path' of the economy, this kind of model allows to investigate shifts between different regimes. In particular, it should enable the study of alternative economic scenarios in the transition to a low-carbon economy.

Coffee break

11:00 -12:00 **Damien Challet**

[Department of Physics, University of Fribourg]

“The universal shape of economic recession and recovery after a shock”

Abstract: *We show that a simple and intuitive three-parameter equation fits remarkably well the evolution of the gross domestic product (GDP) in current and constant dollars of many countries during times of recession and recovery. We then argue that this equation is the response function of the economy to isolated shocks, hence that it can be used to detect large and small shocks, including those which do not lead to a recession; we also discuss its predictive power. Finally, a two-sector toy model of recession and recovery illustrates how the severity and length of recession depends on the dynamics of transfer rate between the growing and failing parts of the economy.*

12:00 -12:30 **Patrick Naïm**

[Finance-Innovation]

Title to be announced

Lunch at the ISC-PIF

14:30-15:30 **Matteo Marsili**

[The Abdus Salam International Centre for Theoretical Physics, Trieste]

“Eroding market stability by proliferation of financial instruments”

Abstract: *We contrast Arbitrage Pricing Theory (APT), the theoretical basis for the development of financial instruments, with a dynamical picture of an interacting market, in a simple setting. The proliferation of financial instruments apparently provides more means for risk diversification, making the market more efficient and complete. In the simple market of interacting traders discussed here, the proliferation of financial instruments erodes systemic stability and it drives the market to a critical state characterized by large susceptibility, strong fluctuations and enhanced correlations among risks. This suggests that the hypothesis of APT may not be compatible with a stable market dynamics. In this perspective, market stability acquires the properties of a common good, which suggests that appropriate measures should be introduced in derivative markets, to preserve stability.*

Coffee break

16:00-17:00 **Alan Kirman**

[GREQAM, Ecole des Hautes Etudes en Sciences Sociales (EHESS), Marseille]

“Complex Systems approach to financial markets”

Abstract: *not communicated.*

Venue : **Institut des Systèmes Complexes Paris Île-de-France, 57-59 rue Lhomond, 75005, Paris**

Open workshop - No registration fee

GSD : <http://www.globalsystemdynamics.eu/>

ISC PIF : <http://iscpif.fr/tiki-index.php>

CAMS : <http://cams.ehess.fr/document.php?id=969>

Logistic: Centre d'Analyse et de Mathématique Sociales (CAMS, UMR CNRS EHESS)
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