The Goods and the Bads of the U.S. Financial System and How to Make the System Better

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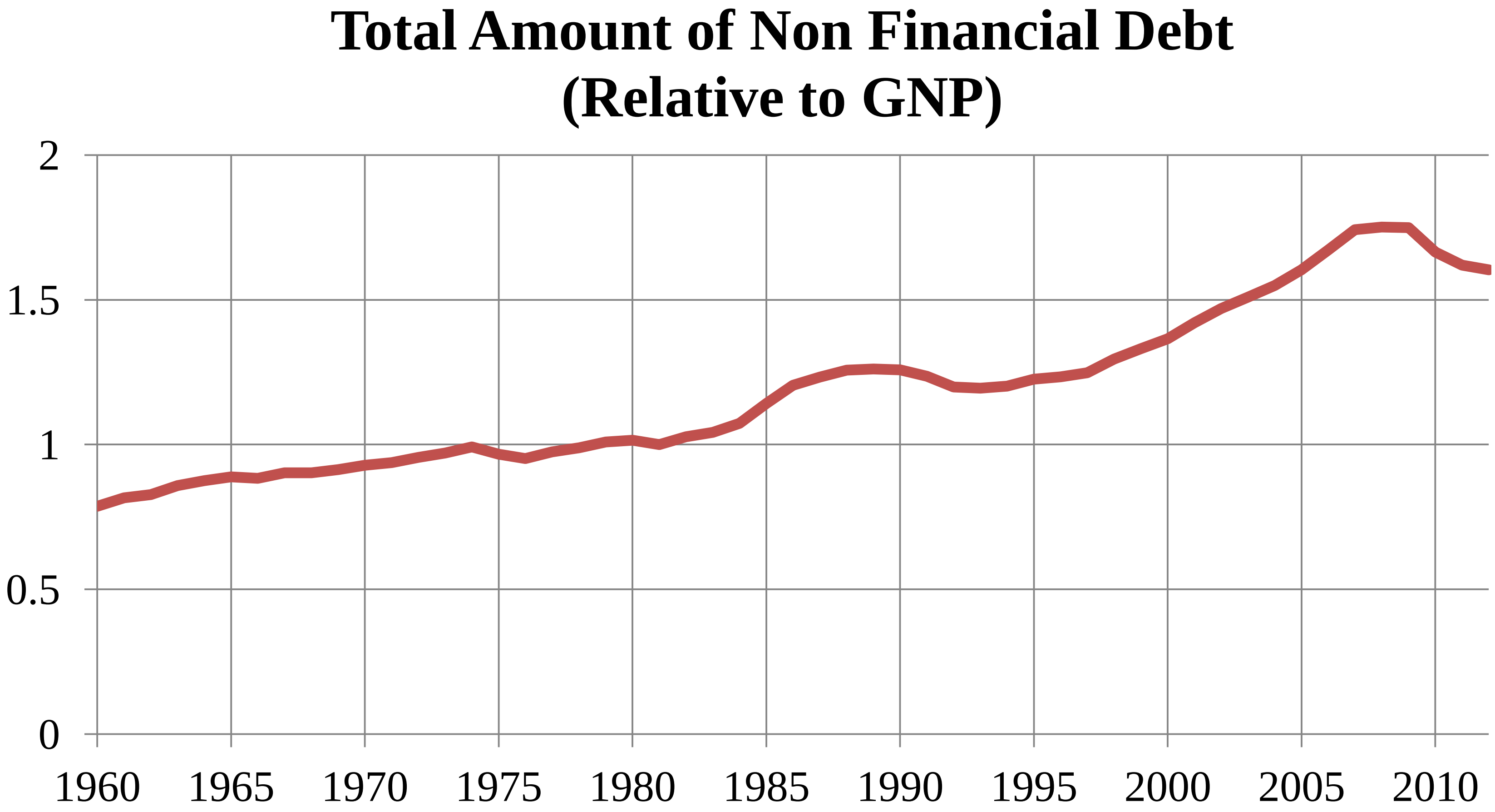
Let’s First Look at Some Facts



Source: Flow of Funds. Domestic nonfinancial sectors excluding governments

Reasons for Increase

- Amount of debt financing has been increasing
- One reason is increase in the fraction of people nearing retirement and longer retirement periods on average
- Another reason is more home mortgages with on average greater percent of house value

2008 Financial Crises and Aggregate Borrowing

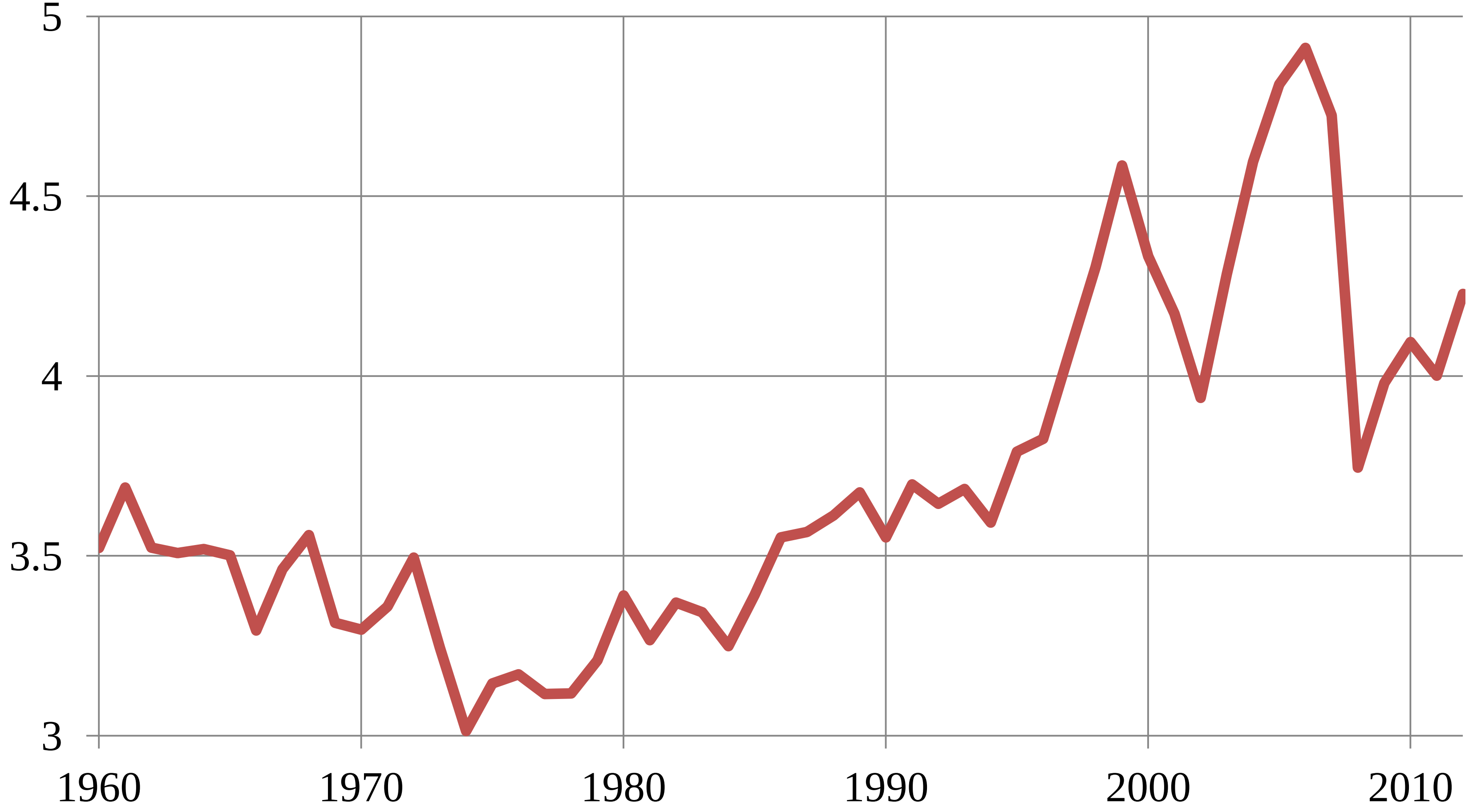
	End 2007	End 2009	End 2012
Total Liabilities (trillion US$) Non-financial sector	**32.5**	**32.5**	**33.2**
Composition Shares			
Mortgages	44.4%	43.7%	39.1%
Business Borrowing	40.5%	40.3%	47.1%
Other	15.1%	16.1%	13.8%

Big Asset Value Losses Relative to GNP

Source: Flow of Funds Accounts

Period	Change in Value of Equity	Change in Value of Household Tangible Assets	Total
2000-I to 2002-III	-0.94	0.25	-0.70
2007-II to 2009-I	-0.78	-0.37	-1.15

US Households Net Worth Relative to GNP



- General equilibrium approach
  - Design an accounting system for a neoclassical growth theory model
    - Any debt liability must be matched by a debt asset
    - Construct consistent set of sector balance sheets
  - Use Flow of Funds (Federal Reserve Board System) statistics to fill in the statistics in this accounting system
- I have a private sector and a public sector
  - I consolidate private business sectors with household sector

- Based on the works of McGrattan and Prescott and also Mehra and Prescott

Principal Roles of Financial Services

- Finance businesses and provide a place for retirement savings
  - And lesser extent for consumption smoothing
- Diversify idiosyncratic risk
- Provide a mechanism for making payments

Financing Businesses and Saving for Retirement

- There is a large quantity of intermediated borrowing-lending between households
  - The stock is approximately 2.8 times annual GNP
- A large amount of resources is used in this intermediation
  - A conservative estimate of the amount of resources used is 4% of GNP
    - This is net interest payments of financial intermediaries less BEA estimate of services provided by financial institution without charge
    - Bad debt treated as negative interest in calculations

Lending to other Households Leaves Net Worth of Households Unchanged

- In this discussion we abstract from the rest of the world sector as U.S. net asset position verses the rest of world is near zero and has been for a long time
- Within the overlapping generation framework, lending to government is part of household net worth
- I consolidate private businesses with households, who own the businesses

Use Overlapping Generation Framework

- Reason is that it is consistent with micro and macro observation while dynastic family is not

- Joines, Braun & Ikeda (2008) used the OLG framework to correctly predict the falling Japanese savings rate before it happened
- This along with micro studies of A. Imrohoroğlu, S. Imrohoroğlu, DeNardi, Klein and others instrumental in the shift from using the dynastic family to the OLG framework
- Also instrumental in the shift was the increased computational power needed when using OLG structures

Basic Accounting Identity (with OLG)

Private Savings Stock = Private Equity + Gov. Debt

- Necessarily private lending equals private borrowing for closed economy
  - As net private lending is zero
  - Aggregate stock of borrowing and lending is big
    - 2.8 annual GNPs

What about Fractional Reserve Banking with Demand Deposits

- Diamond-Dybvig studied an economy with a particular government imposed banking arrangement
- With their arrangement, there are two equilibria
  - One that supports what ***sometimes*** is called the anonymous social-optimum
  - And one that has bank-runs and inferior outcomes
- Their economy falls in the class that can be studied using valuation equilibrium theory with private information
  - The valuation equilibrium exists, is unique, and is optimal

Theory of Value Representation of the Diamond-Dybvig Environment

Underlying commodity space:

$$S = \{k_0, \{c_{t\theta}\}_{t,\theta=1,2}\} \subset \Re^5_+$$

t is date and θ is a private idosyncratic preference shock indicating whether someone is or is not patient. An individual learns his θ at date 1

The set S is closed & bounded and therefore compact.

The theory of value commodity space L is signed measures on the Borel sigma algebra of S

Preference

One type of measure 1 with consumption set

$$X = \{x \in L : \int u_\theta(c_{1\theta}, c_{2\theta}) x(ds) \geq \int u_\theta(c_{1\theta'}, c_{2\theta'})\, x(ds) \;\forall \theta, \theta';$$

$$\text{the marginal on } k_0 \text{ places mass 1 on}$$

$$\text{endowment } e > 0\}$$

Aggregate Technology Set Y

$Y = \{\ y \in L : y$ places all mass on a single point;

$\exists\,(z_{01}, z_{02}, z_{11}, z_{12}) \in \Re^4_+$ (z_{tj} are investments in j technology) s.t.

$z_{01} + z_{02} \le k_0 \qquad z_{01} \ge z_{12}$

$\mathrm{c}_{11} + c_{12} + z_{11} \le z_{01} + \phi_2 z_{12}$ where $\phi_2 < 1$

$\mathrm{c}_{21} + c_{21} \le \phi_1(z_{02} - z_{12}) + z_{11}\ \}$ where $\phi_1 > 1\}$

Resource Balance Constraint

$$\boldsymbol{x} = \boldsymbol{y}$$

Why Lotteries Needed

- Lottery valuation equilibrium more general than Arrow-Debreu event contingent valuation equilibrium
- Lottery do more than convexify
- Idiosyncratic shocks to preferences, as there are in the D-D environment, often permits differentiation on the basis of risk aversion conditional on idiosyncratic shock
- The are also needed if the optimal mechanism in dynamic situation does not entail making all revealed private information public at each point in time
  - This is not the case in D-D environment

Regulating commercial Banks is Expensive

- A large amount of resources are used in this activity – estimates from the 1990s is that it is nearly 0.5% of deposits per year
  - What is it currently? Would like to know.

Improvements

- The development of money market accounts
- Cost of check clearing down
  - The hordes of check clearers at Fed Res Banks are no more
  - Electronic images of checks and not checks are sent electronically and used in clearing
- Credit cards saving time – faster checkout than currency
- Bills paid automatically
  - Saves time

- Cost of transferring financial assets fallen dramatically
  - Use to be 2%
  - Now zero on Vanguards Indexed ETF
- Spread between borrowing and lending by households down
  - Spread on home mortgages was 3% in 1960s
  - Now about 2%

Making Financial System Better

- 100% reserves on guaranteed demand deposits
  - Tax-free, interest-bearing
- No possibility of a bank-run
- People use less time keeping non interest bearing deposits low
- Government probably could borrow a GNP for this purpose
- Keep the spread between interest on deposits and short-term publicly held debt small so few resources wasted in shadow banking
- With this option there is no too-big-to-fail problem

Forbid Financial Intermediaries

- That is forbid business with net interest income above some level
- Rely on mutual financial arrangements to allocate aggregate risk
- Currently most business financing is mutual
  - Stock market
  - Mutual funds holding debt
  - Insurance and pension funds
  - Many trusts

Why Have Fractional Reserve Banks?

- When there was a gold system, fractional reserves banking economized on resources allocated to digging gold out of the ground
  - It increased the quantity of money relative to the stock of gold
- Now we have fiat money, so why is there still fractional reserve banking?

Reasons for Fractional Reserve Banking are Political

- With this system there are regulatory rents, which are hidden taxes
- These rents are a source of campaign financing and a way to allocate subsidies to groups for political support

Aggregate Risk Cannot be Diversified: It Must be Allocated Across Households

What is a Solution?

- Have mutual arrangement
- Regulating insurance businesses is necessary
  - Limited liability institutions will make promises they cannot honor with probability 1.0
  - So require insurance companies to be mutual
- Spread large regional risk across regions
  - Hurricane Sandy is an example of such a risk
  - This spreading is achieved through reinsurance

Properties of a Better System

- Borrowing and lending between households
  - Big – about 2.8 GNPs (Table D3 in Flow of Funds)
  - The amounts of this type of borrowing and lending by the private sector are equal
    - To say people are borrowing too much is to say people are lending too much
    - Lenders are mostly people who are saving or have saved for retirement
    - Borrowers are mostly businesses, owned by households

What are Businesses?

- Corporate businesses, unincorporated businesses, household businesses (whose major activity is renting real estate to its owner), government businesses
- The owners of a business are the owners of that business's productive assets and the people liable for ths business's liabilities
- Accounting framework:
  - Private (household) sector
  - Public (government) sector

Financing of Private and Quasi Private Businesses

- Corporations subject to corporate income tax (1/2 of value added)
- Pass through corporation (1/8 of value added)
- Unincorporated businesses (1/8 of value added)
- Household businesses (1/8 of value added)
  - Mostly households implicitly renting real estate they own to themselves
- Rest is Government businesses (1/8 of value added)

What is Good?

- Difference between borrowing and lending rates small
  - Households like to lend at high rates and borrow at low rates
- Low costs of diversifying idiosyncratic risk
- Low costs of carrying out transactions
- Low costs for allocating aggregate risk
- More productive businesses are the ones that receive the financing

Debt and Equity Financing of Businesses

- Now roughly 50% equity and 50% debt
- In 1960 it was 75% equity and 25% debt

- Some debt is household debt, but this is not big
  - Credit card
  - Only a little direct lending between households
- Consumer durable debt is household business debt as services of durables should be imputed to consumption as are services of household used real estate

Value of privately owned businesses is V = q K

- Household net worth = *V + B*
  - Where *B* is government debt
  - Micro observations dictate the use of OLG rather than dynastic family framework, so B is part of private new worth
- Average *q* is about 0.6
  - Means net worth minus government debt is much less than *K*
  - Growth in retirement accounts have increased *q*

Conclusion

- The financial system is getting better
  - Transactions costs have fallen
  - Asset management costs have fallen
  - Diversification costs have fallen
  - More intertemporal trades relative to GNP are being carried out
  - With retirement accounts, capital income taxes have been dramatically reduced
    - This makes retirement consumption less expensive relative to consumption when saving for retirement
    - So that it more in line with ability of economy to transform current consumption into future consumption

How to Make It Better

- Switch to 100% reserve demand deposit system with tax-free interest on deposits
  - The transaction sector is the one that needs improvement the most
- Use mutual arrangements to finance businesses
  - That is use equity provided by business owners
  - And debt provided by mutual lending organizations