Abstract: Why are shadow banks unregulated and what is the optimal shadow bank regulation? I propose a model to investigate macro-prudential regulation in the tension between financial innovation and stability. I show that optimal regulation policy features deterrence effect on excessive risky-taking. In the model, banks make endogenous choice to perform traditional lending to safe and bad risky projects ("traditional banks") or to conduct costly financial innovation which produces good risky assets when successful ("innovative banks"). While an unregulated sector is necessary to foster innovation, it induces regulatory arbitrage by traditional banks, which gain an unfair advantage in competing for funding from unsophisticated investors, crowding out innovative banks and increasing systemic risk. Regulator deters such bad banks through credible regulatory threat with inspection and punishment power, and in equilibrium the actual punishment is optimally rare. The model provides a theoretical framework on the importance of data-collection and designation authority of Financial Stability Oversight Council (FSOC) and other prudential regulators.