



Moral-hazard credit cycles with risk-averse agents ^{☆,☆☆}

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Abstract

We consider a simple overlapping-generations model with risk-averse financial agents subject to moral hazard. Efficient contracts for such financial intermediaries involve back-loaded late-career rewards. Compared to the analogous model with risk-neutral agents, risk aversion tends to reduce the growth of agents' responsibilities over their careers. This moderation of career growth rates can reduce the amplitude of the widest credit cycles, but it also can cause small deviations from steady state to amplify over time in rational-expectations equilibria. We find equilibria in which fluctuations increase until the economy enters a boom/bust cycle where no financial agents are hired in booms.

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1. Introduction and review of previous paper

This paper shows how problems of moral hazard in financial intermediation can cause macroeconomic fluctuations in a stationary nonstochastic economic environment even when financial agents are risk averse. A previous paper [3] showed how such credit cycles can be sustained over an infinite time horizon when financial agents are risk neutral. Risk neutrality is a natural simplifying assumption, but the optimal contracts for risk-neutral agents look rather extreme,

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^{☆☆} <http://home.uchicago.edu/~rmyerson/research/rabankers.pdf>.

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with agents receiving incentive payments only at the end of their careers and then only if their investments have been successful in every period. When we assume that agents are risk averse, the analysis becomes more complicated, but the resulting optimal contracts seem more realistic, as risk-averse financial agents will get substantial rewards in every period when they supervise investments. Remarkably, we also find that the economy can become even more unstable when financial agents are risk averse.

Together with the previous paper, this paper is part of a growing theoretical literature since Bernanke and Gertler [2] that explores how macroeconomic instability can be driven by microeconomic agency problems of moral hazard and adverse selection. References to many important papers in this literature are listed by Myerson [3]. This paper and Myerson [3] are particularly intended to show how such instability can be driven by the simplest kinds of moral-hazard problems which might reasonably be expected to apply whenever an agent is responsible for large investments of other people's savings.

Let us first review the main points from the previous paper. Since Becker and Stigler [1] and Shapiro and Stiglitz [4], it has been well understood in agency theory that dynamic moral-hazard problems with limited liability are efficiently solved by promising large end-of-career rewards for agents who maintain good performance records. At any point in time, a rational agent can be motivated to exert hidden efforts by the possibility of future rewards but not by earlier rewards that have already been received. Thus, an end-of-career reward can be most effective, because it can motivate efforts at every period of an agent's career.

But standard assumptions about the discounting of future rewards imply that the motivating value of any specific end-of-career reward will become greater as the agent gets closer to the end of her career. Thus, under efficient moral-hazard incentive contracts, agents' responsibilities should be expected to grow over time during their careers. Myerson [3] showed that, when such efficient agency contracts are imbedded in a general dynamic model of the whole economy, this expected career growth of financial agents' responsibilities can cause general equilibria to be dynamically unstable.

The back-loading of moral-hazard agency rents requires that financial agents must anticipate some kind of long-term relationship with investors. The aggregate value of these relationships for mid-career financial agents at any point in time may be considered as a state of the dynamic economy, and this state can change over time. When trusted mid-career financial agents are relatively scarce, investment is reduced, and the result is a recession. A larger cohort of new young agents may be then recruited to help fill the gap. But competitive recruitment of new agents cannot fully remedy such an undersupply of financial intermediation, because the moral-hazard incentive constraints imply that agents can be hired efficiently only as part of a long-term career plan in which their expected responsibilities tend to grow during their careers. Because of this expected growth of agents' responsibilities, a large adjustment to reach steady-state financial capacity in one period would create excess financial capacity in the future. Thus, in the model of Myerson [3], the recovery from a recession must move gradually up into a boom, when the economy will have an excess of financial intermediaries relative to what can be sustained in the steady state. This boom, in turn, will contain the seeds of a future recession that will occur after the large cohort of financial agents retires.

In the model with risk-neutral agents of Myerson [3], a financial agent can manage one investment of any size in each of n periods in her career, after which the agent may retire to enjoy end-of-career rewards in her last $(n + 1)$ th period of life. An ample supply of new young agents is assumed to be available in every period, but they will be only hired under efficient n -period incentive contracts. Expected profit rates for investments in each period will depend on aggregate

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