Expectations

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Federal Reserve Bank of St Louis
Conference on Household Balance Sheets
February 2013

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

The 'Fallacy of Division'

In Aristotle's (350 BC) list of common human logical errors:

Attributing characteristics of the whole to the parts

Google search for examples yields:

- America is rich

- Chris Carroll is American

- Chris Carroll is rich!

Clearly a fallacy!

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
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What Have We Learned?
Conclusions
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What Have We Learned?
Conclusions
References

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The Role of Expectations
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Conclusions
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The Role of Expectations
What Have We Learned?
Conclusions
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Prelude
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What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

Macroeconomics Is A Primitive Discipline

Before 2008, "Representative Agent" models dominant:

Argument:

- Debt is *owed* to someone

- One person's debt is another person's asset

- All that matters is *aggregate* net worth

Advantage: Representative Agent models are *simple*
Of course, as always, some annoying dissenters from the gospel

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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The Role of Expectations
What Have We Learned?
Conclusions
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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
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What Have We Learned?
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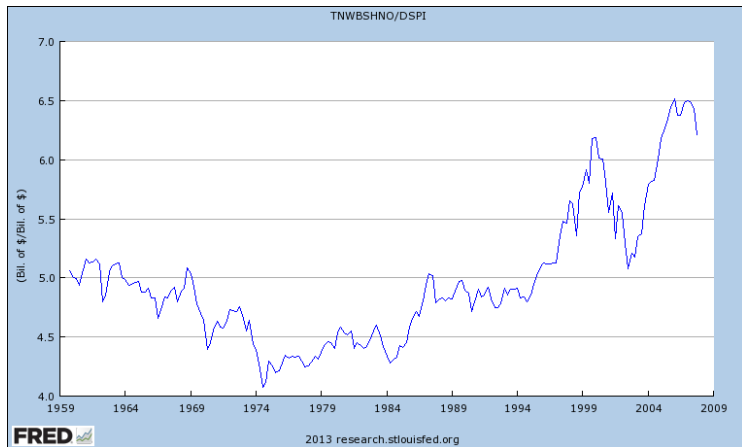- All that matters is *aggregate* net worth

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Prelude
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The Role of Expectations
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Conclusions
References

Don't Worry, Be Happy?

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
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Debt Worrywarts ≈ Believers in Mayan Apocalypse

CMDEBT/DSPI

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Countries, States, Households: Debt Runup Mattered

If i had greater debt runup than j before crisis, then (in the crisis) i suffered worse decline than j, where i, j:

- Countries (International Monetary Fund (2012))

- States/Localities in U.S. (Mian, Rao, and Sufi (2011))

- Households (Dynan (2012))

Prima facie evidence that balance sheet conditions matter (?).

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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The Role of Expectations
What Have We Learned?
Conclusions
References

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The Role of Expectations
What Have We Learned?
Conclusions
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Prelude
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Conclusions
References

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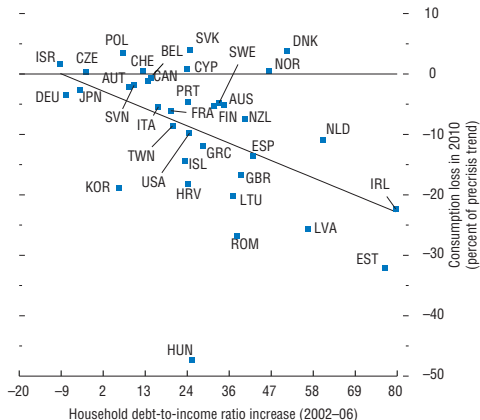If i had greater debt runup than j before crisis, then (in the crisis)
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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

We're Not in Kanasas Anymore

IMF World Economic Outlook 2012, Chapter 3

The Great Recession was particularly severe in economies that experienced a larger run-up in household debt prior to the crisis.

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

We're Not in Kanasas Anymore

Minimal Requirements of a Useful Story

- Imperfect Foresight
    - Simplest Model: Imperfect Unemployment Insurance
- People Differ in *Something* Other Than Employment
    - Otherwise All Balance Sheets Will Be Identical!

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Ingredients

Standard elements: Time-separable CRRA utility, optimization, etc

Elements to highlight:

β	-	Time Discount Factor
μ	-	Expected Unemployment Risk
G	-	Expected Income Growth Rate
κ	-	Expected Credit Availability

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

We're Not in Kanasas Anymore

There are Two Kinds of People ...

. . . Debtors and Creditors

Heterogeneity in targets is matchable in various ways:

- Young vs Old
- Optimist vs Pessimist
- Risk-Averse vs Risk-Tolerant

Assertion: Doesn't Matter (much)!

My Choice: Time preference rate (patient vs impatient)

Crucial point: It *does* matter (for spending) *who* has the wealth

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Conclusions
References

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Conclusions
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Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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Setup

- Equal % of Aggregate Income to Patient and to Impatient
- All debt d belongs to one type, d^{poor}
  - Cynamon and Fazzari (2013)
- Aggregate net worth is $a = 0.5(a^{rich} - d^{poor})$

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Calibration: Match Aggregate Statistics

In 2001

- Aggregate wealth-to-income ratio
- Aggregate debt-to-income ratio d

Requires difference in "patience" of about 8 percent a year

Other parameter values taken from Carroll and Toche (2009)

To match: Rise from $d_{2001} \approx 1$ to $d_{2007} = 1.3$

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Conclusions
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The Role of Expectations
What Have We Learned?
Conclusions
References

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The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

Construct three experiments all of which satisfy:

- d went from $d_{2001} \approx 1$ to $d_{2007} \approx 1.3$
    - So, d^{poor} increased from 2 to 2.6
- Expectation reverts to 2001 value in 2008

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Prelude
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The Role of Expectations
What Have We Learned?
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The Role of Expectations
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Prelude
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The Role of Expectations
What Have We Learned?
Conclusions
References

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2. Belief that Unemployment Risk Has Declined

3. Belief in Faster Growth

In my experiments, none of these beliefs is *true*:

- Unemployment Remains Constant

- Growth Remains Constant

- Credit Availability Does Not Change

In 2008, the "belief bubble" collapses (returns to 2001 values)

Prelude
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What Have We Learned?
Conclusions
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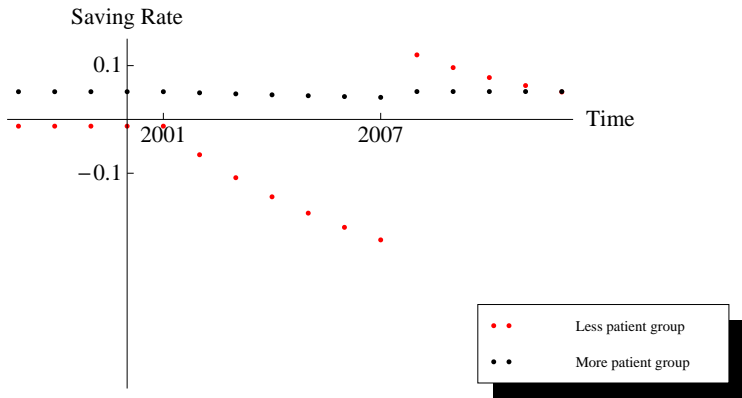In 2008, the "belief bubble" collapses (returns to 2001 values)

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1. Belief in a Credit Boom
2. Belief that Unemployment Risk Has Declined
3. Belief in Faster Growth

In my experiments, none of these beliefs is *true*:

- Unemployment Remains Constant
- Growth Remains Constant
- Credit Availability Does Not Change

In 2008, the "belief bubble" collapses (returns to 2001 values)

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

Credit Boom

1. Find linear increase in ς such that $d_{2007} = 1.3$
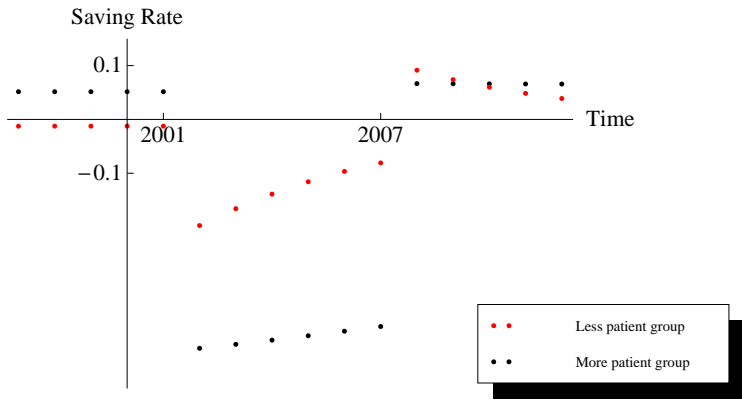2. Assume abrupt reversal of credit easing: $\varsigma_{2008} = \varsigma_{2001}$

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

Belief in Gradual Expansion of Credit Availability

Believed Unemployment Risk Declines in 2001
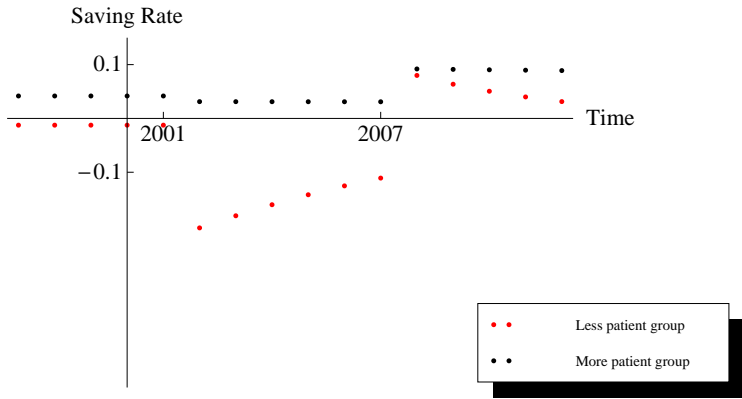
Beliefs About Aggregate Growth Improve in 2001

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

Aggregate Saving in the Three Expectations Cycles

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

Actual Saving Path

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

Expectations Drive Outcomes

In all three experiments:

- In Short Run, Agg Dynamics Are Driven by Changes in $\mathbb{E}$
- Big diffs Across Groups in *response* to expectations changes

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

From Model

- It matters *whose* expectations change
- Debtors more responsive to credit, unemployment fears
- Creditors much more responsive to growth expectations

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

For Data Collection

- Balance Sheet Surveys:
  - Ask Questions About Expectations!
- We Really Need to Measure Saving Rates By Group!

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

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Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

Write the consumption function contingent on the parameter values prevailing in year t as, for example, $c_t^{\text{poor}}(m_t^{\text{poor}}), c_t^{\text{rich}}(m_t^{\text{rich}})$, and so on.

We want to assume a smooth change in the ς parameter over time: ς parameter of $\varsigma_{2002} = \varsigma_{2001} + \eta$, $\varsigma_{2003} = \varsigma_{2001} + 2\eta$ and so on through 2007.

Given this path of ς we have the sequence of consumption functions $c_{2002}^{\text{poor}}, c_{2003}^{\text{poor}}$, and so on.

Then, for example, starting from the steady-state $a^{\text{poor}} = -d_{2001}^{\text{poor}}$ values found in the calibration exercise above, we have a path of values of a_{2002}, a_{2003} and so on from the dynamic budget constraint and from the series of c^{poor} functions.

The idea, then, is just to find the η such that $a_{2007}^{poor} = -2.6$.

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

Unless otherwise indicated, parameter values match those used in
Carroll and Toche (2009)
Given these calibrations, we find the combination of assumptions
about β^{poor} and β^{rich} such that the steady state of the model
predicts that $a = a_{2001}$ and $a^{\text{poor}} = -2$ (which is the same as
$d = 1$ and $d^{\text{poor}} = 2$).

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

so

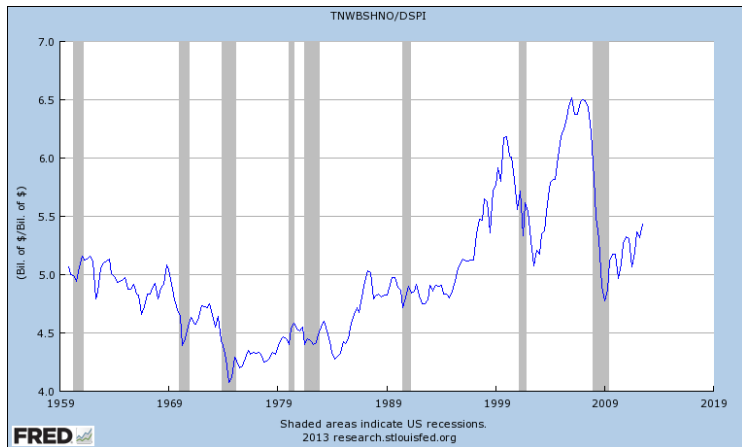$$a^{\text{rich}} = 2a + d^{\text{poor}} \qquad (1)$$

Baseline calibration to 2001:

$$
\begin{aligned}
a_{2001} &\approx 5 \\
d_{2001} &\approx 1 \\
\Rightarrow d_{2001}^{\text{poor}} &\approx 2
\end{aligned}
$$

▸ Back

$\Rightarrow a_{2001}^{\text{rich}} = 12$

Including Post-2007 Data

Prelude
With Apologies to L. Frank Baum
The Role of Expectations
What Have We Learned?
Conclusions
References

Including Post-2007 Data

CMDEBT/DSPI

Shaded areas indicate US recessions.
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