Project 1:
The Socially Optimal Design of Amortizing Innovation-Backed Securities

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This project is aimed to provide a ***tax-funded public reward system*** as an alternative to the world's prevalent ***patent-based commerical reward system***. The proposed public reward system is funded by a non-distortionary head tax. Under this system, any successful innovation is rewarded with a novel amortizing security called "**Innovation-Backed Security**" (IBS) and the innovator must agree to place the innovative know-how in the public domain. The government is the IBS underwriter who guarantees a time-varying payout flow to whoever holds the amortizing security.

Note that such a security is tradeable in financial markets and its equilibrium market value is tied to the discounted present value of a stream of time-varying payouts, subject to the innovative product's time-varying market performance prior to the security's maturity date. The payout flow at time t is calculated using the security's payout ratio times the innovative product's time-t aggregate market sales attributed to all perfectly-competitive producers who use the same innovative know-how.

In this project, I will show how to design the amortizing security's **payout ratio** and **payout term** so that the tax-funded public reward system can achieve social optimality in a continuous-time dynamic general-equilibrium model, where ongoing innovation proceeds in tandem with creative destruction.