The Return Shortfall in Equity Markets

Northfield

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by

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Overview

- Equity premium review
- My solution
  - In the long run, wealth of shareholders must come from economic growth
- Compare to history to draw conclusions

Review of Risk Premium Literature

- Equity premium puzzle
- Equity returns determined by fundamental values
- Equity returns determined by preference for risk
- Equity returns are something else

Equity premium puzzle

- Mehra-Prescott (1985)
  - Standard economic models cannot possibly explain risk premium
- US lucky over last 75 years? (unusually high returns)
- Survivorship bias

Economic models

- Partial or general equilibrium model for economy
- Agents can consume now or invest in risky or risk-free assets
- Risk aversion sets risk free rate and risk premium
- Problems
  - Huge risk aversion required for numbers to make sense (or have to make a complicated model where there are lots of different kinds of risk aversion)
- Risk premium high because people are scared of things that have less value in recessions

Jorion-Goetzmann (2001)

- Examine 39 markets since 1921
- Reconstruct series for markets interrupted by war, hyperinflation, etc
- Find equity premium not nearly so high in other countries
- High equity premium in US is the anomaly
- My question: US had lower than average GDP growth

Dividend Yield

- D/P has a natural value
  - If D/P is low, stocks are overvalued and equity premium will be low
  - If D/P is high, stocks are undervalued and equity premium will be high
- Glosses over
  - Growth rates can change
  - Risk of assets
  - Risk aversion

Irrational Exuberance

- Investor irrationality
- Unrealistic expectations
- Demographic concerns
  - Baby boomers who like to save driving up stock prices
- Mutual funds and longer investment horizon lead to lower premium

Sustainable Capital gains must come from Economic growth

- GDP only thing that affects growth in long term
  – Speculation, expectations, and risk aversion are limited in ability to move prices
- This has been used as an excuse for a low risk premium
  – i.e. stocks can’t grow faster than economy forever
  – If stocks continue to grow 4.5% faster than GDP, value of stocks will equal value of entire economy within 60 years (welch 1999)
- What’s missing?

Rebalancing*

- If an economy experiences a long period of economic growth, stock prices will soar
  - The ratio of stocks to bonds will be much higher than historically
  - But investors want to hold assets in similar proportions as before
  - What happens
    - Investors sell stocks and buy bonds
    - Firms will issue relatively more debt
    - Return to equilibrium prices

Growth example

- Economy has initial value of 100
- Equal value of risky and risk-free assets
- Economy grows 10%
- Value of economy 110
- Risk free assets still worth the same
- Risky assets value increases 10 (from 50 to 60)
- Return on risky assets is 20%

Model for 1 period change in value of risky assets

- $V^0_{economy} = V^0_{risky} + V^0_{risk\text{-}free}$
- $V^1_{economy} = V^1_{risky} + V^1_{risk\text{-}free}$
- $V^1_{economy} - V^0_{economy} = V^1_{risky} + V^0_{risky}$
- $\%CHG(V_{economy}) = \%CHG(V_{risky}) * V_{risky}/V_{economy}$

Theoretical risk premium

- Multi-period extension
- Leverage of equities estimated at beginning of every period
- equity risk premium = ΔGDP * leverage

What's missing

- Utility functions
- Risk-free rate
- Dividends

Does this make sense?

- Risk-free debts and even dividends will continue to be paid even with no growth
- A person who never gets a raise still can pay his mortgage

More questions

- Why haven't returns ever been this high?
  - Some stocks might be over equitized (too much stock, not enough risk-free debt)
- What about markets where most financing is bank financing?
  - Not risk-free financing
  - Still, risk premium should be higher
- Efficient Markets
  - What does this mean for efficient markets?

Where does the money go?

- Asymmetry of return relationship
- Inefficient investments
- Employee bonuses
- Supporting unprofitable divisions
- Not shareholders

Which countries reward investors best

- Outside of US, few equity markets have consistently had higher returns than GDP growth
- In US, Welch (1999) survey of economists shows expected risk premium in US to be 4-8%, twice GDP growth!

What is leverage of equity?

- Difficult to estimate
- Varies by country
- 2 is a good guess
  - Fits well with history
  - Supported by returns when GDP significantly falls

Long term effect

- Can be dominated by changing expectations or preferences in short term
- Eventually wealth determined by growth

What good is a long run result?

- Not much use for a day trader
- Shows historically which countries reward investors best

What determines short run returns

- Changes in expectations
  – 2000 market downturn began when estimates for productivity growth began to fall
- Change in risk aversion
  – D/P has fallen because people better diversify
  – Hold stocks for longer periods

Historical observations

- Equity values fall much faster than they rise
  - GDP fell ~1/3 in the US from 1929 to 1933
  - Equity values fell ~4/5 over the same time period
    - Sensible in light of this paper
  - GDP reached 1929 levels in 1936
  - The stock market reached 1929 levels in 1944, by which time, GDP more than doubled

Example: WWII Japan

- Bank of Japan (1966) estimated wealth was reduced from 253 to 189 billion yen
- Equity values fell 95%
- Use for estimating leverage

US and Japan

- Similar levels of industrialization
- Similar leverage of equities
- Over last 50 years
  - US 3.5% GDP growth and 6% equity premium
  - Japan 8% GDP growth and 5% equity premium
- Very different ways of treating shareholders

US History

- Moderate GDP growth
- Capitalist culture
  - Invest economic surpluses wisely
  - Respect your shareholders
- No complete catastrophes

Outlook for US equity markets

- Still better than outlook for most foreign countries
- No reason why equity premium couldn’t continue at historical levels

Conclusions

- Invest in equities if you believe economy will grow over your investment horizon
- Make bets in countries that reward shareholders best
- May be interesting to examine firm level data