The equity risk premium of a risky stock

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Abstract

In this paper, I describe the equity risk premium of a risky stock
and a solution to the equity risk premium of a risky stock.
The paper ends with "The End"

Introduction

In a previous paper, I've described power stocks.
In a previous paper, I've described the price-to-earning pricing of a stock.
A stock that's neither a power stock nor priced through price-to-earning pricing is called a risky stock.
While power stocks and price-to-earning pricing of a stock are observed in many financial markets,
there are also financial markets where risky stocks exist along with a risk-free rate and an equity risk premium.
In this paper, I describe the equity risk premium of a risky stock.

The equation of equity risk premium of a risky stock

The equation of equity risk premium of a risky stock is

$$P\left(1+r_f+p_e\right)=\left(a\frac{P\left(1+r_f+p_e\right)}{E}+b\log\left(\frac{P\left(1+r_f+p_e\right)}{E}\right)\right)\left(1+r_f+p_e\right)$$

where
P is the price of the risky stock
E is the earning of the risky stock
r_f is the risk-free rate
p_e is the equity risk premium of the risky stock
a and b are the linear and logarithmic coefficients
of the equity risk premium-adjusted price-to-earning ratio of the risky stock

A solution to the equation of equity risk premium of a risky stock

A solution to the equation of equity risk premium of a risky stock is

$$p_e=\frac{bEW\left(\frac{ae^{\frac{P}{b}}}{b}\right)-aP(1+r_f)}{aP}$$

where
$W(z)$ is the ProductLog function that gives
the principal solution for w to the equation $z=we^w$

The End