Expectations

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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!
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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
Before 2008, “Representative Agent” models dominant:

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Macroeconomics Is A Primitive Discipline

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Don’t Worry, Be Happy?
Debt Worrywarts ≈ Believers in Mayan Apocalypse

Shaded areas indicate US recessions.
2013 research.stlouisfed.org
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 (?).
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The Great Recession was particularly severe in economies that experienced a larger run-up in household debt prior to the crisis.
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!
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Ingredients

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

Elements to highlight:

\[ \beta \quad - \quad \text{Time Discount Factor} \]
\[ \mu \quad - \quad \text{Expected Unemployment Risk} \]
\[ G \quad - \quad \text{Expected Income Growth Rate} \]
\[ \kappa \quad - \quad \text{Expected Credit Availability} \]
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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Setup

- Equal % of Aggregate Income to Patient and to Impatient
- All debt $d$ belongs to one type, $d^{\text{poor}}$
  - Cynamon and Fazzari (2013)
  - Debt rise concentrated in bottom 95 %
- Aggregate net worth is $a = 0.5(a^{\text{rich}} - d^{\text{poor}})$
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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 $d_{2007} = 1.3$
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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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Three Experiments

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)
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In 2008, the “belief bubble” collapses (returns to 2001 values)
1. Find linear increase in $\varsigma$ such that $d_{2007} = 1.3$

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

Assume abrupt reversal of credit easing: $\varsigma_{2008} = \varsigma_{2001}$
Belief in Gradual Expansion of Credit Availability

Saving Rate

Time

-0.1

0.1

2001

2007

- More patient group
- Less patient group
Believed Unemployment Risk Declines in 2001

![Graph showing saving rate over time with dots indicating different patient groups.]

- More patient group
- Less patient group

Time
-0.1
0.1
Saving Rate
2001 2007
Beliefs About Aggregate Growth Improve in 2001

Saving Rate

-0.1
0.1

Time

2001 2007

Less patient group
More patient group
Aggregate Saving in the Three Expectations Cycles

Saving Rate

Time

-0.1

0.1

2001

2007

E[σ] Cycle (Credit)

E[U] Cycle (Unemp Risk)

E[Γ] Cycle (Growth)
In all three experiments:

- In Short Run, Agg Dynamics Are Driven by Changes in $E$
- Big diffs Across Groups in response to expectations changes
Expectations Drive Outcomes

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

- Debtors more responsive to credit, unemployment fears
- Creditors much more responsive to growth expectations
From Model

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It matters *whose* expectations change
- Debtors more responsive to credit, unemployment fears
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For Data Collection

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

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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 $\varsigma$ parameter over time:

- $\varsigma$ parameter of $\varsigma_{2002} = \varsigma_{2001} + \eta, \varsigma_{2003} = \varsigma_{2001} + 2\eta$ and so on through 2007.

Given this path of $\varsigma$ 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 $a_{2001}^{\text{poor}} = -d_{2001}^{\text{poor}}$ 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 $c_{\text{poor}}$ functions.

The idea, then, is just to find the $\eta$ such that $a_{2007}^{\text{poor}} = -2.6$. 
Unless otherwise indicated, parameter values match those used in Carroll and Toche (2009).

Given these calibrations, we find the combination of assumptions about $\beta_{\text{poor}}$ and $\beta_{\text{rich}}$ 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 $d_{\text{poor}} = 2$).
so

\[ a^{\text{rich}} = 2a + d^{\text{poor}} \]  \hspace{1cm} (1)

Baseline calibration to 2001:

\[ a_{2001} \approx 5 \]
\[ d_{2001} \approx 1 \]
\[ \Rightarrow d_{2001}^{\text{poor}} \approx 2 \]

\[ \Rightarrow a_{2001}^{\text{rich}} = 12 \]
Including Post-2007 Data

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