

Financial Structure (1+35)

Sources of funds:

1. Debt (Liabilities)

Promised return

No control over firm

unless default.

"Creditors"

2. Equity ("Capital", "NW")

Gets residual return

after creditors paid.

Controls firm if not in default.

"Owners"

Bankruptcy

Creditors get first claim on

assets.

Leverage

$$= \boxed{\frac{\text{Assets}}{\text{Equity}}} \geq 1$$

- Allows owners to control more assets
- Increases their expected ^{rate of} return
- Increases riskiness of their return
- Allows investors to specialize
 - Risk averse, unknowledgeable
hold debt
 - Risk tolerant, knowledgeable
hold equity
- Increases chance of default, losses to creditors in event of default.

Debt Seniority

Senior secured debt generally has
prior claim over Junior debt

since Jr. debt increases Leverage,
default risk.

- 1st mortgage = Sr. Debt.
- 2nd mortgage = Jr. Debt.

But new debt used to buy new
asset may have first claim (lien)
on that asset.

Debt Securitization

eg 1,000,000 bonds @ \$1000 each.

If borrower sells 1 at a time, 1st is Sr
to 2nd, etc., so not equal claims.

If borrower sells all 1,000,000 at once
to single buyer or syndicate of buyers,
all are co-equal, have better 2ndary mkt.

→ Investment Banking.

Holding Companies

= corp whose purpose is to own stock of + control other corps.

May itself be leveraged,

⇒ double leverage

- H.C. stock controls many assets w/o impairing claims of creditors of underlying corps.
- H.C. debt riskier than ordinary debt, because assets are riskiest part of underlying investments.

"Junk Bonds" often HC Debt

Used for Leveraged Buyouts

Commercial Banks

$$\frac{NW}{A} = 7.2\% \quad (9/29/93)$$

Leverage Ratio

$$= \frac{A}{NW} = 12.6 : 1$$

Very high for ordinary corp.

But —

Bank assets almost all
others' debt

→ Assets safe from default if borrowers
not excessively leveraged, if
loans well collateralized, and if
default risks well diversified

→ Liabilities safe if A, L maturities
not excessively mismatched.

FINANCIAL INTERMEDIATION

M+B 27

Credit Market Assets of Households and Financial Intermediaries, 2008Q1.

(\$ Trillions)

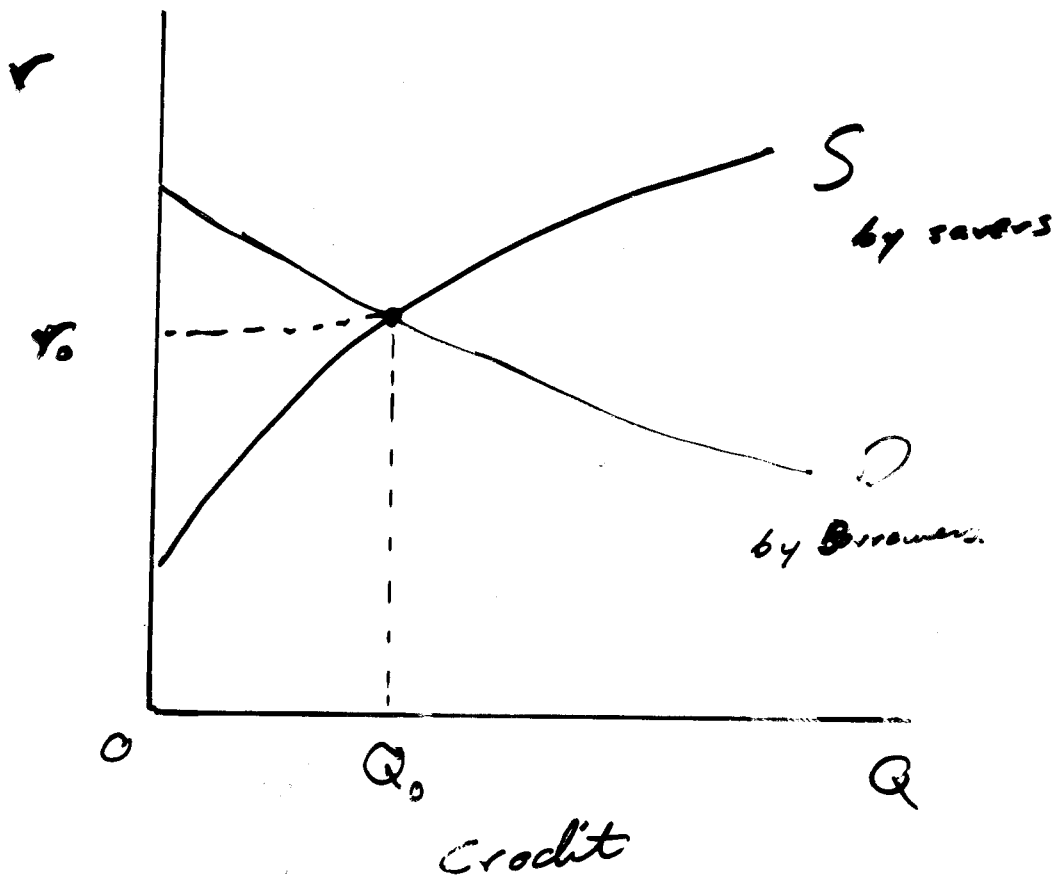
<u>Households</u>		<u>3.89</u>
<u>Financial Intermediaries:</u>		<u>36.52</u>
Commercial Banks	8.88	
Thrifts*	1.60	
Life Insurance Companies	2.92	
Pension Funds	4.48	
Finance Companies	1.63	
Money Market Mutual Funds	2.25	
Other non-equity Mutual Funds	2.27	
Government-sponsored Agencies**	2.89	
Federally Related Mortgage Pools**	4.59	
Misc. Fin. Intermediaries	5.01	
Business and Government		2.09
Rest of World		<u>7.11</u>
<u>Total all sectors</u>		<u>49.61</u>

Data source: *FR Bulletin*, 9/08, Table 1.60.

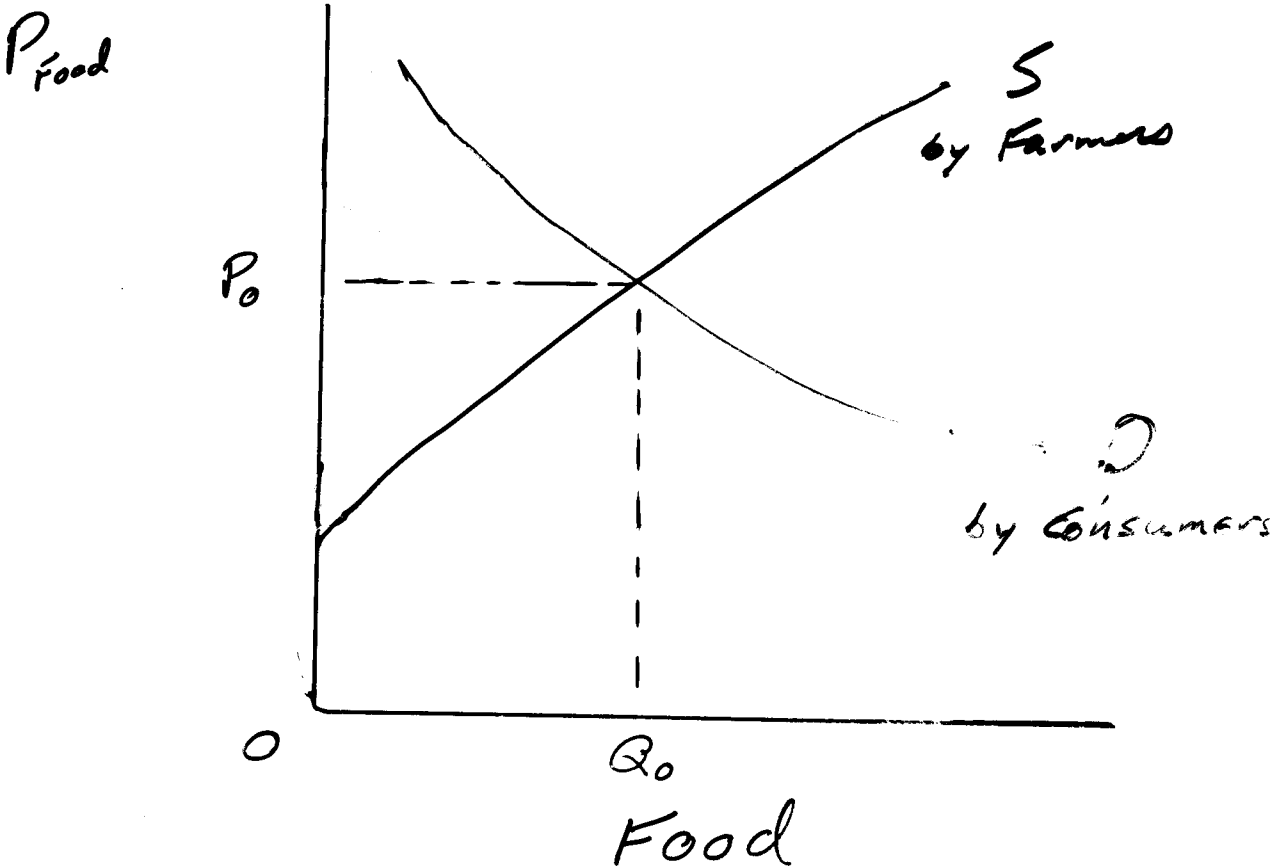
* Savings and Loan Assns, Savings Banks, Credit Unions.

** Includes Fannie Mae, Freddie Mac, and GNMA assets and guaranteed pools.

Credit Market Equilibrium



Food Market Equilibrium



Food Intermediaries

- Grocery Stores
- Distributors
- Processors

Functions of FI's

- Absorb differences in timing.
- Absorb differences in quantity
- Repackage payment stream
CDs → Amortised Loans.
- Improve quality of product
 - Credit information specialists
 - Diversification of default risks
 - Leveraging residual risk onto equity

Misfunction of F.I's:

- Transforming maturities
causes interest rate risk

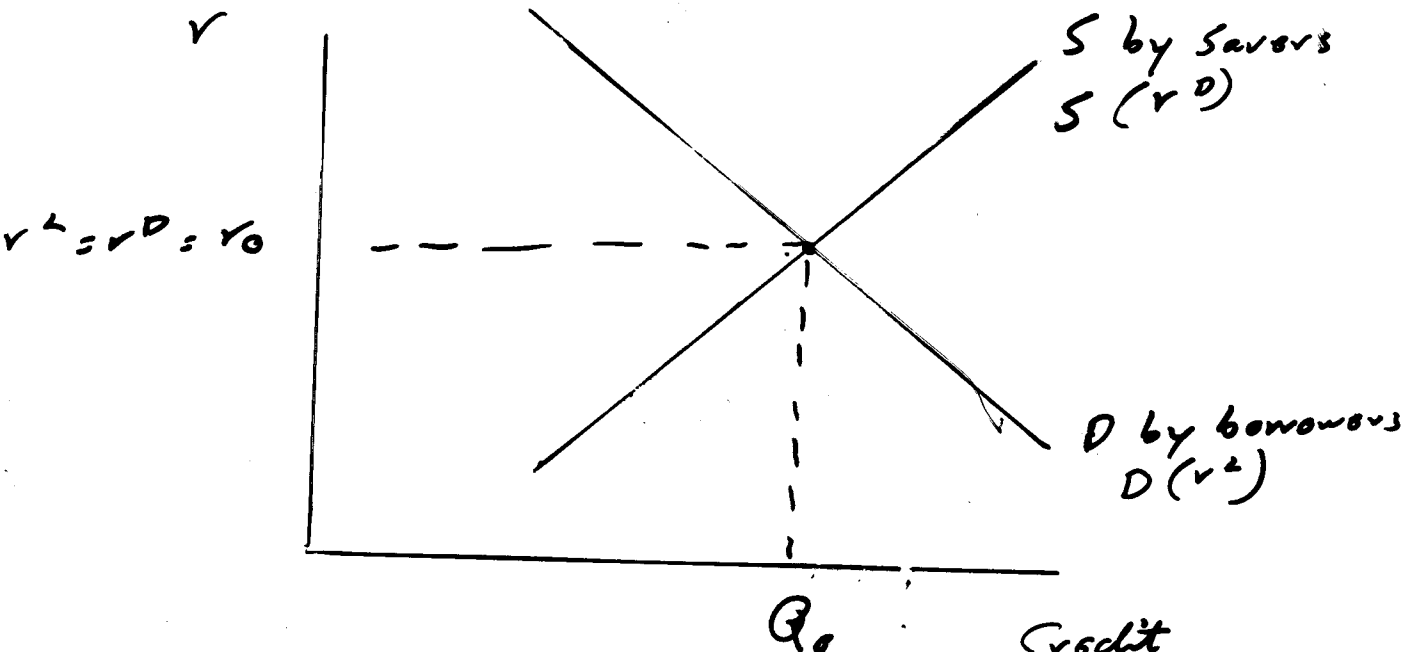
Costs of FI.

$r^L = \text{FI Loan } r \text{ to borrowers}$
(not of default risk)

$r^D = \text{FI Deposit } r \text{ to savers}$

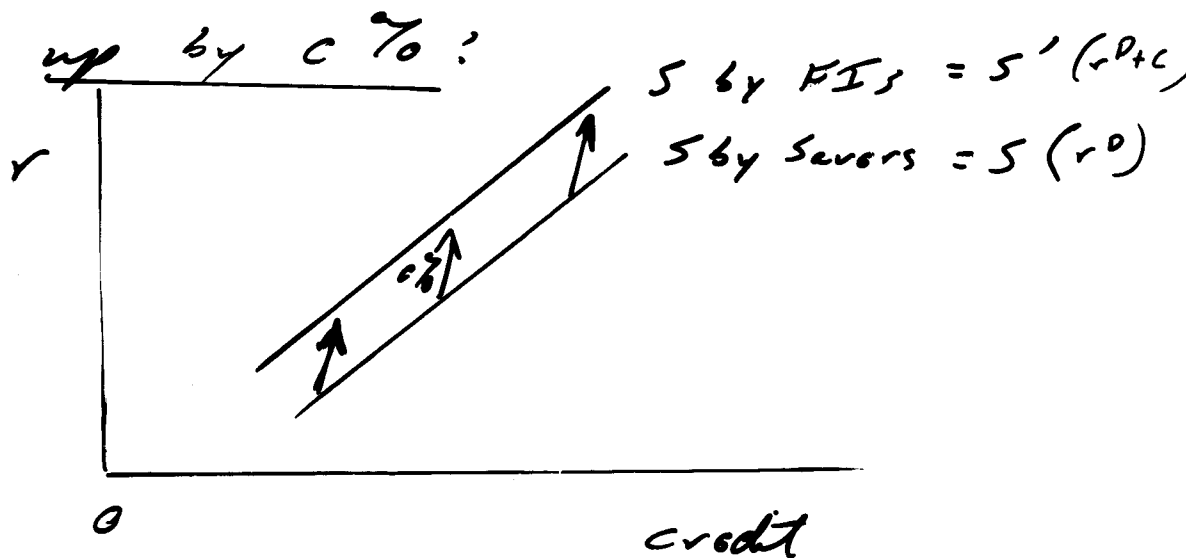
If FI costless + markets competitive,

$r^L \rightarrow r^D \rightarrow r_0$

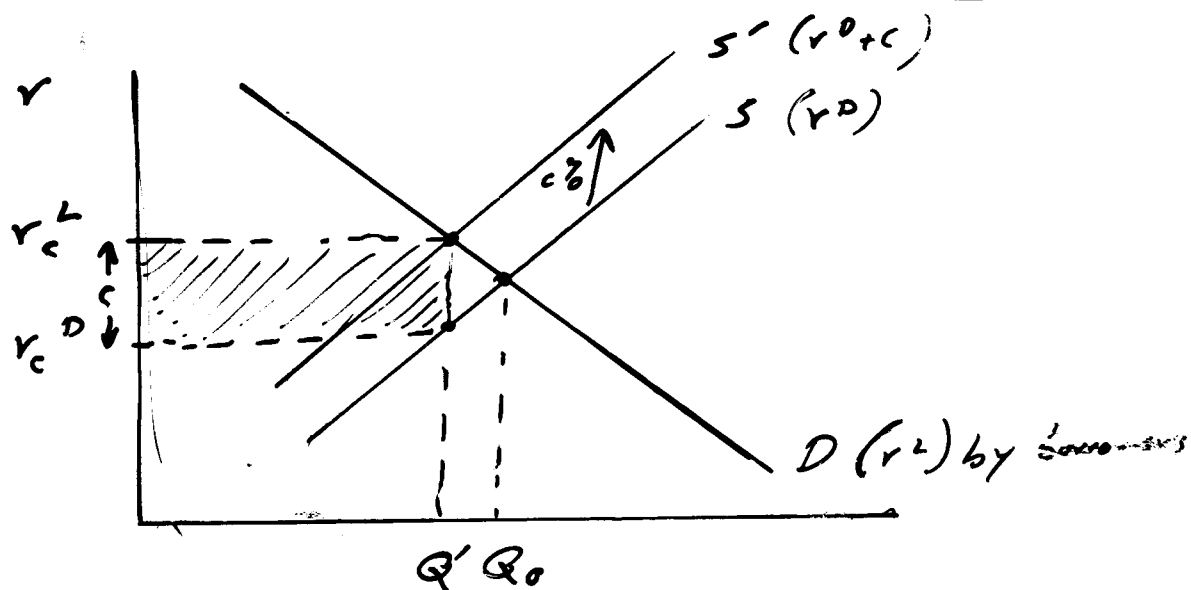


IF FI costs \$c/yv/\$100, intermediated
(incl competitive return on req'd capital),

S by FIs = S by savers, shifted



Then if mkt competitive, $r^L \rightarrow r^D + c$;



$\square = (r^L - r^D) Q' = c Q' = \text{Costs of F.I.}$

Profit = 0 (net of comp. return to capital)

Interest Rate Risk

Thrifts traditionally hold

- Short term liabilities

Savings accts, MMDAs

- Long term assets

30 yr fixed rate mortgages

⇒ If $R \uparrow$ (as 1950-1980),

- $A \downarrow \downarrow$ in P.V.

- $L \downarrow$ only slightly if at all.

⇒ $NW \downarrow \downarrow$ in economic value

$$\underline{NW \equiv A - L}$$

Avoidable by matching maturities
of A, L

⇒ Long-term CDs and/or
short term loans.

Thrift Institutions

- Savings + Loan Assns (S+Ls)
- Savings Banks
- Credit Unions

Specialize in

- Non-M1 Deposits

Savings

MMDA since 80's

CDs since 70's

- Long-Term Loans

S+Ls -

30 yr Fixed Rate Mortgages

Savings Banks -

Bonds, Mortgages

Traditionally transform maturities

→ Severe R-Risk.

Pre-1970s, largest class of F.I.!

Maturity Transformation \Rightarrow if $R \uparrow\uparrow$
as 1950-1980,

- $A \downarrow\downarrow$ in P.V.
- $L \downarrow$ only slightly if at all

\Rightarrow Economic NW $\downarrow\downarrow$

- Most S+Ls economically insolvent
by 1980s.

Even if Assets carried at book value,
profits \downarrow since $R^D \uparrow$ while R^L
fixed.

\Rightarrow Accounting NW eroded.

Interest Rate Risk avoidable

by Matching A, L maturities.

Deposit Int. Ceiling

1960's, 70's

Regulators set r^D ceiling $\bar{r}^D < r_c^D$

Reduces credit supplied to FI's to

$$\bar{Q} = S(\bar{r}^D) < Q'$$

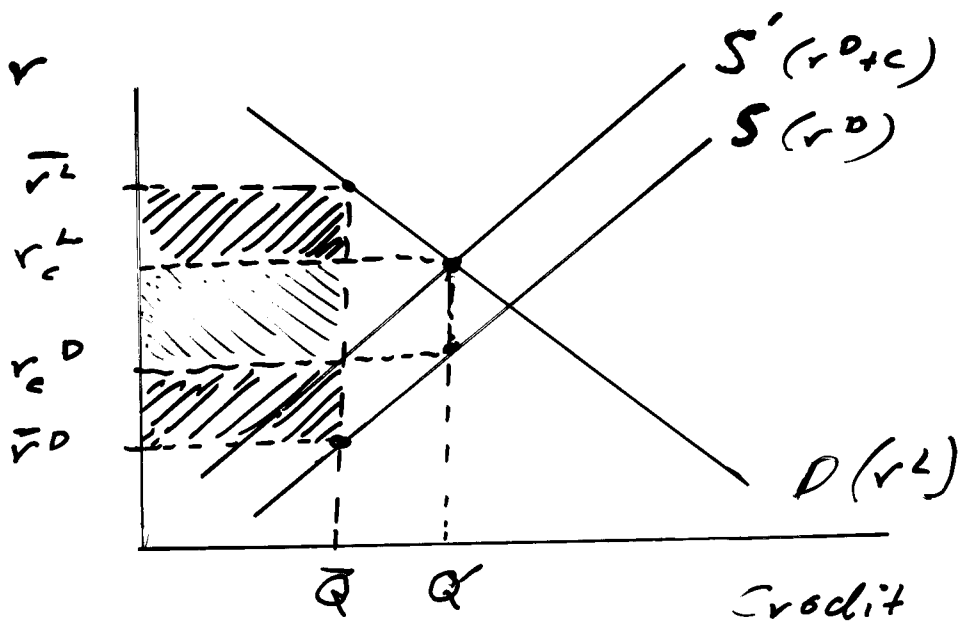
Competition by borrowers forces r^L

up to \bar{r}^L , where $D(\bar{r}^L) = \bar{Q}$

$$\Rightarrow \bar{r}^L > r_c^L$$

Profits (net of comp. rot. on cap.)

$$\uparrow \text{ to } \boxed{\text{hatched}} = (\bar{r}^L - \bar{r}^D - c) \cdot \bar{Q} > 0.$$



$$\boxed{\text{hatched}} = c \bar{Q} = \text{Cost of Intermediating } \bar{Q}.$$

Disintermediation

1960's, 70's

- Savers bypass intermediaries to avoid deposit interest ceilings.
- \$1,000 T-Bills popular in 60's,
Min Denomination ↑ to \$10,000 in 1970

6, Money Market Mutual Funds

- Early 70's
- Hold only very short term (~20 days), highly marketable debt securities
 - T-Bills
 - Corporate Commercial Paper
 - Bank Large CDs
 - > \$100,000 deregulated early, negotiable
- ⇒ PV very stable
- Allow limited "checks"
 - Payable through CB
- Uninsured, but very safe
 - No R-risk, runproof
 - Regulated by SEC
- Took off 1979-82
- Withstood 25% loss of deposits Jan. 1983, due to MMDA's. Still popular.

Most MMMFs "Penny Round"

- Round Net Asset Value to nearest 1¢/\$.
- Defeats spirit of mutual fund

But not a problem if fund holds

- very safe (low yield) assets
- very short-term (< 20 day) assets

Reserve Primary Fund

- hold longer-term, higher yield (riskier) paper
incl Lehman Bros CP.

- "Broke Buck" 9/17/08 after Lehman failure

Could have sold Lehman paper,
marked down to ~ 97¢/\$,
continued in business.

Instead needlessly froze deposits!

10/21/08 - Fed may lend up to \$40 B to
MMMFs to protect penny-rounding.

Federal + Fed. Sponsored Mortgage Intermediaries

		2008 Q2
	Assets	Guaranteed Pools + MBS ***
<u>Fannie Mae</u> FNMA = Fed. Nat'l Mortgage Assn.	\$1,021 B *	\$2,444 B
<u>Froddie Mac</u> FHLMC = Fed. Home Loan Mort. Corp.	\$813 B **	\$1,802 B
<u>Quinnie Mae</u> GNMA = Gov't Nat'l Mort. Assn. (Packages FHA, VA loans.)	\$14 B ***	\$570 B

* Latest figure for 2004 in latest (2007)
OFHEO Report to Congress!

** As of 2006 in latest (2007) OFHEO
Report to Congress.

*** As of 2007 per GNMA annual report.

**** Per Federal Reserve Bulletin 9/08 Table 1.54
MBS = Mort. Backed Security

Gov't Sponsored Enterprises (GSE's)

Freddie & Fannie

mac

mac

- Private corps w/ shareholders
- Sell bonds, buy mortgages
can match maturities,
avoid int. rate risk.
- Unique Federal Charters from Congress
"Government Sponsored Enterprises"
Like 1st, 2nd Banks of US in 19c.
- FNMA exempt from state, local
income taxes.
- \$2.25 B Line of Credit with Treasury.
- Assumed Federal Guarantee on debt.
Not explicit so far. until 9/7/2008
⇒ Private Profit, Public Risk
- Exempt from SEC
"Regulated" by Office of Federal
Housing Enterprise Oversight (OFHEO)
Replaced by Fed. Housing Finance Agency,
7/30/08

Now3

QSE Equity (WSS 11/15/08)

Qtr 3Q 2008 (read off graph)

	<u>Fannie Mae</u>	<u>Freddie Mac</u>
<u>GAAP</u>	+9 B	-14 B
<u>Fair Value</u>	-46 B	-42 B

- GAAP - Mix of Historical, Market value.
- Fair Value Value if sold (est.)

US Tax Code encourages excessive
Home Leverage, intermediation

- Home Mortgage Interest Deductible
by Itemizers 1st Mortgage and HELOC!

→ Incentive to borrow as much as possible,
to pay as slow as possible

Invest savings in stocks etc,
not home equity.

→ ◦ Too little home equity

◦ Housing, stock bubbles

◦ Too much intermediation.

- Repeal Deduction, with compensating cut
in tax rates

→ ◦ More home equity

◦ More stable housing, stock market

◦ Fewer mortgage intermediation problems.

◦ More incentive to work

Phase in over 10 yrs