Discussion of Chen, Michaux and Roussanov (2014)
Houses as ATMs?
Mortgage Refinancing and Macroeconomic Uncertainty

Paul Willen, Federal Reserve Bank of Boston

Macro Finance Society, May 31, 2014

Disclaimer

- I am speaking today as a researcher and as a concerned citizen
- not as a representative of:
  - The Boston Fed
  - or the Federal Reserve System

- When I say "we", I don't mean Janet and me.

Disclaimer

- I am speaking today as a researcher and as a concerned citizen
- not as a representative of:
  - The Boston Fed
  - or the Federal Reserve System

- When I say "we", I don't mean Janet and me.

Disclaimer

- I am speaking today as a researcher and as a concerned citizen
- not as a representative of:
  - The Boston Fed
  - or the Federal Reserve System

- When I say "we", I don't mean Janet and me.

Disclaimer

- I am speaking today as a researcher and as a concerned citizen
- not as a representative of:
  - The Boston Fed
  - or the Federal Reserve System

- When I say "we", I don't mean Janet and me.

Disclaimer

- I am speaking today as a researcher and as a concerned citizen
- not as a representative of:
  - The Boston Fed
  - or the Federal Reserve System

- When I say "we", I don't mean Janet and me.

Disclaimer

- I am speaking today as a researcher and as a concerned citizen
- not as a representative of:
  - The Boston Fed
  - or the Federal Reserve System

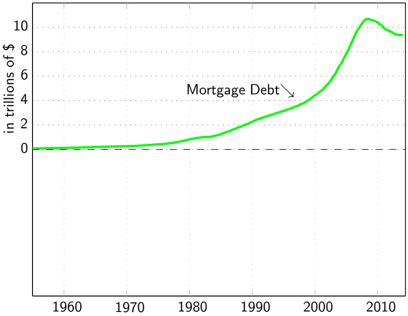
- When I say "we", I don't mean Janet and me.

Disclaimer

- I am speaking today as a researcher and as a concerned citizen
- not as a representative of:
  - The Boston Fed
  - or the Federal Reserve System

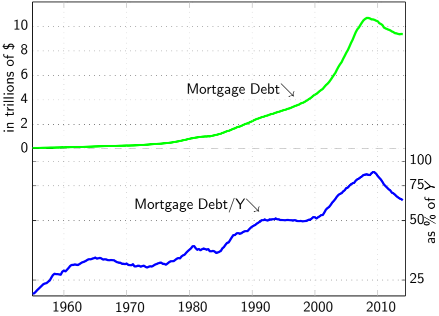
- When I say "we", I don't mean Janet and me.

Where did the money go?



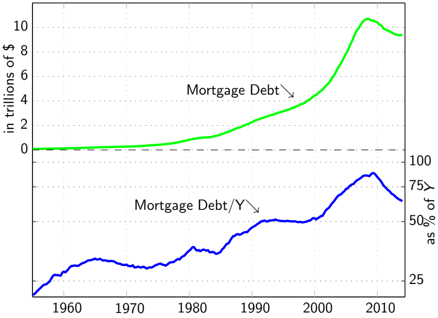
- Between 2000 and 2008, American households added about $6 trillion of debt.
- Mortgage debt went from about half of national income
- To 90 percent
- Where did that money go?

Where did the money go?



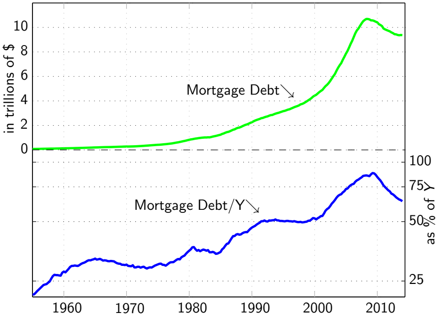
- Between 2000 and 2008, American households added about $6 trillion of debt.
- Mortgage debt went from about half of national income
- To 90 percent
- Where did that money go?

Where did the money go?



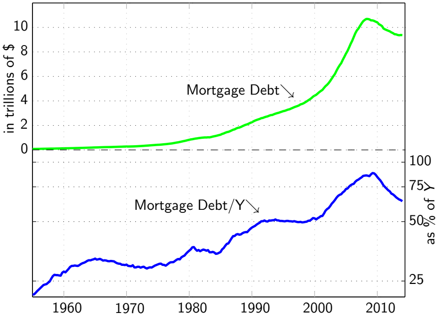
- Between 2000 and 2008, American households added about $6 trillion of debt.
- Mortgage debt went from about half of national income
- To 90 percent
- Where did that money go?

Where did the money go?



- Between 2000 and 2008, American households added about $6 trillion of debt.
- Mortgage debt went from about half of national income
- To 90 percent
- Where did that money go?

Where did the money go?



- Cash flowed to three places
  1. To pay builders of new homes
  2. To pay sellers of existing homes
  3. Onto the balance sheets of the borrower

Theory 1 of Consumer Credit: Hedonism

- Households went on a "debt fueled consumption binge."
  - New Clothes, Dinners out
  - Luxury Sport Utility Vehicles
- Old/new PIMCO Chief Economist Paul McCulley
- "There is room for the Fed to create a bubble in housing prices, if necessary, to sustain American hedonism." (2001)

Theory 1 of Consumer Credit: Hedonism

- Households went on a "debt fueled consumption binge."
  - New Clothes, Dinners out
  - Luxury Sport Utility Vehicles
- Old/new PIMCO Chief Economist Paul McCulley

- "There is room for the Fed to create a bubble in housing prices, if necessary, to sustain American hedonism." (2001)

Theory 1 of Consumer Credit: Hedonism

- Households went on a "debt fueled consumption binge."
  - New Clothes, Dinners out
  - Luxury Sport Utility Vehicles
- Old/new PIMCO Chief Economist Paul McCulley

- "There is room for the Fed to create a bubble in housing prices, if necessary, to sustain American hedonism." (2001)

Theory 1 of Consumer Credit: Hedonism

- Households went on a "debt fueled consumption binge."
  - New Clothes, Dinners out
  - Luxury Sport Utility Vehicles
- Old/new PIMCO Chief Economist Paul McCulley

- "There is room for the Fed to create a bubble in housing prices, if necessary, to sustain American hedonism." (2001)

Theory 1 of Consumer Credit: Hedonism

- Households went on a "debt fueled consumption binge."
  - New Clothes, Dinners out
  - Luxury Sport Utility Vehicles
- Old/new PIMCO Chief Economist Paul McCulley

- "There is room for the Fed to create a bubble in housing prices, if necessary, to sustain American hedonism." (2001)

Theory 1 of Consumer Credit: Hedonism

- Households went on a "debt fueled consumption binge."
  - New Clothes, Dinners out
  - Luxury Sport Utility Vehicles
- Old/new PIMCO Chief Economist Paul McCulley

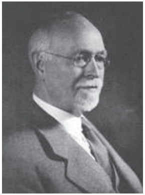
- "There is room for the Fed to create a bubble in housing prices, if necessary, to sustain American hedonism." (2001)

Theory 1 of Consumer Credit: Hedonism

- Households went on a "debt fueled consumption binge."
  - New Clothes, Dinners out
  - Luxury Sport Utility Vehicles
- Old/new PIMCO Chief Economist Paul McCulley

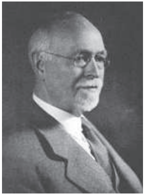
- "There is room for the Fed to create a bubble in housing prices, if necessary, to sustain American hedonism." (2001)

Theory 2: Consumption Smoothing



- Irving Fisher (1930) invented indifference curves
- Different combinations of present and future consumption
- Consumption frontier
- Borrowing moves you down and to the right

Theory 2: Consumption Smoothing



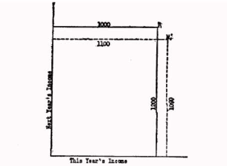
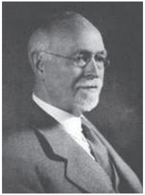


CHART 25
Effect of Borrowing Upon an Individual's Income Position.

- Irving Fisher (1930) invented indifference curves
- Different combinations of present and future consumption
- Consumption frontier
- Borrowing moves you down and to the right

Theory 2: Consumption Smoothing



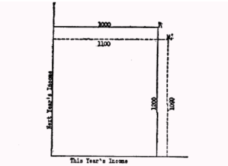


CHART 25
Effect of Borrowing Upon an Individual's Income Position.

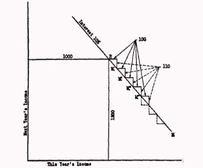
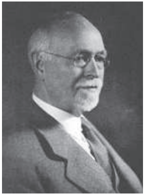


CHART 26
Successive Changes in an Individual's Income Position Produced by Successive Borrowings at the Market Rate of Interest.

- Irving Fisher (1930) invented indifference curves
- Different combinations of present and future consumption
- Consumption frontier
- Borrowing moves you down and to the right

Theory 2: Consumption Smoothing



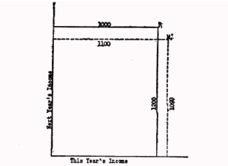


CHART 25
Effect of Borrowing Upon an Individual's Income Position.

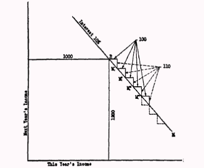


CHART 26
Successive Changes in an Individual's Income Position Produced by Successive Borrowings at the Market Rate of Interest.

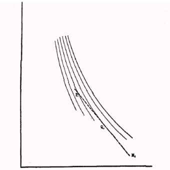
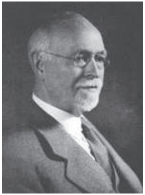


CHART 34
The Final Income Position (Q_1) of Individual I Fixed by Tangency of the W_1 Line to the M_1 Line at Q_1.

- Irving Fisher (1930) invented indifference curves
- Different combinations of present and future consumption
- Consumption frontier
- Borrowing moves you down and to the right

Theory 2: Consumption Smoothing



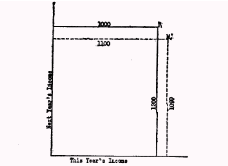


CHART 25
Effect of Borrowing Upon an Individual's Income Position.

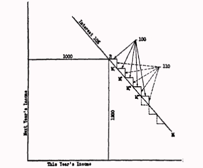


CHART 26
Successive Changes in an Individual's Income Position Produced by Successive Borrowings at the Market Rate of Interest.

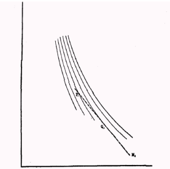
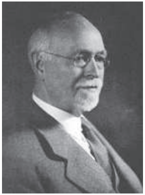


CHART 34
The Final Income Position (Q_1) of Individual I Fixed by Tangency of the W_1 Line to the M_1 Line at Q_1.

- Gross borrowing (what we saw in 2000s)
- Reflects people with low current income
- Increasing consumption today at the expense of future consumption

Theory 2: Consumption Smoothing



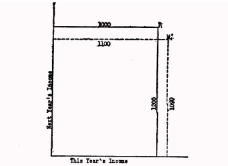


CHART 25
Effect of Borrowing Upon an Individual's Income Position.

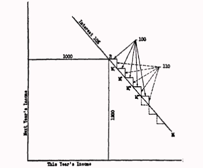


CHART 26
Successive Changes in an Individual's Income Position Produced by Successive Borrowings at the Market Rate of Interest.

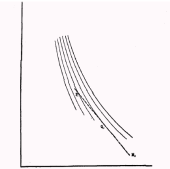
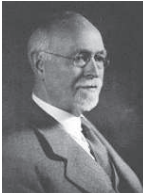


CHART 34
The Final Income Position (Q_1) of Individual *I* Fixed by Tangency of the W_1 Line to the M_1 Line at Q_1.

- Gross borrowing (what we saw in 2000s)
- Reflects people with low current income
- Increasing consumption today at the expense of future consumption

Theory 2: Consumption Smoothing



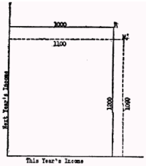


CHART 25
Effect of Borrowing Upon an Individual's Income Position.

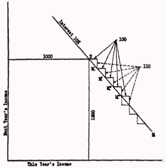


CHART 26
Successive Changes in an Individual's Income Position Produced by Successive Borrowings at the Market Rate of Interest.

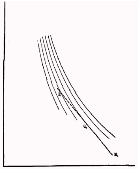


CHART 34
The Final Income Position (Q_1) of Individual I Fixed by Tangency of the W_1 Line to the M_1 Line at Q_1.

- Gross borrowing (what we saw in 2000s)
- Reflects people with low current income
- Increasing consumption today at the expense of future consumption

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

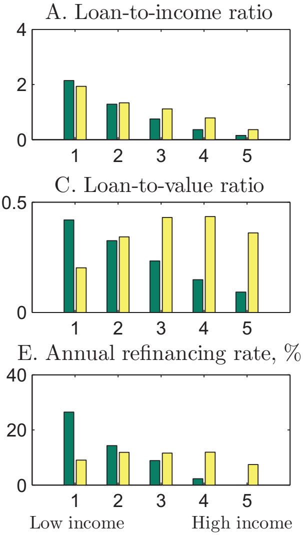
We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Where does CMR fit in?

- CMR take Fisher's model and add
  - Risky labor income
  - Collateral constraints
  - An infinite number of periods
  - Long-term fixed rate loans
  - Refinancing
  - Default
- And that makes it impossible to solve graphically ;-)
- But this intuition is the same as Fisher (1930)
- What do they find?

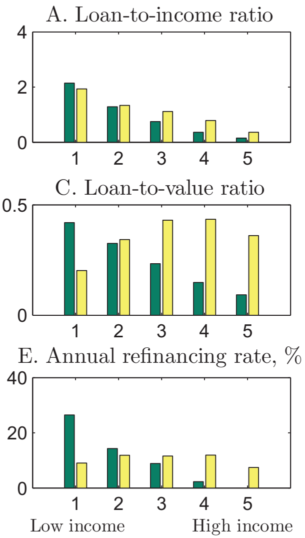
We show that a rational model of home equity-based borrowing by liquidity constrained households can quantitatively account for the empirical patterns in household leverage and consumption over the last decade. (p. 1)

Debt and Income



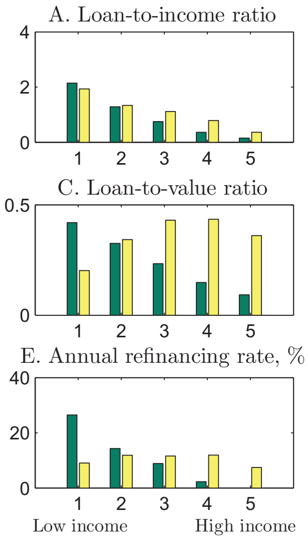
- Borrowers suffering from transitory income shocks.
- An implication of standard PIH – transitory negative shock leads to positive borrowing.
- Generates a negative correlation between debt growth and income growth (see Mian and Sufi (2009))

Debt and Income



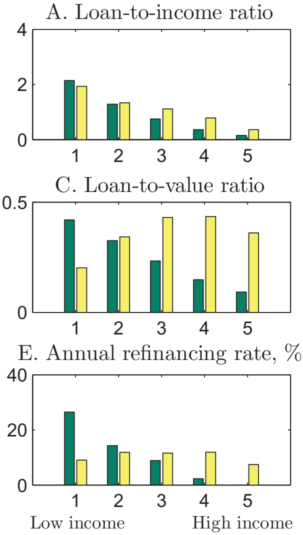
- Borrowers suffering from transitory income shocks.
- An implication of standard PIH – transitory negative shock leads to positive borrowing.
- Generates a negative correlation between debt growth and income growth (see Mian and Sufi (2009))

Debt and Income



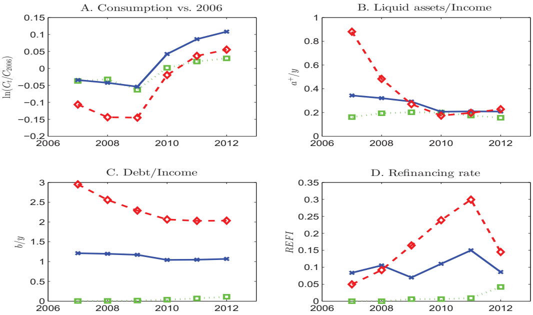
- Borrowers suffering from transitory income shocks.
- An implication of standard PIH – transitory negative shock leads to positive borrowing.
- Generates a negative correlation between debt growth and income growth (see Mian and Sufi (2009))

Debt and Income



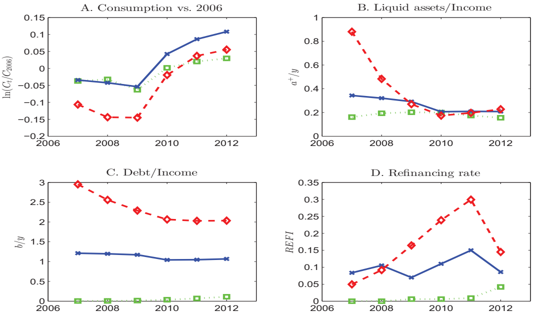
- Borrowers suffering from transitory income shocks.
- An implication of standard PIH – transitory negative shock leads to positive borrowing.
- Generates a negative correlation between debt growth and income growth (see Mian and Sufi (2009))

The recession



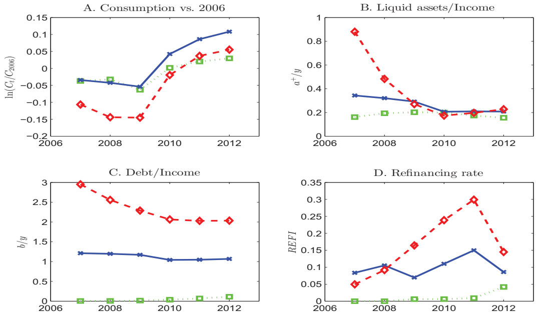
- Households suffering bad shocks borrow more
- And set it aside for a worse shock
- High leverage results from bad shocks not the other way around.

The recession



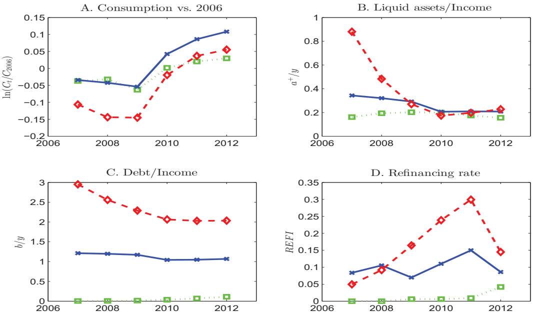
- Households suffering bad shocks borrow more
- And set it aside for a worse shock
- High leverage results from bad shocks not the other way around.

The recession



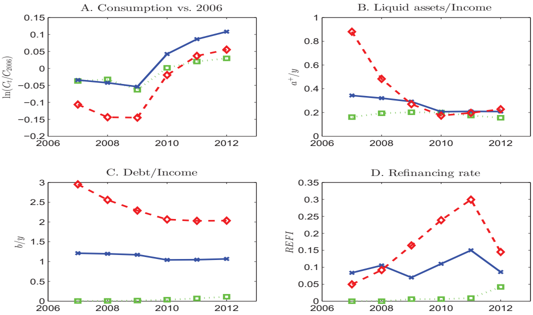
- Households suffering bad shocks borrow more
- And set it aside for a worse shock
- High leverage results from bad shocks not the other way around.

The recession



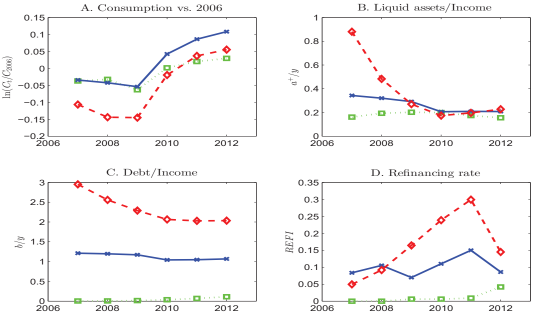
- Rational response to the worst recession in 75 years
- Borrow and dissave
- And pay it back later.

The recession



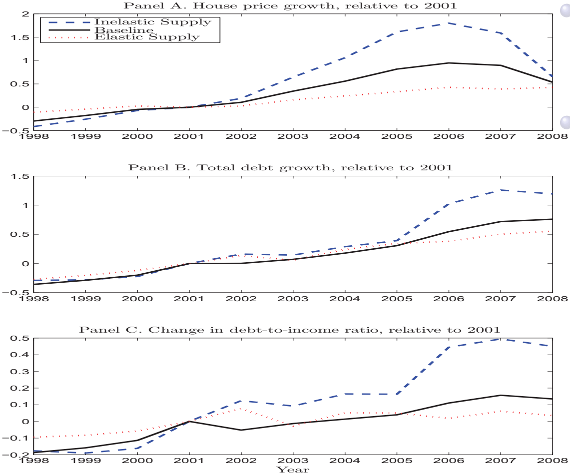
- Rational response to the worst recession in 75 years
- Borrow and dissave
- And pay it back later.

The recession



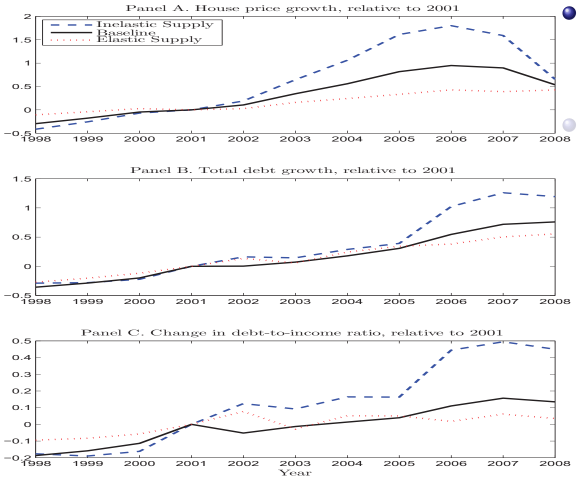
- Rational response to the worst recession in 75 years
- Borrow and dissave
- And pay it back later.

The boom



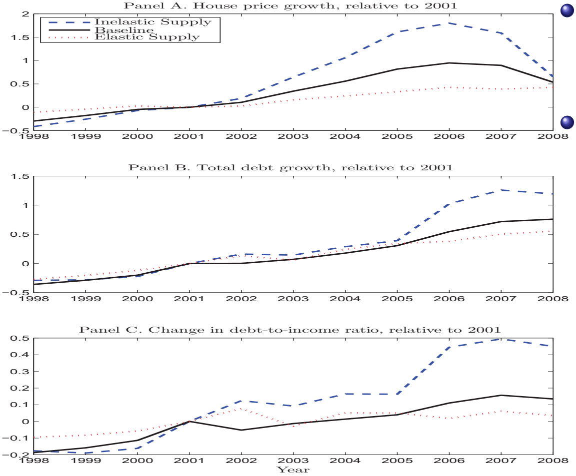
- High house prices...
- Enable households to do more consumption smoothing.
- No binging here
  - No luxury SUVs.

The boom



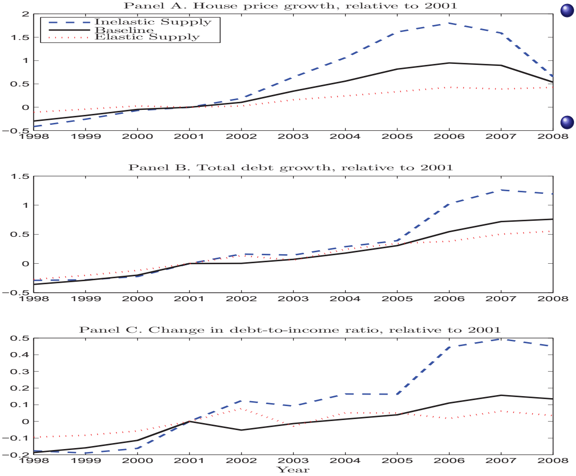
- High house prices...
- Enable households to do more consumption smoothing.
- No binging here
  - No luxury SUVs.

The boom



- High house prices...
- Enable households to do more consumption smoothing.
- No binging here
  - No luxury SUVs.

The boom



- High house prices...
- Enable households to do more consumption smoothing.
- No binging here
  - No luxury SUVs.

The role of debt

- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

The role of debt

- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

The role of debt

- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

The role of debt

- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

The role of debt

- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

The role of debt

- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

The role of debt

- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

The role of debt

- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

The role of debt

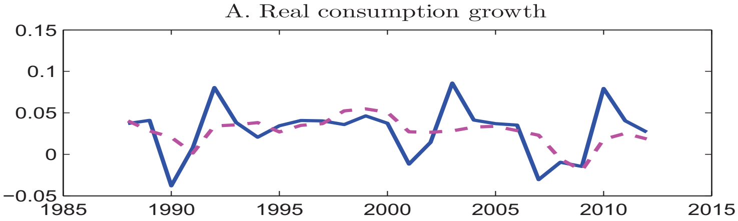
- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

The role of debt

- Table 7 of the paper.
- Relaxing the LTV and DTI constraints
  - Does not increase overall consumption
- But it has to increase utility
  - Because this is partial equilibrium
- All these features of the recent economy
  - high leverage
  - defaults
  - slow consumption after the recession
- Welfare is still higher!

"...the 'consumption boom' of the mid-2000s,..."

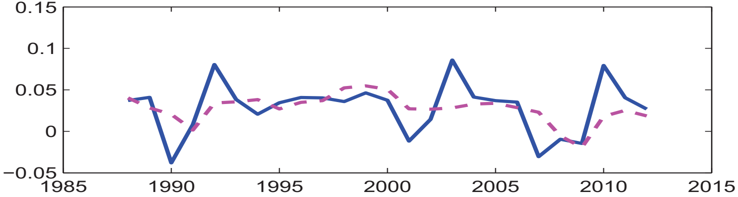
- The quotations marks are in the original.
- Why?
- Because there doesn't appear to be much of a boom in the *data*



"...the 'consumption boom' of the mid-2000s,..."

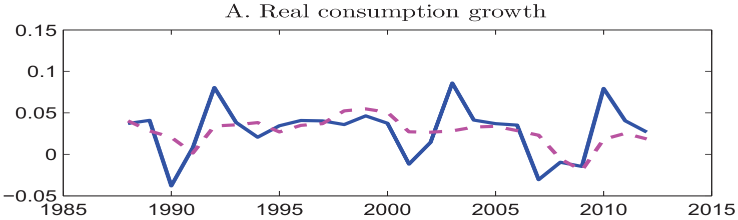
- The quotations marks are in the original.
- Why?
- Because there doesn't appear to be much of a boom in the *data*

A. Real consumption growth



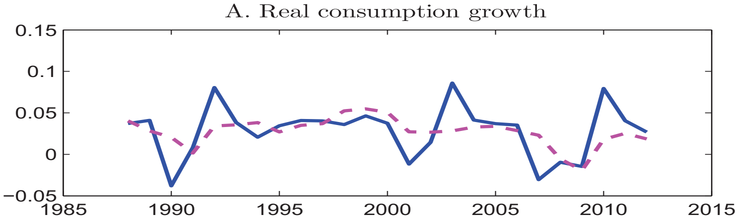
"...the 'consumption boom' of the mid-2000s,..."

- The quotations marks are in the original.
- Why?
- Because there doesn't appear to be much of a boom in the *data*

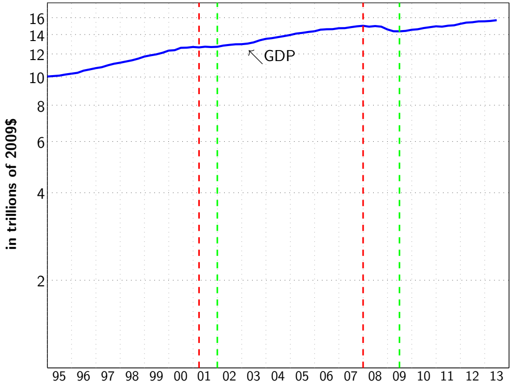


"...the 'consumption boom' of the mid-2000s,..."

- The quotations marks are in the original.
- Why?
- Because there doesn't appear to be much of a boom in the *data*

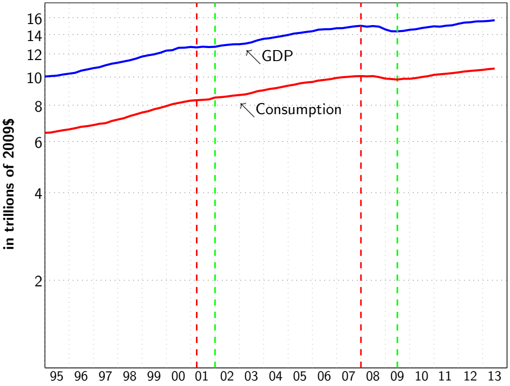


Components of growth



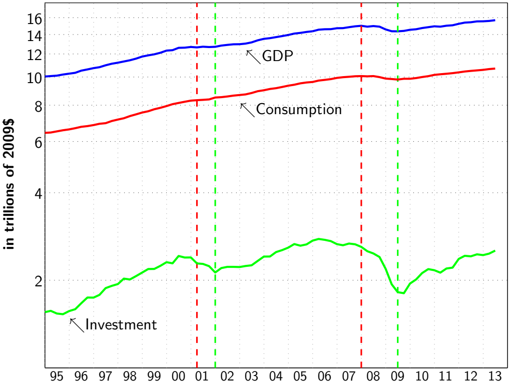
- Consumption growth has followed income *very closely*
- If consumption was the driver,
  - Why is investment growing so much faster than consumption in the boom?
- Consumption just doing its "fair share."

Components of growth



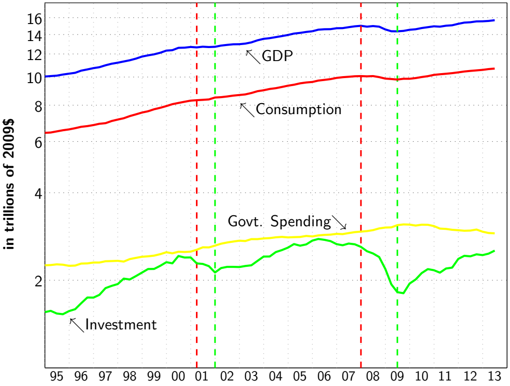
- Consumption growth has followed income *very closely*
- If consumption was the driver,
  - Why is investment growing so much faster than consumption in the boom?
- Consumption just doing its "fair share."

Components of growth



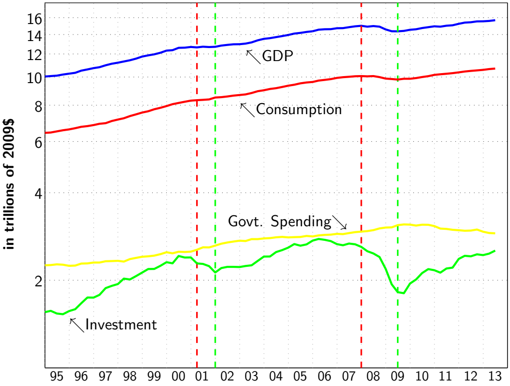
- Consumption growth has followed income *very closely*
- If consumption was the driver,
  - Why is investment growing so much faster than consumption in the boom?
- Consumption just doing its "fair share."

Components of growth



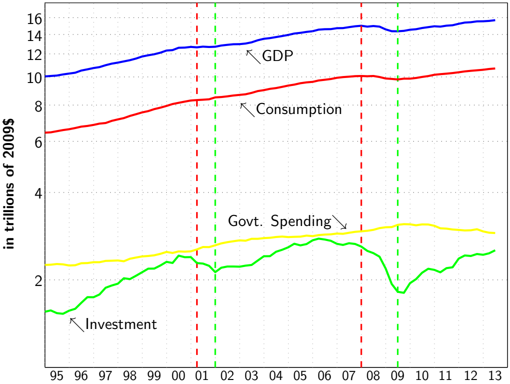
- Consumption growth has followed income *very closely*
- If consumption was the driver,
  - Why is investment growing so much faster than consumption in the boom?
- Consumption just doing its "fair share."

Components of growth



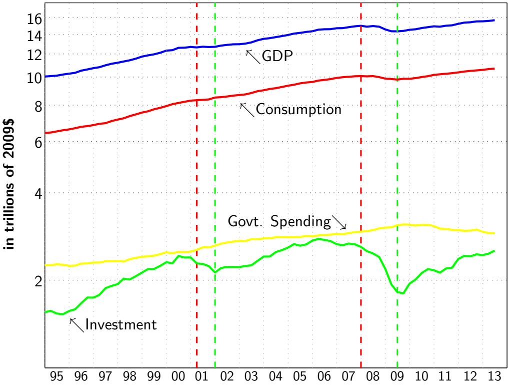
- Consumption growth has followed income *very closely*
- If consumption was the driver,
    - Why is investment growing so much faster than consumption in the boom?
- Consumption just doing its "fair share."

Components of growth



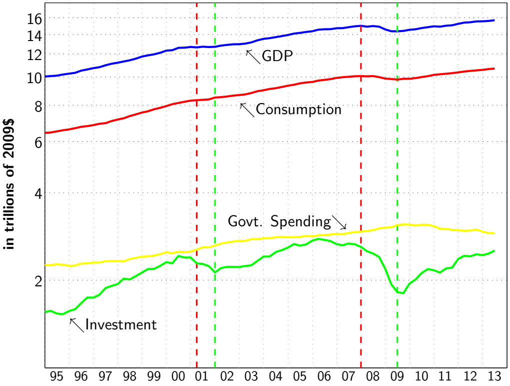
- In the recession, consumption
  - fell less than income...
  - returned to peak by 2010
  - 12% above previous peak today
- Investment
  - fell 40%
  - returned to peak...
- Can you come up with a theory in which consumption plays a starring role here?
- But if you just saw this

Components of growth



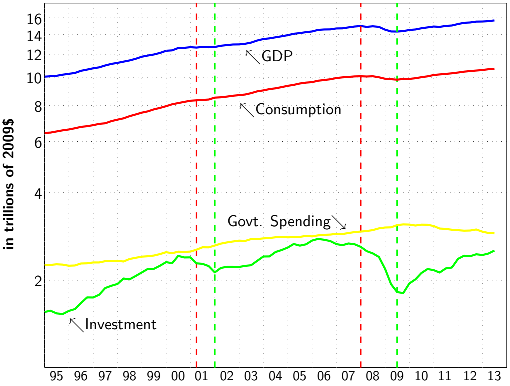
- In the recession, consumption
  - fell less than income...
  - returned to peak by 2010
  - 12% above previous peak today
- Investment
  - fell 40%
  - returned to peak...
- Can you come up with a theory in which consumption plays a starring role here?
- But if you just saw this

Components of growth



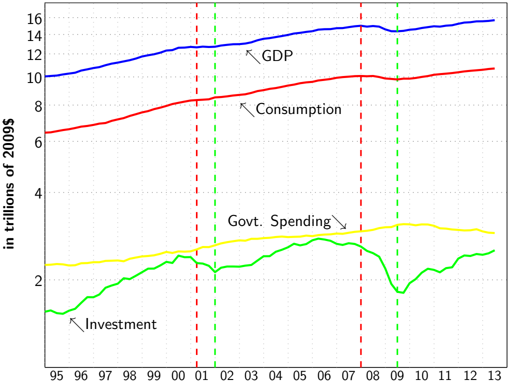
- In the recession, consumption
  - fell less than income...
  - returned to peak by 2010
  - 12% above previous peak today
- Investment
  - fell 40%
  - returned to peak...
- Can you come up with a theory in which consumption plays a starring role here?
- But if you just saw this fi...

Components of growth



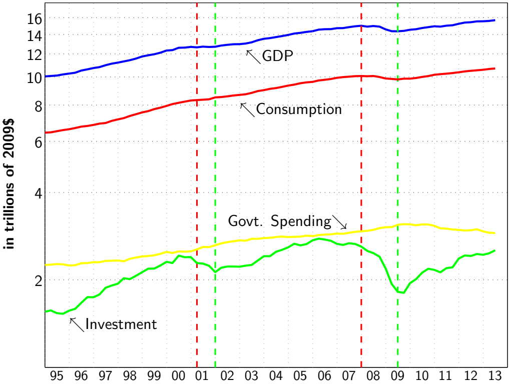
- In the recession, consumption
  - fell less than income...
  - returned to peak by 2010
  - 12% above previous peak today
- Investment
  - fell 40%
  - returned to peak...
- Can you come up with a theory in which consumption plays a starring role here?
- But if you just saw this

Components of growth



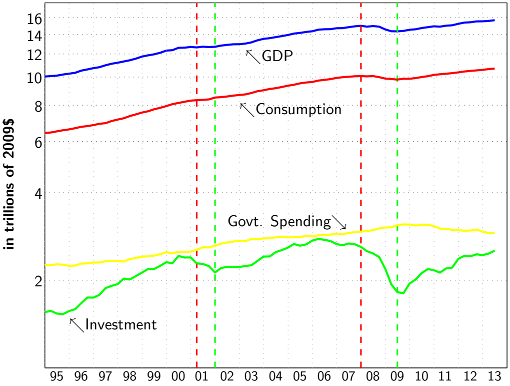
- In the recession, consumption
  - fell less than income...
  - returned to peak by 2010
  - 12% above previous peak today
- Investment
  - fell 40%
  - returned to peak...
- Can you come up with a theory in which consumption plays a starring role here?
- But if you just saw this

Components of growth



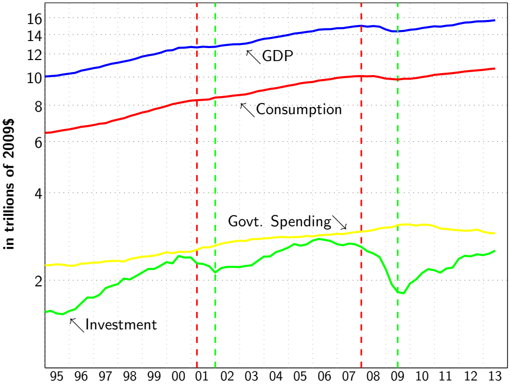
- In the recession, consumption
  - fell less than income...
  - returned to peak by 2010
  - 12% above previous peak today
- Investment
  - fell 40%
  - returned to peak...
- Can you come up with a theory in which consumption plays a starring role here?
- But if you just saw this

Components of growth



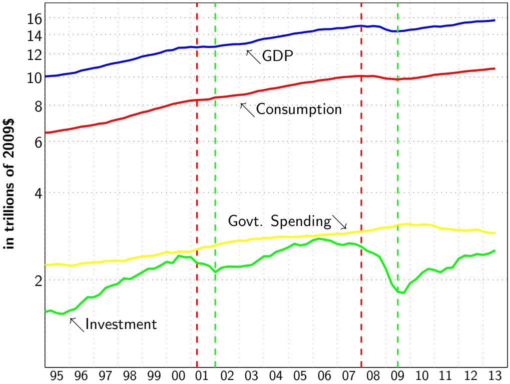
- In the recession, consumption
  - fell less than income...
  - returned to peak by 2010
  - 12% above previous peak today
- Investment
  - fell 40%
  - returned to peak...
- Can you come up with a theory in which consumption plays a starring role here?
- But if you just saw this

Components of growth



- In the recession, consumption
  - fell less than income...
  - returned to peak by 2010
  - 12% above previous peak today
- Investment
  - fell 40%
  - returned to peak...
- Can you come up with a theory in which consumption plays a starring role here?
- But if you just saw this

Components of growth



- In the recession, consumption
  - fell less than income...
  - returned to peak by 2010
  - 12% above previous peak today
- Investment
  - fell 40%
  - returned to peak...
- Can you come up with a theory in which consumption plays a starring role here?
- But if you just saw this

The Housing Boom, 2001-2006

From: Q4/2001 To: Q1/2006

Variable	Growth	×Share	=Contribution	Share of Growth
C	14.4	66.9	9.6	66.4
I	30.4	16.7	5.1	35.1
Residential	*35.1*	*5.1*	*1.8*	*12.3*
Non – Res	*28.4*	*11.7*	*3.3*	*22.8*
G	8.4	20.7	1.7	12.0
NX	51.7	-4.1	-2.1	-14.7
Y	14.5	100.0	14.5	100.0

- Consumption accounts for exactly its normal share.
- Strong investment is the key.
- Offset by increased imports (fall in NX)

The Housing Boom, 2001-2006

From: Q4/2001 To: Q1/2006

Variable	Growth	×Share	=Contribution	Share of Growth
C	14.4	66.9	9.6	66.4
I	30.4	16.7	5.1	35.1
Residential	*35.1*	*5.1*	*1.8*	*12.3*
$Non - Res$	*28.4*	*11.7*	*3.3*	*22.8*
G	8.4	20.7	1.7	12.0
NX	51.7	-4.1	-2.1	-14.7
Y	14.5	100.0	14.5	100.0

- Consumption accounts for exactly its normal share.
- Strong investment is the key.
- Offset by increased imports (fall in NX)

The Housing Boom, 2001-2006

From: Q4/2001 To: Q1/2006

Variable	Growth	×Share	=Contribution	Share of Growth
C	14.4	66.9	9.6	66.4
I	30.4	16.7	5.1	35.1
Residential	*35.1*	*5.1*	*1.8*	*12.3*
$Non-Res$	*28.4*	*11.7*	*3.3*	*22.8*
G	8.4	20.7	1.7	12.0
NX	51.7	-4.1	-2.1	-14.7
Y	14.5	100.0	14.5	100.0

- Consumption accounts for exactly its normal share.
- Strong investment is the key.
- Offset by increased imports (fall in NX)

The Housing Boom, 2001-2006

From: Q4/2001 To: Q1/2006

Variable	Growth	×Share	=Contribution	Share of Growth
C	14.4	66.9	9.6	66.4
I	30.4	16.7	5.1	35.1
Residential	*35.1*	*5.1*	*1.8*	*12.3*
$Non - Res$	*28.4*	*11.7*	*3.3*	*22.8*
G	8.4	20.7	1.7	12.0
NX	51.7	-4.1	-2.1	-14.7
Y	14.5	100.0	14.5	100.0

- Consumption accounts for exactly its normal share.
- Strong investment is the key.
- Offset by increased imports (fall in NX)

The Housing Bust, 2006-2009

From: Q1/2006 To: Q2/2008

Variable	Growth	×Share	=Contribution	Share of Growth
C	3.6	66.8	2.4	82.9
I	-10.9	19.1	-2.1	-71.2
Residential	*-40.8*	*6.0*	*-2.4*	*-84.1*
$Non - Res$	*2.8*	*13.1*	*0.4*	*12.8*
G	4.3	19.6	0.8	28.7
NX	-31.9	-5.4	1.7	59.7
Y	2.9	100.0	2.9	100.0

- Housing bust led to massive fall in residential investment.
- Non-residential investment OK
- Consumption held up well.

The Housing Bust, 2006-2009

From: Q1/2006 To: Q2/2008

Variable	Growth	×Share	=Contribution	Share of Growth
C	3.6	66.8	2.4	82.9
I	-10.9	19.1	-2.1	-71.2
Residential	*-40.8*	*6.0*	*-2.4*	*-84.1*
Non − Res	*2.8*	*13.1*	*0.4*	*12.8*
G	4.3	19.6	0.8	28.7
NX	-31.9	-5.4	1.7	59.7
Y	2.9	100.0	2.9	100.0

- Housing bust led to massive fall in residential investment.
- Non-residential investment OK
- Consumption held up well.

The Housing Bust, 2006-2009

From: Q1/2006 To: Q2/2008

Variable	Growth	×Share	=Contribution	Share of Growth
C	3.6	66.8	2.4	82.9
I	-10.9	19.1	-2.1	-71.2
Residential	*-40.8*	*6.0*	*-2.4*	*-84.1*
$Non - Res$	*2.8*	*13.1*	*0.4*	*12.8*
G	4.3	19.6	0.8	28.7
NX	-31.9	-5.4	1.7	59.7
Y	2.9	100.0	2.9	100.0

- Housing bust led to massive fall in residential investment.
- Non-residential investment OK
- Consumption held up well.

The Housing Bust, 2006-2009

From: Q1/2006 To: Q2/2008

Variable	Growth	×Share	=Contribution	Share of Growth
C	3.6	66.8	2.4	82.9
I	-10.9	19.1	-2.1	-71.2
Residential	*-40.8*	*6.0*	*-2.4*	*-84.1*
$Non - Res$	*2.8*	*13.1*	*0.4*	*12.8*
G	4.3	19.6	0.8	28.7
NX	-31.9	-5.4	1.7	59.7
Y	2.9	100.0	2.9	100.0

- Housing bust led to massive fall in residential investment.
- Non-residential investment OK
- Consumption held up well.

The Collapse, 2008-2009

From: Q3/2008 To: Q2/2009

Variable	Growth	×Share	=Contribution	Share of Growth
C	-1.9	67.1	-1.3	35.7
I	-24.3	16.1	-3.9	108.4
Residential	*-23.2*	*3.3*	*-0.8*	*21.2*
$Non - Res$	*-24.5*	*12.8*	*-3.2*	*87.2*
G	2.6	20.2	0.5	-14.8
NX	-29.7	-3.4	1.0	-28.3
Y	-3.6	100.0	-3.6	100.0

- After Lehman bankruptcy.
- Consumption fell but less than output.
- Consumption share of collapse was samll.
- Big driver of fall was non-res investment.

The Collapse, 2008-2009

From: Q3/2008 To: Q2/2009

Variable	Growth	×Share	=Contribution	Share of Growth
C	-1.9	67.1	-1.3	35.7
I	-24.3	16.1	-3.9	108.4
Residential	*-23.2*	*3.3*	*-0.8*	*21.2*
$Non - Res$	*-24.5*	*12.8*	*-3.2*	*87.2*
G	2.6	20.2	0.5	-14.8
NX	-29.7	-3.4	1.0	-28.3
Y	-3.6	100.0	-3.6	100.0

- After Lehman bankruptcy.
- Consumption fell but less than output.
- Consumption share of collapse was samll.
- Big driver of fall was non-res investment.

The Collapse, 2008-2009

From: Q3/2008 To: Q2/2009

Variable	Growth	×Share	=Contribution	Share of Growth
C	-1.9	67.1	-1.3	35.7
I	-24.3	16.1	-3.9	108.4
Residential	*-23.2*	*3.3*	*-0.8*	*21.2*
$Non - Res$	*-24.5*	*12.8*	*-3.2*	*87.2*
G	2.6	20.2	0.5	-14.8
NX	-29.7	-3.4	1.0	-28.3
Y	-3.6	100.0	-3.6	100.0

- After Lehman bankruptcy.
- Consumption fell but less than output.
- Consumption share of collapse was samll.
- Big driver of fall was non-res investment.

The Collapse, 2008-2009

From: Q3/2008 To: Q2/2009

Variable	Growth	$\times$Share	$=$Contribution	Share of Growth
C	-1.9	67.1	-1.3	35.7
I	-24.3	16.1	-3.9	108.4
Residential	*-23.2*	*3.3*	*-0.8*	*21.2*
$Non - Res$	*-24.5*	*12.8*	*-3.2*	*87.2*
G	2.6	20.2	0.5	-14.8
NX	-29.7	-3.4	1.0	-28.3
Y	-3.6	100.0	-3.6	100.0

- After Lehman bankruptcy.
- Consumption fell but less than output.
- Consumption share of collapse was samll.
- Big driver of fall was non-res investment.

The Collapse, 2008-2009

From: Q3/2008 To: Q2/2009

Variable	Growth	×Share	=Contribution	Share of Growth
C	-1.9	67.1	-1.3	35.7
I	-24.3	16.1	-3.9	108.4
Residential	*-23.2*	*3.3*	*-0.8*	*21.2*
$Non - Res$	*-24.5*	*12.8*	*-3.2*	*87.2*
G	2.6	20.2	0.5	-14.8
NX	-29.7	-3.4	1.0	-28.3
Y	-3.6	100.0	-3.6	100.0

- After Lehman bankruptcy.
- Consumption fell but less than output.
- Consumption share of collapse was samll.
- Big driver of fall was non-res investment.

The Expansion, 2009-Present

From: Q2/2009 To: Q2/2013

Variable	Growth	×Share	=Contribution	Share of Growth
C	9.1	68.3	6.2	67.1
I	38.9	12.7	4.9	53.5
Residential	*28.8*	*2.6*	*0.8*	*8.2*
$Non - Res$	*41.6*	*10.1*	*4.2*	*45.3*
G	-6.3	21.6	-1.4	-14.8
NX	17.2	-2.5	-0.4	-4.7
Y	9.2	100.0	9.2	100.0

- Consumption accounts for exactly its normal share.
- Strong investment...
- Offsets decline in G.

The Expansion, 2009-Present

From: Q2/2009 To: Q2/2013

Variable	Growth	×Share	=Contribution	Share of Growth
C	9.1	68.3	6.2	67.1
I	38.9	12.7	4.9	53.5
Residential	*28.8*	*2.6*	*0.8*	*8.2*
Non – Res	*41.6*	*10.1*	*4.2*	*45.3*
G	-6.3	21.6	-1.4	-14.8
NX	17.2	-2.5	-0.4	-4.7
Y	9.2	100.0	9.2	100.0

- Consumption accounts for exactly its normal share.
- Strong investment...
- Offsets decline in G.

The Expansion, 2009-Present

From: Q2/2009 To: Q2/2013

Variable	Growth	×Share	=Contribution	Share of Growth
C	9.1	68.3	6.2	67.1
I	38.9	12.7	4.9	53.5
Residential	*28.8*	*2.6*	*0.8*	*8.2*
Non − Res	*41.6*	*10.1*	*4.2*	*45.3*
G	-6.3	21.6	-1.4	-14.8
NX	17.2	-2.5	-0.4	-4.7
Y	9.2	100.0	9.2	100.0

- Consumption accounts for exactly its normal share.
- Strong investment...
- Offsets decline in G.

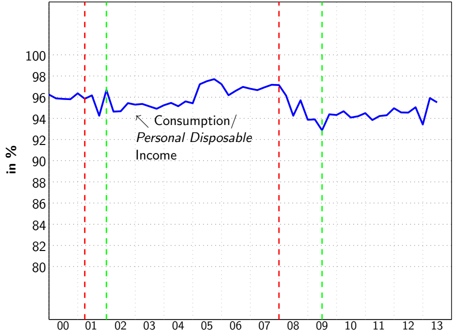
The Expansion, 2009-Present

From: Q2/2009 To: Q2/2013

Variable	Growth	×Share	=Contribution	Share of Growth
C	9.1	68.3	6.2	67.1
I	38.9	12.7	4.9	53.5
Residential	*28.8*	*2.6*	*0.8*	*8.2*
Non − Res	*41.6*	*10.1*	*4.2*	*45.3*
G	-6.3	21.6	-1.4	-14.8
NX	17.2	-2.5	-0.4	-4.7
Y	9.2	100.0	9.2	100.0

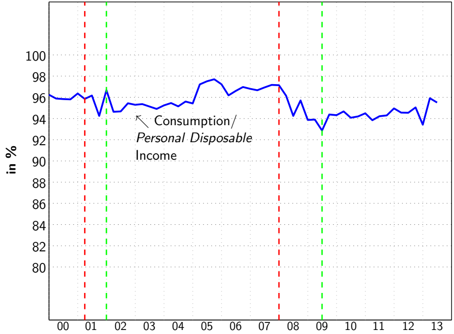
- Consumption accounts for exactly its normal share.
- Strong investment...
- Offsets decline in G.

Saving (or Spending) rates



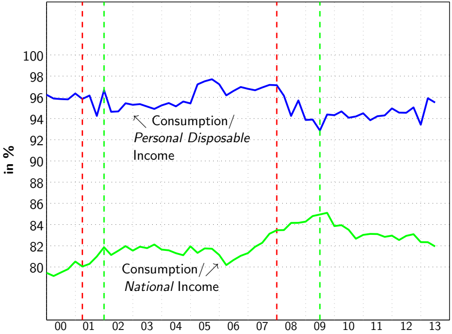
- If we define income as "Personal Disposable Income": income received
- Consumption does appear to have risen some – although the timing is odd.

Saving (or Spending) rates



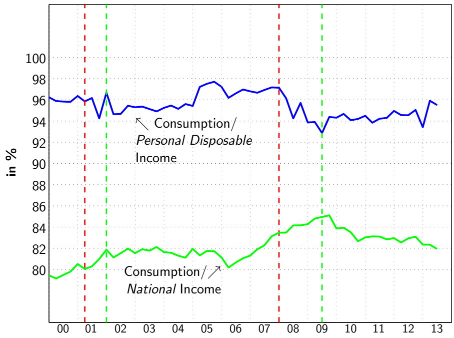
- If we define income as "Personal Disposable Income": income received
- Consumption does appear to have risen some – although the timing is odd.

Saving (or Spending) rates



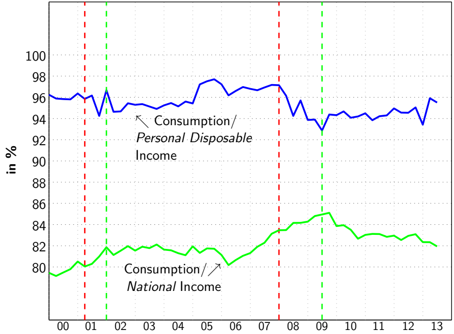
- If we define income as "National Income": income earned
  - Fall in saving rate in 2005 is because of an increase in retained earnings – "income earned but not received."
- Saving went up in the boom, down in the bust and is still low...
- Fisher would say to focus on income earned.

Saving (or Spending) rates



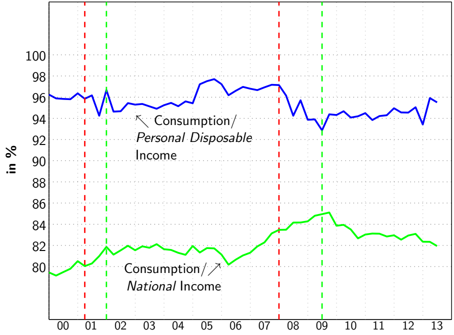
- If we define income as "National Income": income earned
  - Fall in saving rate in 2005 is because of an increase in retained earnings – "income earned but not received."
- Saving went up in the boom, down in the bust and is still low...
- Fisher would say to focus on income earned.

Saving (or Spending) rates



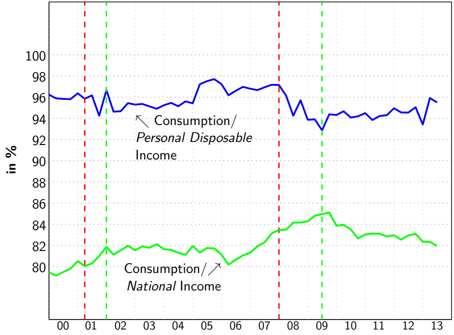
- If we define income as "National Income": income earned
  - Fall in saving rate in 2005 is because of an increase in retained earnings – "income earned but not received."
- Saving went up in the boom, down in the bust and is still low...
- Fisher would say to focus on income earned.

Saving (or Spending) rates



- If we define income as "National Income": income earned
  - Fall in saving rate in 2005 is because of an increase in retained earnings – "income earned but not received."
- Saving went up in the boom, down in the bust and is still low...
- Fisher would say to focus on income earned.

Saving (or Spending) rates



- If we define income as "National Income": income earned
  - Fall in saving rate in 2005 is because of an increase in retained earnings – "income earned but not received."
- Saving went up in the boom, down in the bust and is still low...
- Fisher would say to focus on income earned.

The slide you've all been waiting for...

- The end.

The slide you've all been waiting for...

- The end.