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

Total Amount of Non Financial Debt (Relative to GNP)

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

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<tbody>
<tr>
<td>Mortgages</td>
<td>44.4%</td>
<td>43.7%</td>
<td>39.1%</td>
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<tr>
<td>Business Borrowing</td>
<td>40.5%</td>
<td>40.3%</td>
<td>47.1%</td>
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<tr>
<td>Other</td>
<td>15.1%</td>
<td>16.1%</td>
<td>13.8%</td>
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Big Asset Value Losses Relative to GNP
Source: Flow of Funds Accounts

<table>
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<tr>
<th>Period</th>
<th>Change in Value of Equity</th>
<th>Change in Value of Household Tangible Assets</th>
<th>Total</th>
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<tr>
<td>2000-I to 2002-III</td>
<td>-0.94</td>
<td>0.25</td>
<td>-0.70</td>
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<td>2007-II to 2009-I</td>
<td>-0.78</td>
<td>-0.37</td>
<td>-1.15</td>
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• 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:

\[ S = \{ k_0, \{ c_{t \theta} \}_{t, \theta=1,2} \} \subset \mathbb{R}^5_+ \]

\( t \) is date and \( \theta \) is a private idiosyncratic preference shock indicating whether someone is or is not patient. An individual learns his \( \theta \) 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

\[ X = \{ x \in L : \int u_\theta(c_{1\theta}, c_{2\theta}) x(ds) \geq \int u_\theta(c_{1\theta}', c_{2\theta}') x(ds) \ \forall \theta, \theta' ; \] 
the marginal on \( k_0 \) places mass 1 on
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 \mathbb{R}_+^4$ ($z_{tj}$ are investments in j technology) s.t. \\
$z_{01} + z_{02} \leq k_0 \quad z_{01} \geq z_{12}$ \\
$c_{11} + c_{12} + z_{11} \leq z_{01} + \phi_2 z_{12}$ where $\phi_2 < 1$ \\
$c_{21} + c_{21} \leq \phi_1 (z_{02} - z_{12}) + z_{11}$ where $\phi_1 > 1$}
Resource Balance Constraint

\[ x = y \]
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 the 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 $V = qK$

- 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