Secular Deleveraging post the Global Financial Crisis?

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Questions

- What do we mean by “secular deleveraging”
- Is the deleveraging associated with the Global Financial Crisis a transitory or longer-term phenomenon?
- If longer term, why?
- What are the consequences for asset markets?

Overview

- Definitions
- Background – historical leverage trends
- The Global Financial Crisis (GFC)
  - – a leverage perspective
- The GFC aftermath
  - – What effects, for how long
- Longer term drivers of leverage trends
- Some other related issues

What is meant by deleveraging?

- *Strictly* – shifting the composition of the liability side of balance sheets to less debt and more equity (a "*stock – portfolio composition"* effect

Assets (market value)	**Liabilities**	
Real assets	Borrowings	↓
Financial assets	Net worth (equity)	↑

no change →

- Certainly applicable for corporates / financial institutions who can (have been) raising new equity
- May also be (and has been) reducing borrowings by asset sales → asset price deflation spiral
- *They appear different – but not really unless new equity subscribers are releveraging (borrowing or running down cash).*

What is meant by deleveraging?

- Popular usage appears to be
  - Increasing (restoring) balance sheet net worth (equity) by increased saving / reduced consumption (a “*flow – income account” effect).*
  - Relevant for household (unincorporated sector)
    - can’t issue equity

Assets	Liabilities
Real assets	Borrowings
Financial assets	Net worth (equity)

  - But households may also use asset sales to reduce borrowings
    - Including forced sale through loan default
    - Reducing gross balance sheet size
      - Potentially generating cumulative decline in asset values

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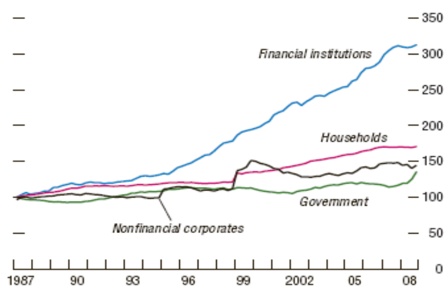
Why Might Deleveraging be Forecast?

- Historically high leverage pre-GFC

Figure 1.3. Ratio of Debt to GDP Among Selected Advanced Economies
(In percent, GDP-weighted, 1987 = 100)



Sources: Bank of Japan; Bureau of Economic Analysis; Federal Reserve; Office of National Statistics; and IMF staff estimates.

•Development of internally levered financial products
•Hybrid (mixed debt/equity) products
•Levered business structures
•Collateralized borrowing
•Higher risk lending (covenant-lite).

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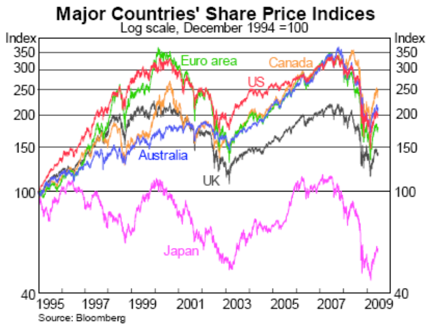
Why Might Deleveraging be Forecast?

- Historically high leverage pre-GFC
- GFC induced fall in asset values

- & GFC experience of risks of levered positions
  – "funding" risk and "asset price" risk



Why Might Deleveraging be Forecast?

- Historically high leverage pre-GFC
- GFC induced fall in asset values
  – And GFC experience of risks of levered positions
    - "funding" risk and "asset price" risk
- Decline in asset values means
  – Net Worth/Income falls – if below desired ratio → increase savings (if possible)
  – Debt/Net Worth increases – if above desired ratio → sell assets and pay down debt

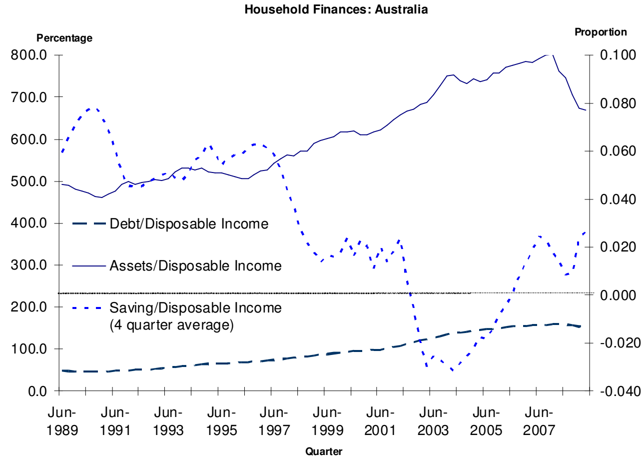
Why Might Post-GFC Deleveraging be Forecast?

- The Questions:
  - How much of pre GFC crisis “leverage” was “bubble-related” rather than “optimal financial structure” in modern, liberalized, financial systems?
  - Has net worth / income fallen sufficiently to cause a sustained increase in savings?
  - Has debt/net worth increased sufficiently to cause decline in borrowings and/or asset sales?
  - How do the answers vary across countries and sectors (corporate, household, financial)?
  - Over what period will such effects play out?
  - What can we learn from history?

The GFC – a leverage perspective

- Companies/Individuals – an unplanned leverage increase
  - Decline in asset values
    - Leverage (Debt/MV Assets) increased
  - Decline in current (expected) income
    - Leverage (debt repayments/income) increased
- Responses
  - Increased saving, reduced investment
  - Asset sales to pay down debt
  - Exit from leveraged structures and products

Household Deleveraging: Australia?



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Household Deleveraging: Australia?

	Australian Household Sector Leverage		
Date	Interest Payments / Income	Leverage (Debt/ Net Worth)	Net Worth / Income (%)
Jun-1977	5.6	10%	369
Jun-1987	7.8	11%	392
Jun-1997	6.1	16%	471
Jun-2007	11.9	24%	665
Mar-2009	11.2	30%	515

- Low interest rates have moderated effect of high debt/income ratio.
- Debt/Net worth not “excessive”?
  – But marked cross-section differences
  – Australian experience has been relatively benign (but risks)

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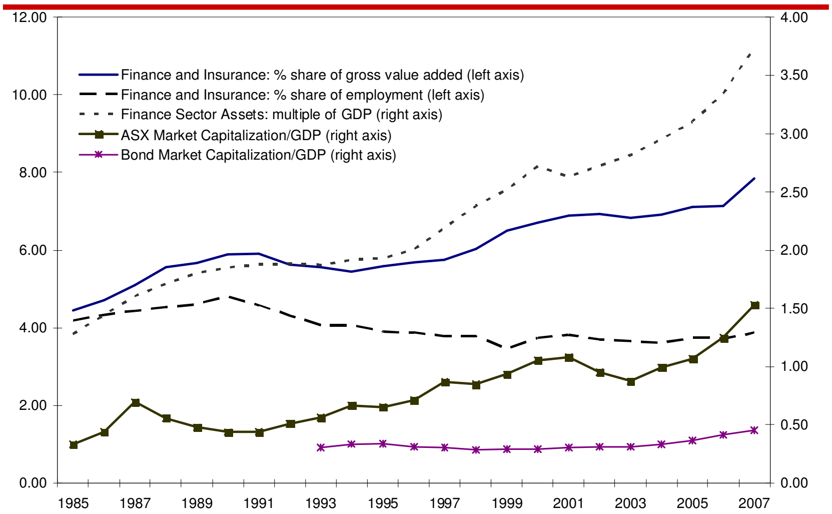
Effects of a Higher Saving Rate

- Not a direct cause of low interest rates
  - Small flow effect on asset markets relative to balance sheet adjustments
- But may have an influence through
  - Depressing income
  - Inducing expansionary monetary policy
- May be offset by higher government deficits

The GFC – a Leverage Perspective

- Financial Institutions
  - Asset values decline
    - increased leverage ((deposits & debt) / equity)
    - Customer net worth reduced / risk increased
    - Counterparty risk increased
    - Margin calls on collateralized borrowings
  - Responses
    - reduce lending, asset sales, raise equity
    - Asset price – margin liquidity spiral
    - Deleveraging

Finance Sector asset growth overstates



Finance Sector Deleveraging

- Recapitalization (raising equity)
  - Requires investors to off-load other assets
    - negative implications for asset markets
  - Unless investors content to swap bank debt/deposits for bank equity
    - or borrow (relever) to fund equity purchases
- Balance sheet shrinkage
  - How much an effect on real economic growth?
  - How much a return to "normal" liquidity production?

The GFC – a Leverage Perspective

- Governments
  - Effects
    - Lower tax revenues
    - Increased expenditures
      - Fiscal stimulus, bail-out costs
    - Asset acquisitions
      - Private sector securities, institutions
  - Outcomes
    - Increased deficits and public debt on issue
    - Leveraging!

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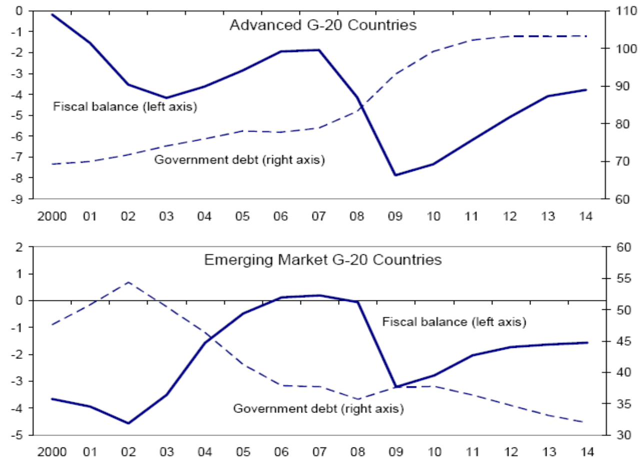
Government Finances and the GFC



Source: http://www.imf.org/external/np/pp/eng/2009/030609.pdf

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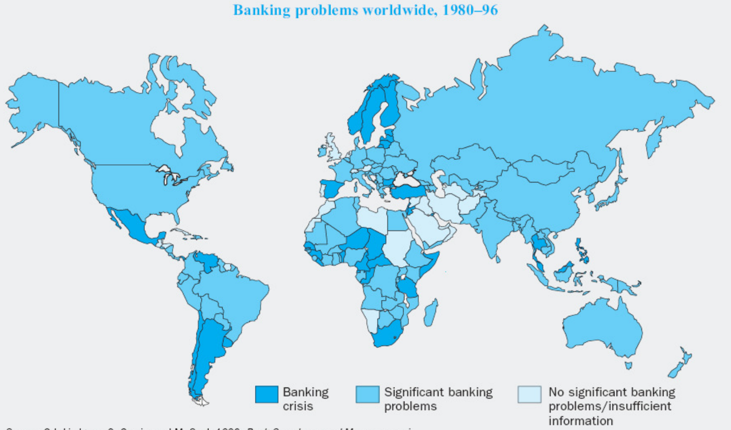
Beware Selective Bears (Learning from History)

- Discussion about historical precedents emphasizes long-term problems of
  - Great Depression
    - Different world economy, different policy responses
  - Japan during 1990s
- These are only 2 of 63 “banking / financial”crises since 1945 (and a much larger number prior to that) studied by Reinhart and Rogoff (2008).
- These are only 2 of 148 “output disasters” (GDP decline >10% peak to trough) for 35 countries since 1914 studied by Barro (2008). Average size is around 21-22% and duration of 3.5 years.

Crises are frequent!

Financial Crises Post 96
Asian crisis 1997
Russian crisis 1998 (& LTCM)
Brazil 1999
DotCom Bubble 2000
Argentina 2001
GFC 2007-?

FIGURE 1
Banking problems worldwide, 1980–96



Source: C-J. Lindgren, G. Garcia, and M. Saal, 1996, *Bank Soundness and Macroeconomic Policy*, Washington, DC: International Monetary Fund, p. 4.

Beyond the GFC

- How long till "normality"?
  - Past crises suggest main effects over in 2-4 years?
    - (see appendix)
- Which world do we live (believe) in?
  - A "Minsky" world – ever repeating credit (leverage) cycles and recurrent crises
  - A (generally) stable equilibrium growth path/trends
    - The same as before? What might have changed?

Macro-finance: risk, leverage, returns

- Financial assets are ultimately (although generally indirectly) claims on current and future real output
- GFC involves arguably
  - Lower expected real output growth
  - Increased risk aversion
  - Greater perceived output volatility
  - Greater perceived inflation volatility
- Translates into lower asset prices, increased risk premia, higher return volatility
- Is any of this a long-lasting change?

Macro-finance: risk, leverage, returns

- The aggregate irrelevance of leverage?
- If the underlying real sector risk is unchanged, and unchanged risk aversion, lower aggregate leverage simply redistributes risk
  - Equities become less levered claims on assets
    - Lower risk, lower expected return?
    - Lower equity premium?
- But why would lower aggregate leverage occur?

Is Lower Leverage a likely long term trend?

- Tougher prudential regulation, constrained financial sector (*supply side effect)*
  - But offsets from unregulated financing methods
- More conservative preferred capital structures of business/household borrowers (*demand side*)
  - Why? (Changes in tax incentives etc unforseeable)
- More conservative preferred investment portfolios of savers
  - Why? (Perhaps long term ageing & age-phasing of portfolios)
- My Conclusion:
  - No obvious reason to anticipate continued lowering of leverage once effects of GFC on risk aversion etc have passed
    - Unless, perhaps, substantial financial reregulation occurs!

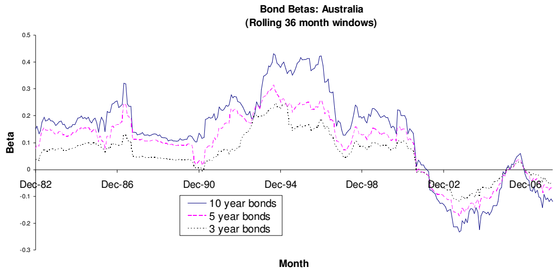
Possible Compositional Leverage Effects

- Less liquidity creation by financial sector
  - (ie less borrowing short, lending/investing long)
  - Increased yield curve slope?
- Increased government debt
  - Increased sovereign credit spreads for some?
  - “Crowding out” of private debt?
    - Higher interest rates ? (although long term increase in household savings would offset)
    - Effect on credit spreads?
  - Increased supply of inflation-indexed bonds?
- Effects of winding back of government guarantees and various support programs?

A couple of digressions

Will Bonds remain an Equity Hedge?

- Correlation between short run bond and equity returns has been negative (globally) since around 2000 (internationally)
- Reflects positive correlation of nominal interest rates and expected future equity cash flows (as successful inflation targeting might predict) outweighing positively correlated required returns on bonds and equities.



Inflation Indexed Yields

- 10 year Inflation-indexed yields around 3.5 – 4.0% in the UK and US until start of 2000's
- Fell to low of 1% in early 2008, spiked to 3% in late 2008
- Recently indexed bond prices have moved inversely to stock prices (a negative beta).
- Substantial differences in inflation-indexed (real) yields across countries (1- 2%)
- Decline in credibility of effective inflation targeting (and non-constant expected real interest rate) reduces substitutability of nominal and inflation-indexed bonds

Source: Campbell, Shiller, Viceira, 2009 (Yale ICF Working Paper No. 09-08)

Conclusions

- Balance sheet deleveraging effects of GFC likely to be relatively short term (2-3 years)
- Income-savings deleveraging effects may be longer term
- Increased public debt levels
- Restraint on finance sector might have implications for liquidity production, corporate leverage, yield curve, equity premium
- Financial sector cycles and crises may be the “norm”
- Bond and Equity returns have been negatively correlated, perhaps due to success of inflation targeting. Will this continue?
- Substitutability of nominal and inflation-indexed bonds conditional on credibility of inflation targeting.

APPENDIX

Some Information from Crises Past

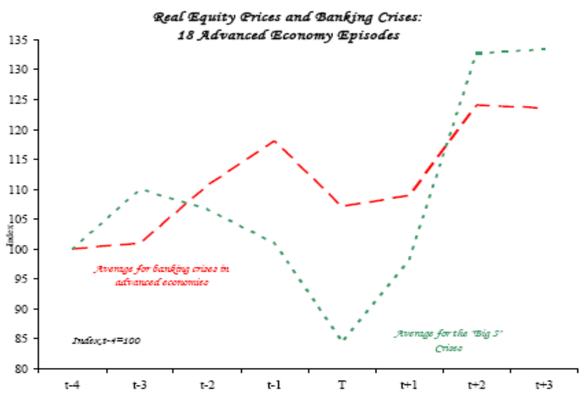
Source (Reinhart and Rogoff, 2008)

Crises Aftermath: Residential Property Prices

Country	*Crisis Date*	*Peak*	*Trough*	*Duration (years)*	*% Fall*	*Country*	*Crisis Date*	*Peak*	*Trough*	*Duration (years)*	*% Fall*
Advanced economies "big five"						**Asian Crisis**					
Finland	1991	1989:Q2	1995:Q4	6	–50.4	Hong Kong	1997	1997:Q2	2003:Q2	6	–58.9
Japan	1992	1991:Q1	Ongoing	Ongoing	–40.2	Indonesia	1997	1994:Q1	1999:Q1	5	–49.9
Norway	1987	1987:Q2	1993:Q1	5	–41.5	Malaysia	1997	1996	1999	3	–19.0
Spain	1977	1978	1982	4	–33.3	Philippines	1997	1997:Q1	2004:Q3	7	–53.0
Sweden	1991	1990:Q2	1994:Q4	4	–31.7	South Korea	1997		2001:Q2	4	–20.4
Historical episodes						Thailand	1997	1995:Q3	1999:Q4	4	–19.9
Norway	1898	1899	1905	6	–25.5	**Other emerging**					
US	1929	1925	1932	7	–12.6	Argentina	2001	1999	2003	4	–25.5
						Colombia	1998	1997:Q1	2003:Q2	6	–51.2

Source: Carmen M. Reinhart & Kenneth S. Rogoff (2008) NBER Working Paper 14587

Crises Aftermath: Real Equity Prices



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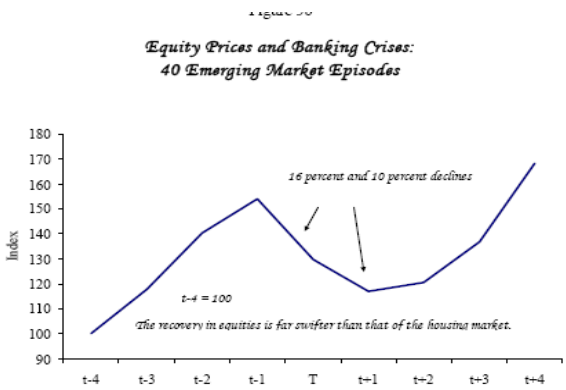
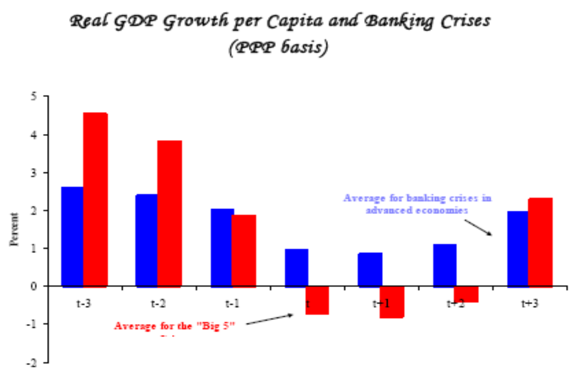
Crises Aftermath: Real Equity Prices



Source: Carmen M. Reinhart & Kenneth S. Rogoff (2008) NBER Working Paper 14587

Crises Aftermath: Real GDP Growth



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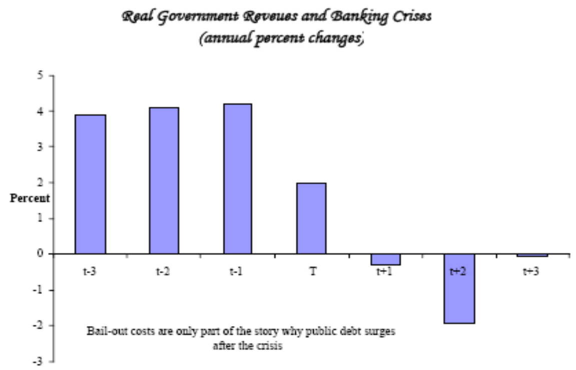
Crises Aftermath: Real Govt. Revenue



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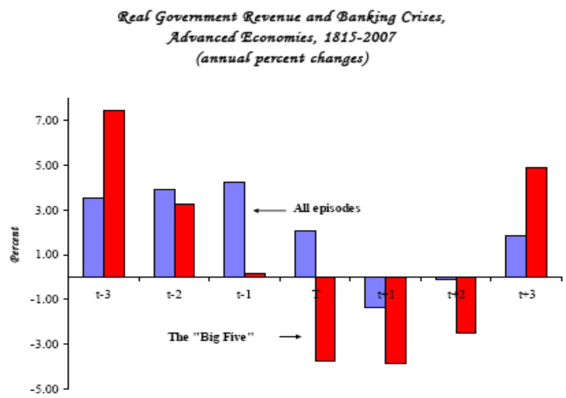
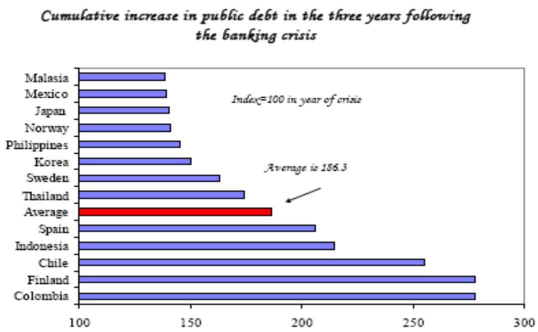
Crises Aftermath: Real Govt. Revenue



Source: Carmen M. Reinhart & Kenneth S. Rogoff (2008) NBER Working Paper 14587

Crises Aftermath: Public Debt



Source: Carmen M. Reinhart & Kenneth S. Rogoff (2008) NBER Working Paper 14587