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Asset Pricing with Financial Bubble Risk

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Abstract

This paper characterizes systematic risk stemming from the possible occurrence of price bubbles and measures the impact of this additional risk factor on asset prices. Historical stock market behavior and recent empirical experience have led economists and policy makers to acknowledge that price bubbles in financial markets do occur and need to be accounted for in risk analysis. New econometric tools for analyzing mildly explosive behavior (Phillips and Magdalinos, 2007; Phillips, Wu and Yu, 2011) have made it possible to detect the presence of bubbles in data and to date stamp their origination and collapse, providing empirical confirmation of such episodes in recent data. The potential for price bubbles and market collapse provides another source of stock market risk and adds to the risk premium. We provide an analytic and empirical investigation of this additional risk factor. The standard present value model is extended to allow for possible price bubbles and the effects of integrating bubble behavior into a consumption-based asset pricing model are analyzed. The theory involves attention to the investor time horizon and a study of the validity of conventional log linear approximations in the presence of nonstationary and mildly explosive data. Finite decision horizons accommodate myopic investors and are a component of speculative behavior that focuses on short run market gains rather than long run effects of fundamentals. An econometric approach to estimate bubble risk effects is developed and the methods are applied to composite stock market index data, giving new model-based equity premium and market volatility estimates that more closely match the data than traditional consumption based asset pricing models.

Keywords: Asset Pricing, Bubbles, Explosive process, Equity premium puzzle, Log linear approximation, Mildly explosive time series, Present value model, Risk, Volatility puzzle.

JEL classification: G10, C22

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