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Leveraged investments and agency conflicts when cash flows are mean reverting

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Abstract

We analyse the effect of mean-reverting cash flows on the costs of shareholder-bondholder conflicts arising from partially debt-financed investments. In a partial equilibrium setting we find that such agency costs are significantly lower under mean-reverting (MR) dynamics, when compared to the ubiquitous geometric Brownian motion (GBM). The difference is attributed to the stationarity of the MR process. In addition, through the application of a novel agency cost decomposition, we show that for a larger speed of mean reversion, agency costs are driven mainly by suboptimal *timing* decisions, as opposed to suboptimal *financing* decisions. In contrast, under the standard GBM assumption the agency costs are driven mainly by suboptimal financing decisions for large growth rates and by suboptimal timing decisions for smaller or negative growth rates.

Keywords: investment, real option, mean reversion, agency conflicts

JEL classification: G13, G32, G33, G38.

1. Introduction

The bulk of the existing real options literature assumes uncertain output or input prices to follow geometric Brownian motion (GBM) (Dixit and Pindyck, 1994). While this modelling choice often provides tractable solutions it has been criticised in relation to its suitability for describing equilibrium price processes (Lund, 1993). It has also been suggested that such price dynamics, particularly in commodity markets, can be more accurately modelled using a mean-reverting

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