Discussion of Dynan, Elmendorf and Sichel

‘Financial Innovation and the Great Moderation: What do Household Data Say’

Paul Willen (with help from Kris Gerardi)

November 16, 2006
Introduction
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Second, I got to visit this fair city.
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Third, the conference explained my absence at...
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Very interesting paper and relevant to almost everything I do.
Overview

- Very interesting paper and relevant to almost everything I do.
- Intellectually: Relevant to many projects I’ve worked on
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Policy Work
Very interesting paper and relevant to almost everything I do.

Intellectually: Relevant to many projects I’ve worked on

1. Policy Work
2. Research
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- Intellectually: Relevant to many projects I’ve worked on
  1. Policy Work
  2. Research
  3. Teaching
Overview

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- Intellectually: Relevant to many projects I’ve worked on
  1. Policy Work
  2. Research
  3. Teaching
- Practically: I could re-use slides from other presentations
Authors make two points:
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1. Changing joint distribution of household income.
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1. Changing joint distribution of household income.
2. Consumption, income and imperfect credit markets.
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1. Changing joint distribution of household income.
2. Consumption, income and imperfect credit markets.

I will devote a little time to 1 and more to 2.
Authors do a careful job exploring changes in the distribution of income in the PSID.
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Essentially effect 2 more than cancels out effect 1 in the aggregate.
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- Nothing on the face of it.
- Financial assets intermediate between consumption and income.
Changing joint distribution of household income
Consumption, income and imperfect credit markets

(1) Youth (21-35)
- Start
  - Income: $30,000 a year
  - (H) High Income
    - Income: $100,000 a year
  - (L) Low Income
    - Income: $50,000 a year

(2) Prime Earning Years (36-65)
- (H) High Income
  - Expenses: $5,000 a year
  - (HB) Bad Health
    - Expenses: $15,000 a year
- (L) Low Income
  - Expenses: $5,000 a year
  - (LB) Bad Health
    - Expenses: $15,000 a year

(3) Retirement (66-80)
- (HG) Good Health
- (LG) Good Health
- (LB) Bad Health

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Discussion of Dynan, Elmendorf and Sichel
Financial assets allow us to move consumption around
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1. Borrowing
Financial assets allow us to move consumption around

1. Borrowing
2. Health insurance
Financial assets allow us to move consumption around

1. Borrowing
2. Health insurance
3. “Income insurance”
Financial assets allow us to move consumption around

1. Borrowing
2. Health insurance
3. "Income insurance"

Income distribution given

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Discussion of Dynan, Elmendorf and Sichel
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Theory 2: Changes in the income distribution *led* to the financial innovations.
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- In the “old days”, households faced relatively small but highly correlated shocks: scope for risk-sharing is limited.
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Natural risk-sharing opportunity:
- Big individual risks
- Small community risks
Consumption, income and imperfect credit markets
Authors measure changes in the relationship between income growth and consumption growth.
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Changes consistent with “less imperfect credit markets.”
Consumption, income and imperfect credit markets

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Three points:

1. Financial innovation and the $\Delta C - \Delta Y$ relationship.
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Three points:

1. Financial innovation and the $\Delta C - \Delta Y$ relationship.
2. Problem of omitted variables.
3. Splitting the sample
Marginal Rate of Substitution
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- Rate at which you would trade future for current consumption
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\[ MRS = \frac{u'(c_0)}{u'(c_1)} \]
Marginal Rate of Substitution

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  \[ MRS = \frac{u'(c_0)}{u'(c_1)} \]

- Key insight: If household is unconstrained with respect to asset \( i \) then,
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\[ MRS = \frac{u'(c_0)}{u'(c_1)} \]

- Key insight: If household is unconstrained with respect to asset \( i \) then,

\[ 1 + r_i = MRS = (1 + \delta) \frac{c_1}{c_0} \]
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- With log utility and subjective discount rate \( \delta \):

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Understanding the $\Delta C - \Delta Y$ relationship
“The portfolio stairs” (Kubler and Willen (2006))

$\Delta Y = Y_1 / Y_0$
Understanding the $\Delta C - \Delta Y$ relationship

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- With no credit market imperfections
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Understanding the $\Delta C - \Delta Y$ relationship

“The portfolio stairs” (Kubler and Willen (2006))

$\Delta Y = Y_1 / Y_0$

- With no credit market imperfections
- Borrower is never constrained
- MRS and thus consumption growth always the same.
Understanding the $\Delta C - \Delta Y$ relationship

“The portfolio stairs” (Kubler and Willen (2006))

$\Delta Y = Y_1 / Y_0$

- If we introduce a borrowing constraint

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Discussion of Dynan, Elmendorf and Sichel
Understanding the $\Delta C$-$\Delta Y$ relationship

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\[ \Delta Y = \frac{Y_1}{Y_0} \]

- If we introduce a borrowing constraint
- For low income growth, $\Delta C$ independent of $\Delta Y$. 

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If we introduce a borrowing constraint
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- For high income growth and for population, presto!

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- For low income growth, $\Delta C$ independent of $\Delta Y$.
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MRS

2%

4%

8%

12%

Higher income growth
Understanding the $\Delta C - \Delta Y$ relationship

“The portfolio stairs” (Kubler and Willen (2006))

- If we introduce a borrowing constraint
- For low income growth, $\Delta C$ independent of $\Delta Y$.
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But people can borrow:
But people can borrow:

- Mortgages.
Credit Cards
Loan sharks
○ Loan sharks
More realistic credit markets

\[ \frac{Y_1}{Y_0} \]

\[ \text{MRS} \]

2\%
4\%
8\%
12\%
More realistic credit markets

The portfolio stairs

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More realistic credit markets

- The portfolio stairs
- Higher income growth leads one to stop saving and...
More realistic credit markets

- The portfolio stairs
- Higher income growth leads one to stop saving and...
- Borrowing at progressively higher rates and you exhaust capacity for each type of borrowing.
More realistic credit markets

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- Higher income growth leads one to stop saving and...
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Discussion of Dynan, Elmendorf and Sichel
More realistic credit markets

The portfolio stairs
- Higher income growth leads one to stop saving and...
- Borrowing at progressively higher rates and you exhaust capacity for each type of borrowing.

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Discussion of Dynan, Elmendorf and Sichel
More realistic credit markets

![Graph showing MRS vs. \(\frac{Y_1}{Y_0}\)]
More realistic credit markets

Higher income growth leads to

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More realistic credit markets

- Higher income growth leads to
- a higher MRS
Higher income growth leads to
a higher MRS
which means higher consumption growth

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Discussion of Dynan, Elmendorf and Sichel
Financial innovation: Lenders improve the terms
Financial Innovation

- Financial innovation: Lenders improve the terms
  - Higher limits

Paul Willen (with help from Kris Gerardi)  Discussion of Dynan, Elmendorf and Sichel
Financial Innovation

- Financial innovation: Lenders improve the terms
  - Higher limits
  - Lower interest rates
Financial Innovation

- Financial innovation: Lenders improve the terms
  - Higher limits
  - Lower interest rates
- Weaker $\Delta C - \Delta Y$ relationship.
Problem of omitted variables

\[ \Delta Y = \frac{Y_1}{Y_0} \]
Problem of omitted variables

\[ \Delta Y = Y_1 / Y_0 \]

- Other things shift portfolio stairs.

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Discussion of Dynan, Elmendorf and Sichel
Problem of omitted variables

\[ \Delta Y = Y_1 / Y_0 \]

- Other things shift portfolio stairs.
- Wealth
Problem of omitted variables

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Other things shift portfolio stairs.
- Wealth
  - higher wealth shifts stairs to the right.
Problem of omitted variables

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Other things shift portfolio stairs.
- Wealth
  - higher wealth shifts stairs to the right.
  - for given income growth, borrow less.
Problem of omitted variables

\[ \Delta Y = \frac{Y_1}{Y_0} \]

Preferences
Problem of omitted variables

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Preferences
- Discount rate
Problem of omitted variables

- Preferences
- Discount rate
  - more patient shifts stairs to the right.

\[ \Delta Y = \frac{Y_1}{Y_0} \]
Problem of omitted variables

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- Preferences
- Discount rate
  - more patient shifts stairs to the right.
  - for given income growth, borrow less.

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Discussion of Dynan, Elmendorf and Sichel
Problem of omitted variables

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Is this a problem?
Problem of omitted variables

Is this a problem?
Not necessarily
Problem of omitted variables

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Is this a problem?
- Not necessarily
  - If increase in wealth among high income growth types.

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Discussion of Dynan, Elmendorf and Sichel
Problem of omitted variables

\[ \Delta Y = Y_1 / Y_0 \]

- Is this a problem?
- Not necessarily
  - If increase in wealth among high income growth types.
  - Will reduce sensitivity of consumption to income.
Splitting the sample

\[ \Delta Y = \frac{Y_1}{Y_0} \]

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Discussion of Dynan, Elmendorf and Sichel
Splitting the sample

Credit constraints not only possible explanation
Splitting the sample

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Credit constraints not only possible explanation
- Myopia

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Changing joint distribution of household income
Consumption, income and imperfect credit markets

Financial innovation and the $\Delta C = \Delta Y$ relationship
Problem of omitted variables
Splitting the sample

Splitting the sample

$\Delta Y = Y_1/Y_0$

- Credit constraints not only possible explanation
- Myopia
- But credit constraints generate a non-linear relationship
Splitting the sample

\[ \Delta Y = Y_1 / Y_0 \]

- Credit constraints not only possible explanation
- Myopia
- But credit constraints generate a non-linear relationship
  - Can test by splitting the sample.
Splitting the sample

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Credit constraints not only possible explanation
- Myopia
- But credit constraints generate a non-linear relationship
  - Can test by splitting the sample.
  - Typically done at \( \Delta Y = 0 \) (arbitrary)
Splitting the sample

Financial innovation implies:

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Discussion of Dynan, Elmendorf and Sichel
Splitting the sample

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Financial innovation implies:
  - Bigger changes for higher growth rates.

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Discussion of Dynan, Elmendorf and Sichel
Splitting the sample

Financial innovation implies:

- Bigger changes for higher growth rates.
- Bigger change $\Delta Y - \Delta C$ relationship for high growth.

$\Delta Y = Y_1/Y_0$
Splitting the sample

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Omitted variables?
Splitting the sample

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Omitted variables?
- More serious
Intro
Changing joint distribution of household income
Consumption, income and imperfect credit markets

Financial innovation and the $\Delta C = \Delta Y$ relationship
Problem of omitted variables
Splitting the sample

Splitting the sample

$\Delta Y = Y_1/Y_0$

- Omitted variables?
- More serious
- Increasing wealth, for example, implies the same thing.

Paul Willen (with help from Kris Gerardi)  Discussion of Dynan, Elmendorf and Sichel
Splitting the sample

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Omitted variables?
- More serious
- Increasing wealth, for example, implies the same thing.
- Households wealthier after 1985 than before
Splitting the sample

\[ \Delta Y = \frac{Y_1}{Y_0} \]

- Omitted variables?
- More serious
- Increasing wealth, for example, implies the same thing.
- Households wealthier after 1985 than before
  - 15% higher \( W/Y \) according to Flow of Funds.

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Conclusion
Paper clearly a bit rough right now.
Conclusion

- Paper clearly a bit rough right now.
- But it has the potential to illuminate both the causes and consequences of financial innovation.