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Optimal investment risks and debt management with backup security in a financial crisis

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Abstract

This paper examines a theoretical and an empirical study of an optimal investment management strategies and debt profile of an investor in a financial crisis. In other to minimize the incident of credit risks, the debts are backup with collaterals. The investment strategies and consumption plan of an investor are exposed to diffusion and credit risks. In this paper, we put into consideration a market that is exposed to four background risks which include inflation, investment, fixed asset and income risks. The investor's income process is influence by the impact of labor force with the production rate function and is assumed to be stochastic. The market is categorized into two: financial market (FM) and fixed asset (FA) market. The underlying assets in the FM are stocks and a riskless asset. This paper aim at to (i) maximize the total expected discounted utility of consumption of the investor in an infinite time horizon, (ii) determine the optimal net debt ratio for an investor under an economy that faces financial crisis, (iii) determine the optimal investment strategies of an investor who invest in an economy that is exposed to both diffusion and credit risks, and (iv) determine the real wealth of an investor. The optimal consumption and investment strategies as well as optimal net debt ratio under power utility function were obtained. We found that investment in FA can hedged the credit risks in the stock market investment portfolio. We also found that the investment portfolio in FA depend inversely on the optimal debt ratio of the economy and directly on the investment portfolio in FM. The numerical implementation of our models using real data from ten companies collected from Nigerian Stock Exchange are also presented in this paper.

JEL Classification: G11, G12, C02, C22, C61

Keywords. Optimal investment; net debt ratio; collateral security; diffusion and credit risks; real wealth; power utility; financial crisis

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