

# Seminari di Economia

Venerdì 22 luglio 2022

Ore 12:00 – Aula 11

Facoltà di Scienze Economiche Giuridiche e Politiche - Viale Sant'Ignazio 70

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## *Human Population, Emissions and Climate Change: Integrating IAMs and the STIRPAT Framework*

**Abstract** – Human population is one the major drivers of greenhouse gas emissions but nevertheless its specific role in determining carbon emissions has never been specifically accounted for in the analysis of climate policy. Indeed, the econometric studies built on the STIRPAT framework show that emissions respond much more strongly to changes in the population size than to changes in per capita production. In order to understand whether and how the dependence of emissions on the population size affects our conclusions regarding mitigation, we integrate a global integrated assessment model of climate-economy and the STIRPAT formulation, allowing population to act as an independent factor affecting emissions in a non-proportional manner. We show that in this more realistic setting emissions, the temperature increase and the cost of climate mitigation are all much larger than what traditionally believed, and thus more abatement efforts and earlier interventions are effectively needed in order to effectively implement a complete decarbonization of economic activities. Our results thus suggest that extant literature strongly underestimates the detrimental environmental consequences of economic activity, and thus achieving the mid/end-of-century objectives set by international climate agreements requires more costly and more urgent mitigation measures.