Séminaire recherche RE2A

10h30-11h10 : **Marco FRITTELLI** (University of Milano)

On systemic risk measures: the static and the conditional setting

Abstract : We specify a general methodological framework for systemic risk measures via multidimensional acceptance sets and aggregation functions. It includes systemic risk measures that can be interpreted as the minimal amount of cash that secures the aggregated system by allocating capital to the single institutions before aggregating the individual risks. An important feature of our approach is the possibility of allocating cash according to the future state of the system (scenario-dependent allocation).

We address the question of fairness of such allocations and propose a fair allocation of the total risk to individual banks. We show that the dual formulation of the
minimization problem identifying the systemic risk measure provides a valuation of the random allocations, which is fair both from the point of view of the society/regulator and from the individual financial institutions.

We then investigate to which extent the relevant features of such static systemic risk measures can be extended to a conditional setting and we analyze in greater detail Conditional Shortfall Systemic Risk Measures. In the particular case of exponential preferences, we provide explicit formulas that also allow us to show a time consistency property of the optimal allocations.

11h15-12h00 : **Alessandro DOLDI** (University of Milano)

Systemic Optimal Risk Transfer Equilibrium (SORTE) and its multivariate version

Abstract : We provide an interpretation of the allocations associated to Shortfall Systemic Risk Measures as suitably defined equilibria and propose a novel concept of a Systemic Optimal Risk Transfer Equilibrium (SORTE) that conjugates the classical Bühlmann's notion of an equilibrium risk exchange with a capital allocation principle based on systemic expected utility optimization.
In both the Bühlmann and the SORTE definition, each agent is behaving rationally by maximizing his/her expected utility given a budget constraint. The two approaches differ by the budget constraints. In Bühlmann's definition the vector that assigns the budget constraint is given a priori. On the contrary, in the SORTE approach, the vector that assigns the budget constraint is endogenously determined by solving a systemic utility maximization. SORTE gives priority to the systemic aspects of the problem, in order to optimize the overall systemic performance, rather than to individual rationality.

We further extend such a notion to the case when the value function to be optimized is multivariate in a general sense, and not simply given by the sum of univariate utility functions. This takes into account the fact that preferences of single agents might depend on the actions of other participants in the game. Conceptually, this more general framework allows us to introduce and study a Nash Equilibrium property of the optimizer.

Both seminar are based on five papers, some of them written jointly with F. Biagini, JP. Fouque, T. Meyer-Brandis.