

Discussion of

“The Market Price of Risk and the Equity Premium:  
A Legacy of the Great Depression?”

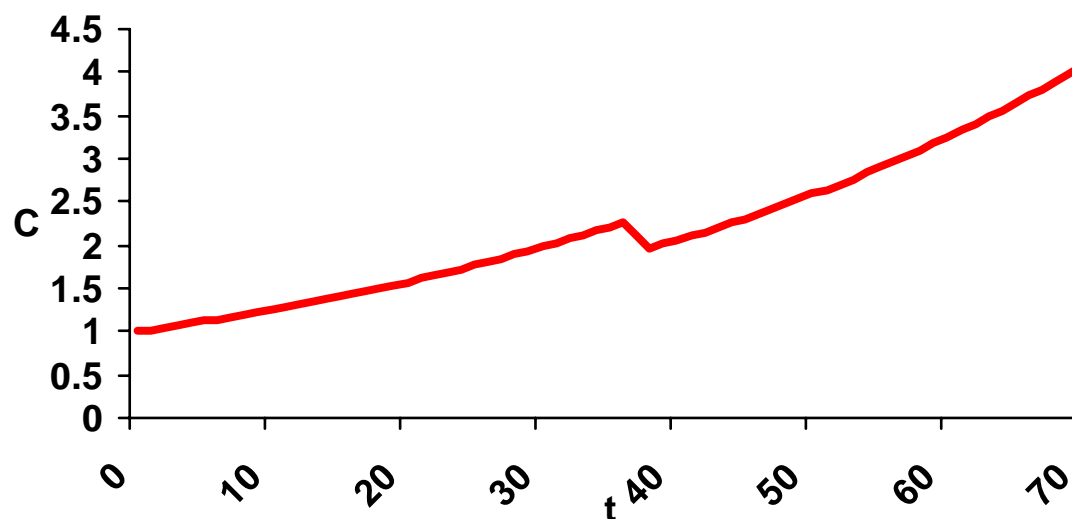
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*Monetary policy, asset markets and learning, Frankfurt, November 2006*

The true US economy looks something like this:

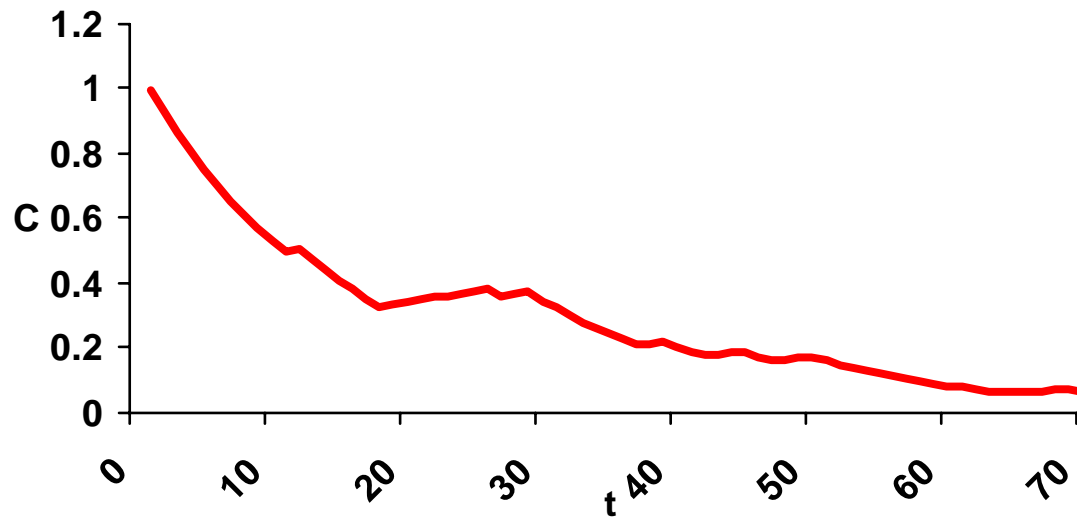
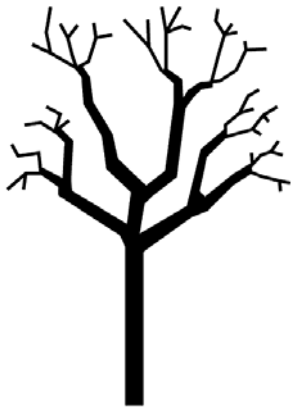


Cecchetti, Lam and Mark (2000) estimates 1890-1994

Consumption growth:  $\Delta \ln C_t = \mu(S_t) + \varepsilon_t$

$$\mu_h = 2.3\% \quad \mu_l = -6.8\% \quad F_{hh} = 0.978 \quad F_{ll} = 0.515$$

In 1935 the representative agent thought the US economy looked like this:



Consumption growth:  $\Delta \ln C_t = \mu(S_t)$

$$\mu_h^s = 2.3\% \quad \mu_l^s = -6.8\% \quad F_{hh}^s = 0.775 \quad F_{ll}^s = 0.932$$

Pessimism caused by Great Depression *shattering* beliefs

## 1935 - 2006

Agents update prior, pessimism gradually erased (=Bayesian learning)

**Question:** What happens to (relative) price of risk-free bonds and equity as beliefs are updated?

Risk-free bonds and equity are both “redundant assets” in terminology of Ljungqvist and Sargent, so pricing is via CAPM

**Answer 1:** High equity premium in 1935, as equity is perceived to be a poor asset that is very likely to lose its value

**Answer 2:** High equity premium even in 2006, as initial pessimism is only slowly eradicated by Bayesian learning. Hence, “market price of risk is a legacy of Great Depression”

# Key features of the story

1. Level of pessimism in 1935
2. Very slow decay of pessimism
3. It's a tree economy

# Level of pessimism in 1935

Lucas warned us to beware of economists bearing free parameters

Here initial level of pessimism is not completely free, as disciplined by a detection probability argument (Anderson, Hansen and Sargent 2003; Hansen, Sargent and Wang 2002)

**But** still some freedom as precision of pessimism ( $T_0$ ) is a free parameter

**But** not a big problem. Reasonable to accept that beliefs were very pessimistic just after the Great Depression.

## Very slow decay of pessimism

Not until about 1962 did representative agent believe that equity had any long-run value

**Why?** Expected length of regimes in a Markov-switching model *independent* → very difficult to learn if one frequent, one infrequent

If Great Depression regime occurs infrequently, then can learn something about probability of it occurring, even if it does not. **But** impossible to learn how long the Great Depression regime will last without one actually occurring.

This is driving force of slow decay: Pessimism about occurrence of Great Depression has almost evaporated by 2006, but pessimism about its duration (if it does occur) is almost at level it was in 1935

**Realistic?** Are expected durations of two regimes really independent in practice? What if there is a common determinant? Policy?

# It's a tree economy

Dividend stream of tree is exogenous

No storage, so consumption exogenous. Only redundant assets

Initial pessimism in 1935 that the next Great Depression is on its way soon creates large incentives to save. What if there was a storage technology?

Savings ratio  $\uparrow$

Consumption smoothing reduces volatility in stochastic

discount factor  $\rightarrow$  return volatility  $\downarrow$

$\rightarrow$  equity risk premium  $\downarrow$

**Challenge:** Can we explain dynamics of market price of risk with a model with a richer portfolio of assets?

Carceles-Poveda and Giannitsarou (2006), De Paoli et al. (2006)

# What if (shhh!) Cogley-Sargent are wrong?

Back to Mehra-Prescott (1985) equity premium puzzle

Smörgåsbord of alternative ideas:

Taxation, diversification costs and regulation

→ McGrattan and Prescott (2003)

Survivorship bias

→ Jorion and Goetzmann 1999, Dimson et al.

Peso problems (a learning story!)

→ Veronesi (2004)

Is Cogley-Sargent a *metaphor* for what is really happening?

Time to find out? Sargent, Williams and Zha (this conference) show how this could be done.