A dynamical systems model for credit expansion, asset price bubbles and financial fragility

Matheus Grasselli

McMaster University, Canada

Abstract / Resumo:
Hyman Minsky's main contribution to economics – the financial instability hypothesis - links the expansion of credit to fund new investment to the increase in asset prices and the inherent fragility of an over-leveraged financial system. In this talk I describe an attempt to mathematize his model. I start by reviewing the main properties of the Goodwin model for employment and wages – a simple two-dimensional ODE system with globally stable cycles. I then describe the extension of this model proposed by Steve Keen to incorporate financing through a banking system. This three-dimensional system exhibits both a good equilibrium with a finite level of debt and a bad one where debt grows without bounds. I analyze the stability properties of this system, in particular with respect to interest rates. A further extension connects this system to asset prices and shows the destabilizing effect of Ponzi financing, that is, the purchase of assets with borrowed money for purely speculative purposes. In the final part of the talk I describe the stabilizing effects of countercyclical government spending and capital requirements.