

# **Norges Bank Macroprudential Regulation Workshop**

## **Reducing the Fragility of the Financial Sector:**

**The Importance of  
Equity and Why it is Not Expensive**

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November 29, 2012

# “Cherry Picking” In Theoretical Research



- Cherry Picking in Empirical Research = Carefully Selecting Data to Support a Desired Result
  - If one has sufficient freedom to select the data, one can support almost any result.
- Potential Cherry Picking in Theoretical Research = Searching for a Set of Assumptions that Produces a Desired Conclusion
  - If one has sufficient freedom to select assumptions, one can create a model to support almost any result.
  - Are the assumptions reasonable?
  - Are there other more reasonable assumptions that explain what we see?

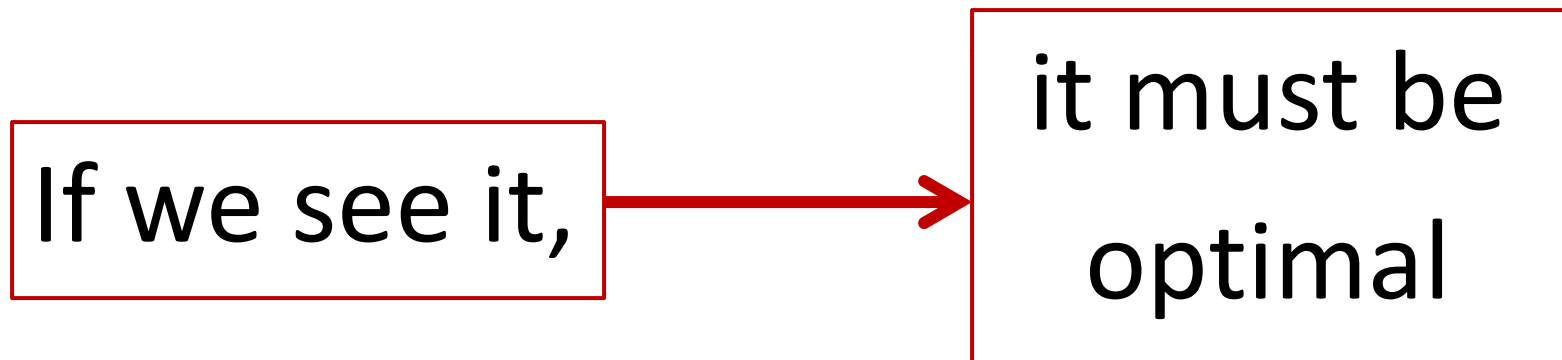
# A Non Sequitur

- We have models in banking and financial intermediation showing that:
  - Equity is expensive
  - Debt disciplines or solves a contracting problem
  - Fragility is valuable
- We see high leverage being chosen by banks (banks “economize” on equity)



- Equity is Expensive
- High Leverage and Fragility are desirable

# The Ultimate Non Sequitur



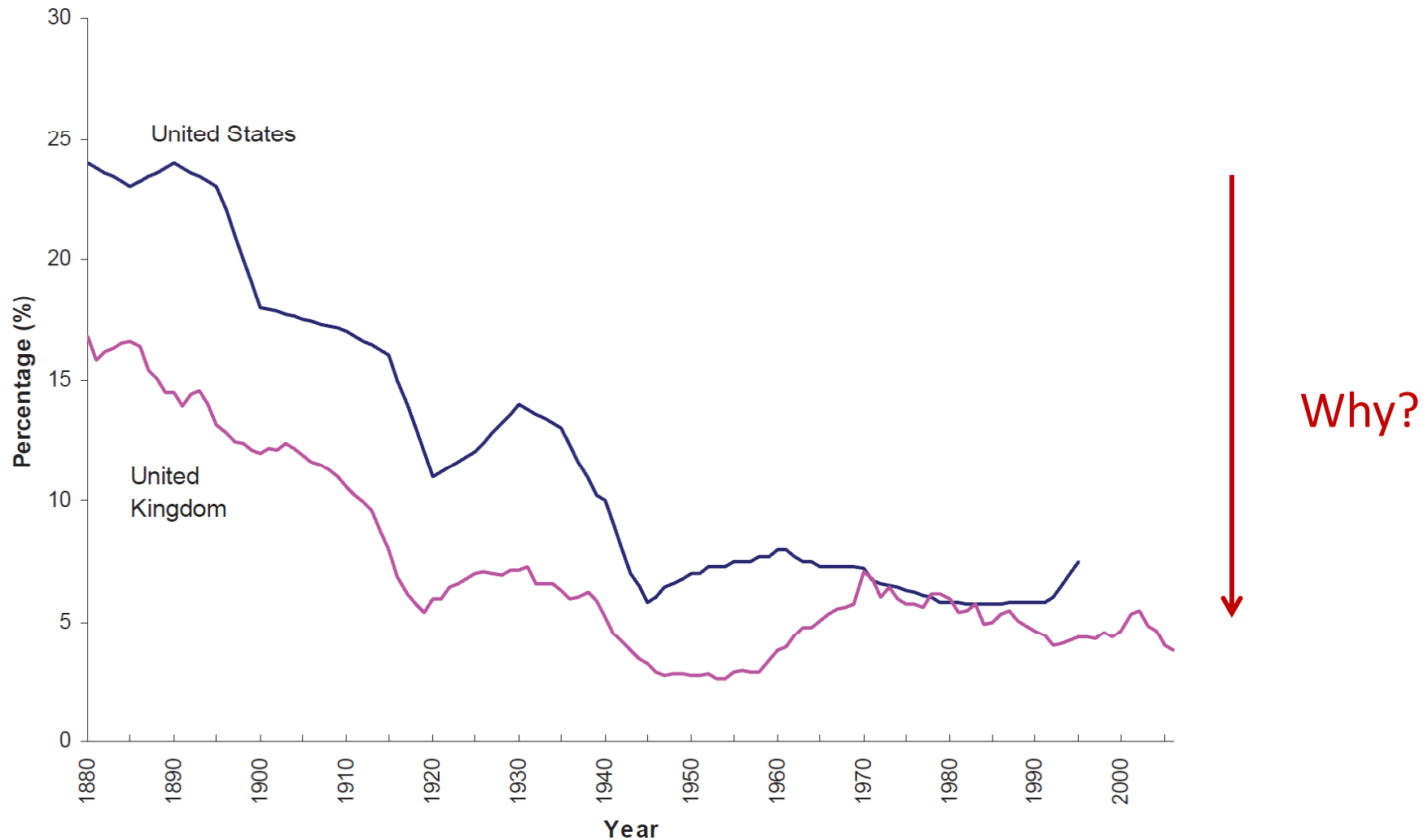
# Two Highly Related Questions

- Why do we see banks so highly leveraged?
  - What are the incentives?
- Is high leverage necessary? Is it “good”?
  - Is equity expensive?
  - Is fragility valuable?
  - Does debt discipline?
  - Are Basle III capital requirements at the right level?

# Leverage in the Banking Sector has Dramatically Increased in the Last 150 Years

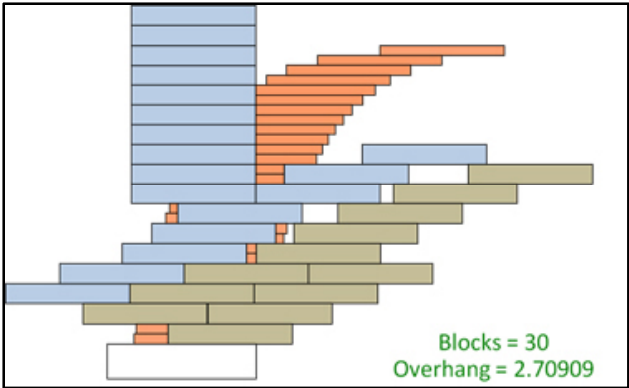
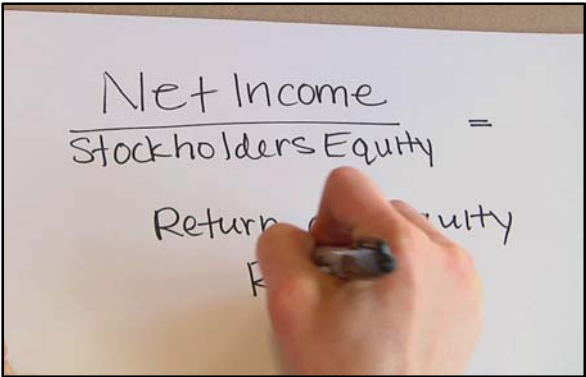
- In 1840, equity funded over 50% of bank assets in US.
- Over the subsequent century equity ratios declined consistently to single digits.
- There is evidence that steps to enhance “safety net” contributed to this. In the US:
  - National Banking Act, 1863,
  - Creation of the Fed, 1914,
  - Creation of FDIC, 1933.
- Similar trends in UK, Germany.
- Bank equity did not have limited liability everywhere in the US until 1940s!

# History of Banking Leverage in US and UK (Alesandri and Haldane, 2009)



Source: US: Berger, A, Herring, R and Szegö, G (1995). UK: Sheppard, D.K (1971), BBA, published accounts and Bank of England calculations.

# Four Strong Incentives For High Leverage





# Incentive for High Leverage: Taxes



- Many tax systems perversely subsidize debt over equity.
- No one argues that taxes completely explain high leverage and fragility in the financial sector, but it is clear that the interest tax shield strengthens incentives.
- Government guarantees and other factors that increase “debt capacity” for banks indirectly subsidize banks over other institutions by allowing them to more aggressively exploit interest tax shield.

# Incentive for High Leverage: Subsidies



**BAC's** ratings benefit from **three notches of uplift** from the standalone credit assessment at the subsidiary bank level, and two notches of uplift at the holding company level, reflecting Moody's assumptions about the very **high likelihood of support from the US government** for bondholders or other creditors in the event that such support is required to prevent a default.

**Barclays Bank** (Barclays) plc's long-term deposit and debt ratings were downgraded to A2 from Aa3 and the bank's Prime-1 short-term ratings were affirmed. The bank's standalone credit assessment was lowered to C-/baa2 from C/a3. The senior debt and deposit ratings **benefit from three notches of uplift from the standalone rating, reflecting Moody's expectation of a very high probability of government support for the bank in the event of stress**. The ratings of the holding company, Barclays plc, were downgraded to A3/ P-2 from A1/P-1. The outlook on the C- standalone rating is stable, whereas that on the A2 long-term deposit rating is negative, reflecting the view that government support for large UK banks will reduce over the medium term.

**BNP Paribas's** (BNPP) long-term debt and deposit ratings were downgraded by two notches, to A2 from Aa3. The bank's Prime-1 short-term rating was affirmed. The standalone credit assessment was lowered by two notches, to C-/baa2 from C/a3. The outlook on both the standalone credit assessment and the long-term debt and deposit ratings is stable. Senior debt and deposit ratings are rated A2 and **incorporate three notches of uplift from government support assumptions**.

*Excerpted from a recent (June 21, 2012) report on Moody's ratings of Global Banks*

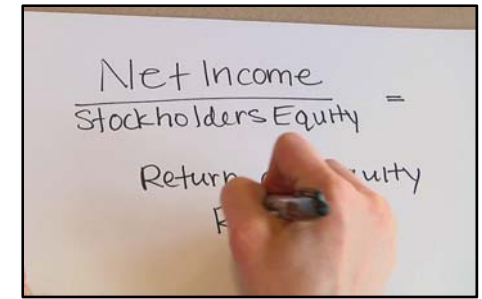
# Incentive for High Leverage: **Subsidies**



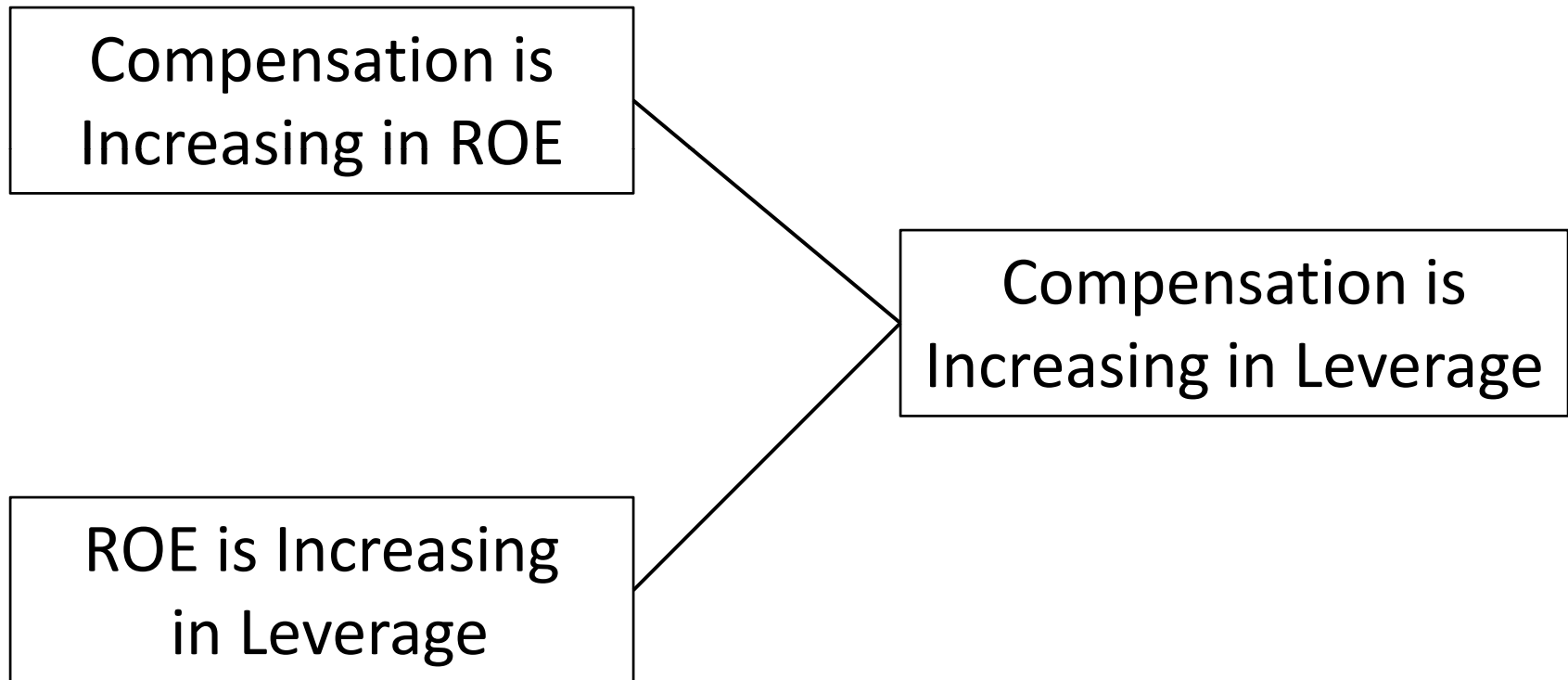
- If creditors of a bank believe that there is a chance they will be bailed-out by the government in situations of systemic distress, they obviously will accept lower yields.

Reduced Cost in Basis Points	Extra Return on Equity (with 3% equity)
2.50	0.81%
5.00	1.62%
7.50	2.43%
10.00	3.23%

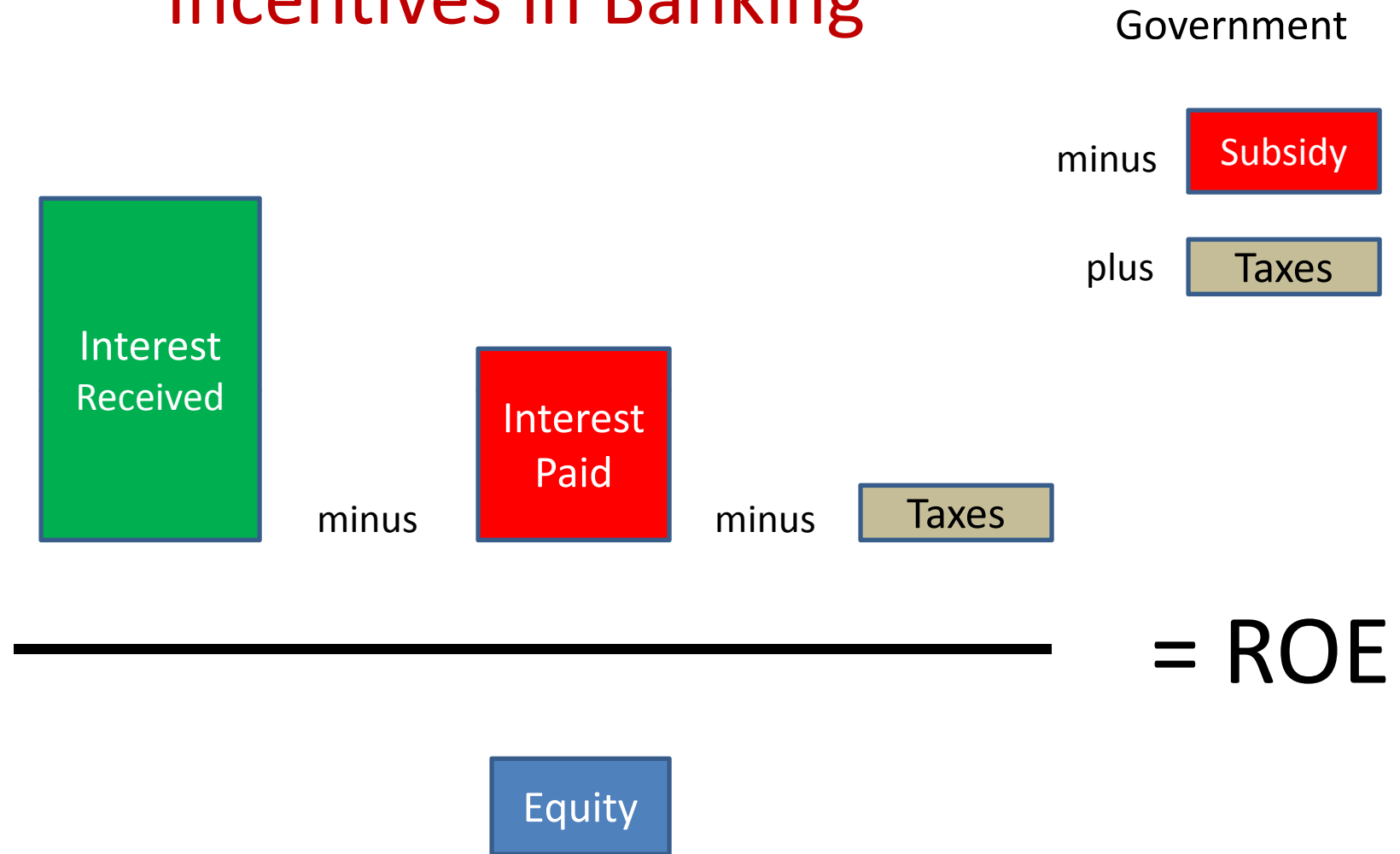
# Incentive for High Leverage: ROE and Compensation



Net Income  
Stockholders Equity =  
Return on Equity

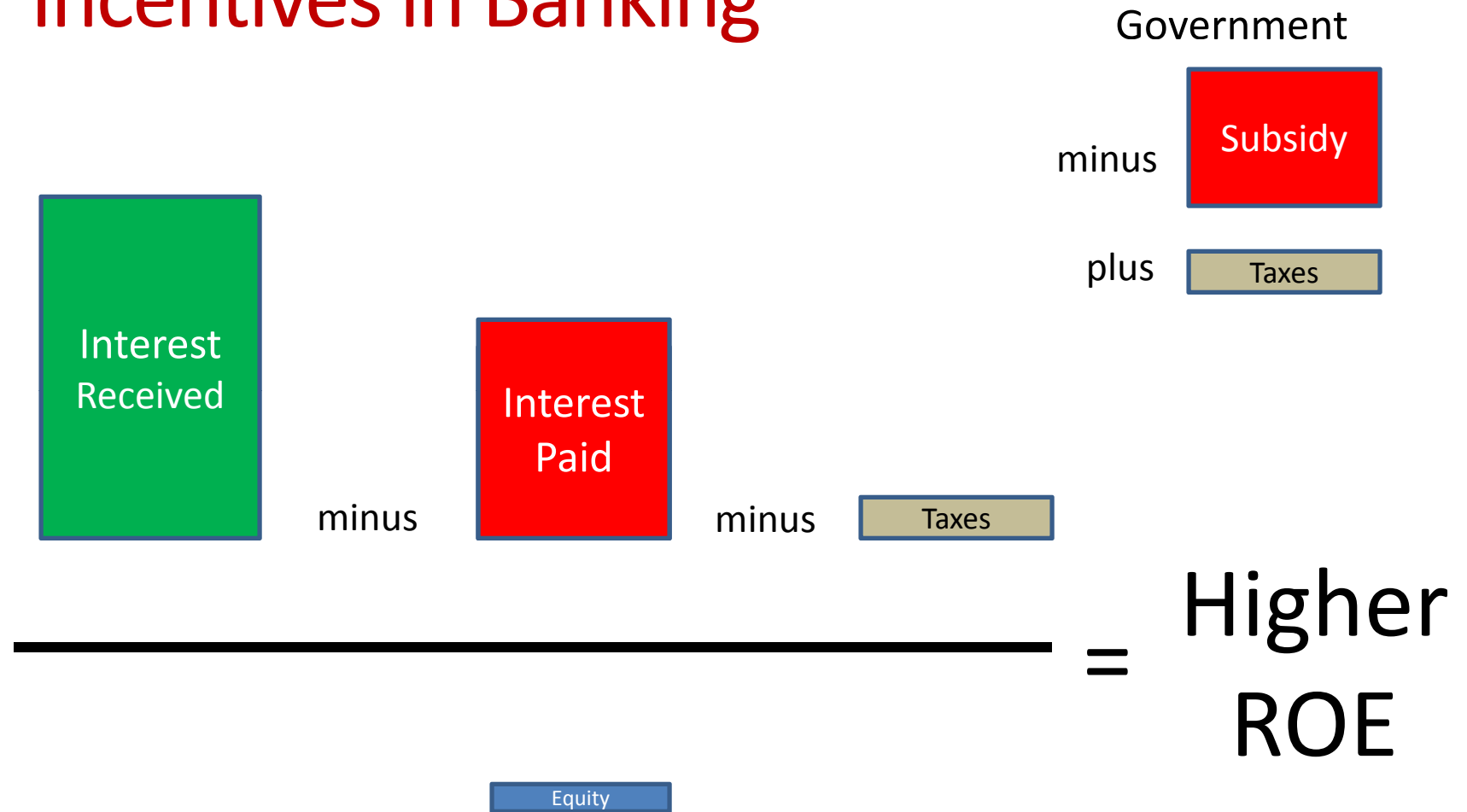


# Incentives in Banking

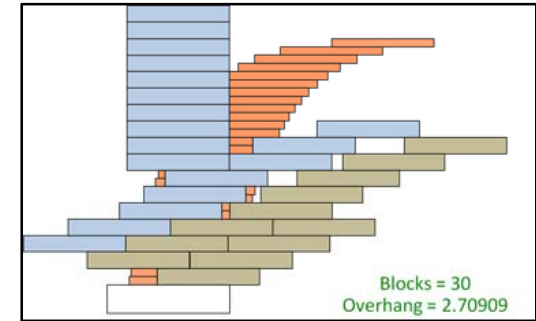


Now Let's "Economize" on Equity

# Incentives in Banking



# Dynamic Incentives for High Leverage: Debt Overhang



- Once fairly high leverage is achieved, it is hard to turn back.
- Issuing equity or taking any action that reduces leverage is costly to shareholders (and managers) since it transfers value to creditors or the government.
- Debt overhang creates a ratchet effect: leverage is “easy” to increase but “difficult” to reduce.



# All of these Incentives are Clearly Perverse and Lead to Socially Undesirable Outcomes

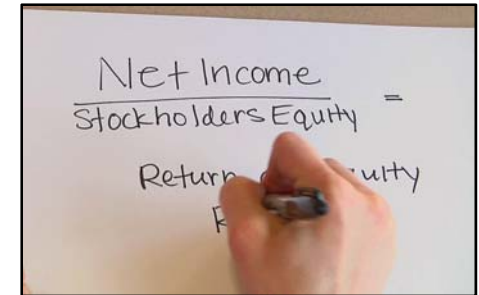
- Tax subsidy is a huge distortion.



- Implicit government guarantees and underpriced deposit insurance are also huge distortions.



# ROE is Completely Irrelevant

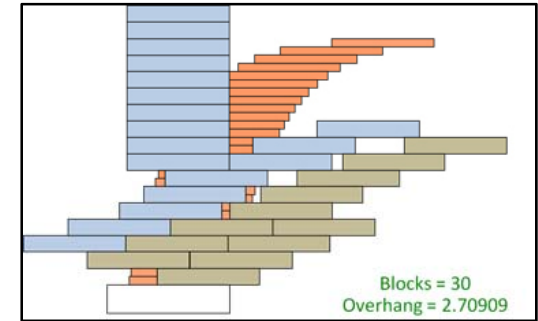


Net Income  
Stockholders Equity =  
Return on Equity

- *Raw return on Equity (ROE), unadjusted for risk, does not measure shareholder value.*
- Consider two managers:
  - Good manager manages assets well and has a prudent level of equity funding
  - Bad manager manages assets poorly and has an imprudent level of equity funding

	Realized Return on Assets (ROA) (Before Interest Payments)	Interest Rate on Debt	% Equity Funding	Realized Return on Equity (ROE)
Good Manager	3.00%	2.00%	10.00%	12.00%
Bad Manager	2.50%	2.00%	3.00%	18.67%

# Debt Overhang



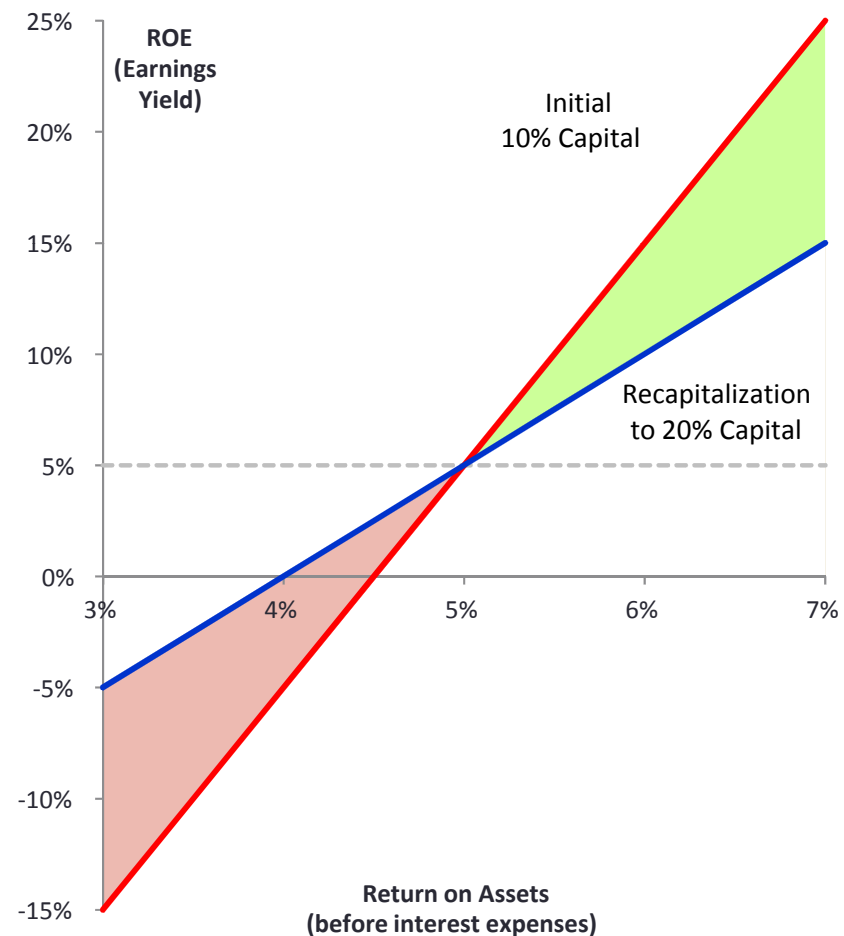
- Debt overhang explains why banks will not voluntarily choose to reduce leverage.
- It is not in any way a reason not to require banks to reduce leverage.
  - Reduction in leverage does result in a wealth transfer between equity holders and managers on one side and creditors and the government on the other.
  - The wealth transfer reflects what happens when distortive government subsidies are removed.

# Fallacy: “Equity is expensive because it has a higher required return than debt”

- This claim violates key principle of finance: the cost of funding is determined by risk.
- The “required return” of debt and equity cannot be discussed separately. Both depend on funding mix.
- Debt creates leverage and increases the risk of equity (for a fixed investment). Less borrowing means less risk to shareholders, which lowers required return on equity.
- Someone must absorb losses on investments.
- Redistributing risk among providers of funds does not by itself affect overall funding costs.

# Return on Equity (ROE) and Leverage

- More equity
  - Reduces ROE in good times
  - Raises ROE in bad times
  - $\Rightarrow$  Risk is reduced
- Lower risk reduces equity holder's required return



# Modigliani and Miller (M&M) and Banking

## A Five Decade Long Debate

- The main message of Modigliani and Miller (1958) is NOT that the capital structures of banks, or of *any* firm, are irrelevant.
- *The impact of any change in funding mix must be examined through its effect on frictions, i.e., how it changes the total cash available.*
  - This principle applies to banks and non-banks.
  - Denying this is akin to denying gravity.

- (1) Taxes
- (2) Subsidies
- (3) ROE Compensation
- (4) Debt Overhang
- (5) The M&M Fallacy

are Completely Illegitimate Reasons to Allow High Leverage in the Financial Sector.

Is there a Legitimate Reason to Allow High Leverage in the Financial Sector?

# Don't we have many models showing that:

- Fragility is important for solving contracting problems
- Debt disciplines





# Is Fragility Necessary?

Diamond and Rajan:

*Liquidity Risk, Liquidity Creation, and Financial Fragility:  
A Theory of Banking (JPE 2001)*

Fragility commits banks to creating liquidity, enabling depositors to withdraw when needed, while buffering borrowers from depositors' liquidity needs.

Stabilization policies, such as capital requirements, narrow banking, and suspension of convertibility, may reduce liquidity creation.

(From the paper's abstract)

## Is Fragility Necessary?

- Before dealing with the entrepreneur at date 2, **the relationship lender can threaten to not collect the loan for the unskilled lender.** The single unskilled lender will accept an offer from the relationship lender, who asks to retain loan collection rights in return for making a payment of  $\beta X_2$ .
- **The role of demand deposits issued to multiple unskilled lenders (i.e., the fragile capital structure) is to deter unskilled lenders from accepting such an offer.** The reason they refuse is that they have the unilateral right to demand immediate payment of their full claim, with depositors being paid in the order in which they show up for payment, until the relationship lender has nothing left.

# Is a Holdup Problem a Legitimate Reason to Have Fragile Financial Sector ??????

- **Precisely who** is it who works at JP Morgan and Barclays and will threaten not to use his skills if investors don't cut him a better deal?
  - The CEO?
  - A loan officer in the bank?
- **Precisely which** loan or asset in a trillion dollar balance sheet is so big that this threat is of such consequence that it would cause creditors to run?
- **Precisely which** creditors are threatening to call the manager's bluff by running?
  - Not the insured depositors.
  - Not the repo lenders who have collateral and are not subject to the sequential service constraint.
  - Not long term debt holders who cannot run.
  - Who?
- **Isn't** this a potential problem at other firms?
  - Can't the General Partners (GPs) in a private equity fund threaten not to do their work in realizing value from their portfolio firms unless the Limited Partners (LPs) cut them a better deal?
  - Can't Microsoft employees threaten not to finish the operating system unless they are cut a better deal.
- **Why** is fragility not used for other firms? How do they solve the problem?

# Theoretical Modeling Is Critically Important for Understanding, but...

- The fact that there exists a model showing X does not mean X is true.
- Empiricists are highly skeptical of empirical results:
  - How good is the data?
  - Are the results statistically and economically significant?
  - Are there endogeneity problems and omitted variables?
- The same level of skepticism should be applied to theoretical results, especially those used in policy debates.
- Does it pass the “smell test”?

## Myth: Debt is Needed to Provide “Discipline”

- In general, creditors protected by safety net do not have strong incentives to invest in monitoring.
- Equity should have stronger incentives, *and ability*, than debt to monitor waste of assets or poor effort, *and to intervene*.
- Is managerial discipline the reason bankers object to capital requirements?
- *No empirical evidence*. Did high leverage and a lot of short term funding pre-crisis create good discipline?
- *Even if “debt disciplines” ...*
  - Are high levels of debt the unique or best way to solve governance problems? Is it worthwhile given fragility and systemic risk?
- How do non-banks solve these problems?

# Debt Overhang Versus Asymmetric Information

- Myers Majluf (1984) has been used to explain reluctance of bank managers to issue equity
  - When managers view their shares as undervalued (e.g., when the market does not factor in positive information that the manager knows but cannot communicate), they view share issuance as “dilutive.”
  - The market accounts for adverse selection associated with the choice of a manager to issue shares and applies a discount when equity is raised through share issuance.
- Asymmetric information is unlikely to be of first-order importance for leverage reduction.
  - Adverse selection costs do not apply if equity is built through retained earnings or rights offerings.
  - The adverse-selection argument presumes that managers of the firm in question have discretion with respect to equity issuance. Capital regulation that reduces this discretion would limit the scope for adverse selection and lower any costs.
  - If equity issuance is mandated by regulators, the dilution costs for incumbent shareholders in banks with above-average prospects should be matched by the gains to shareholders of banks with below-average prospects.

# Other Arguments against Requiring Higher Equity Funding

- “Level Playing Field” Concerns are invalid.
  - Banks can endanger an entire economy (Ireland, Iceland); national taxpayers bear the costs.
  - Banks compete with other industries for inputs (talent) .
  - Misguided subsidies distort the market process.
  - Argument creates a “race to the bottom.”
- “Shadow banking” is an enforcement issue that must be tackled anyway.
  - The crisis exposed ineffective enforcement.
  - Regulated banks sponsored entities in shadow banking.
  - Should we give up tax collection because of loopholes?

# Implementation Issues



# A Purported Tradeoff

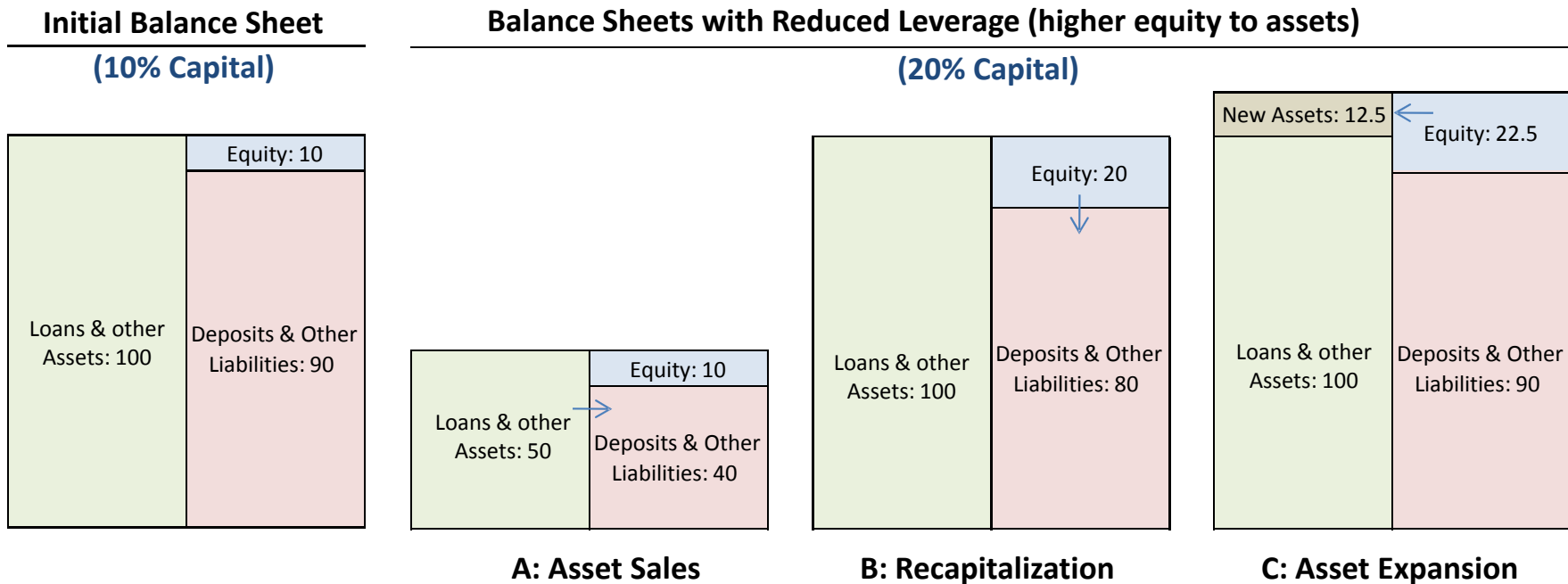
“More equity might increase the stability of banks. At the same time, however, it would restrict their ability to provide loans to the rest of the economy. This reduces growth and has negative effects for all.”

Josef Ackermann, CEO of Deutsche Bank

(November 20, 2009, interview)

# Balance Sheets and Leverage Reduction

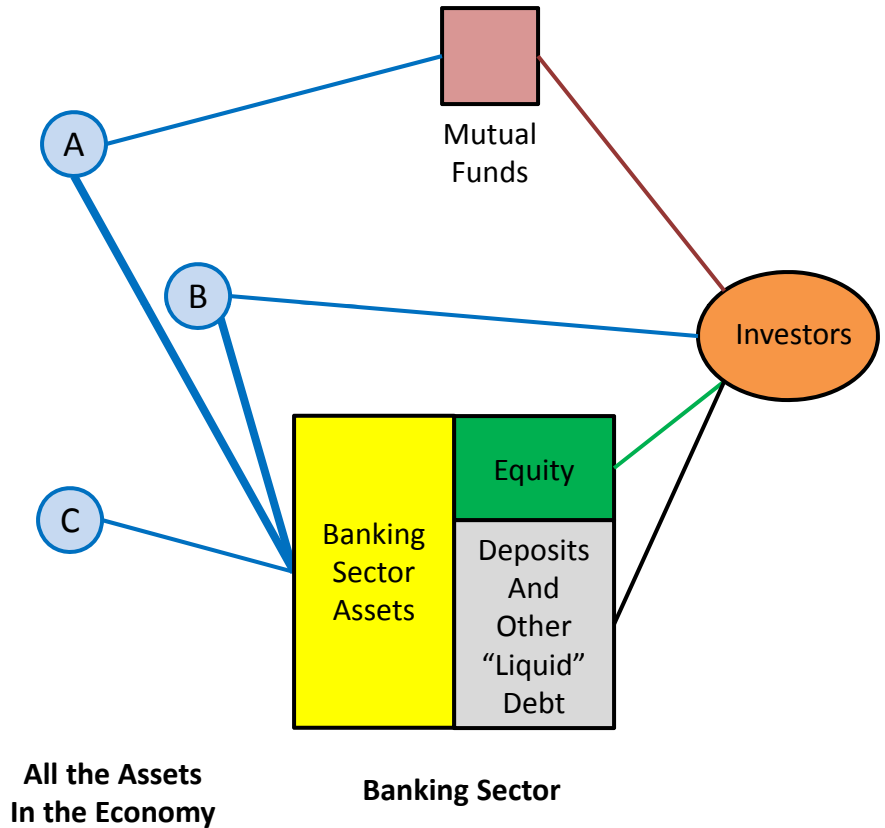
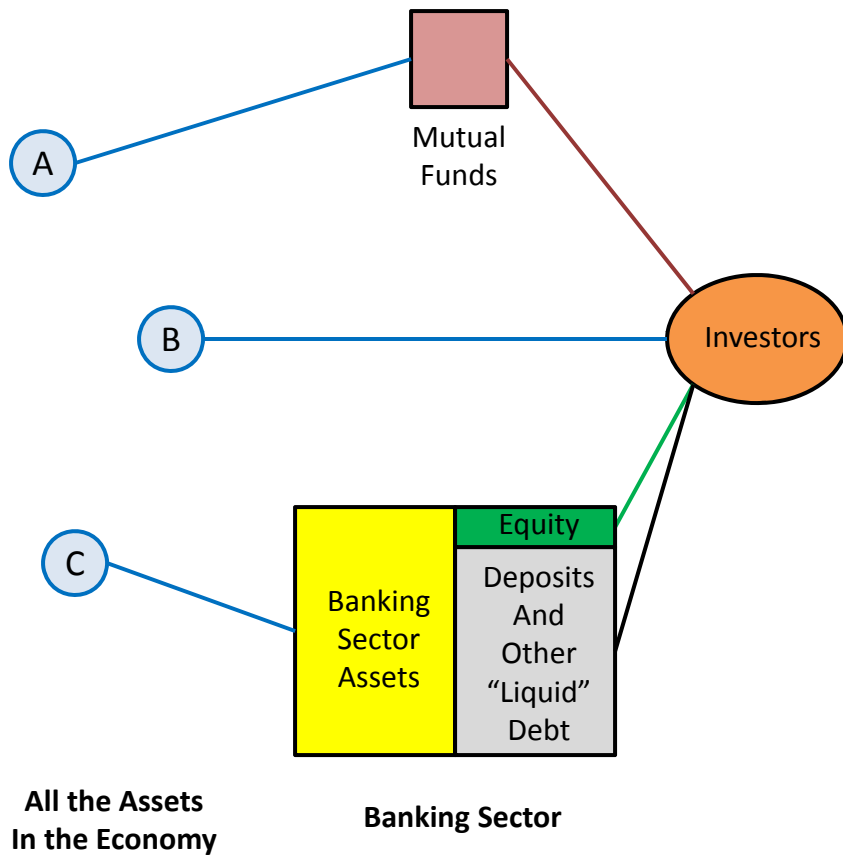
- Three possible ways to reduce leverage
  - Note: Recapitalization and expansion maintain assets.
  - Expansion maintains assets and liabilities.



# Resistance to Leverage Reduction

- Shareholders and particularly bank managers will resist leverage reduction:
  - Loss of subsidies
  - Debt overhang effect.
- Resistance due to debt overhang exists no matter how leverage reduction is achieved.
  - If assets are “homogeneous” and there is one class of debt, all methods of leverage reduction result in the same private loss for shareholders.
  - If share holders can repurchase junior debt, Asset Sales are preferred.

# Assume it is Important Banking Sector Keeps All its Assets and Liabilities in Place



- All risks are held by final investors. Rearranging claims aligns incentives better.
- Key question: Are all productive activities taken? Is risk spread efficiently?

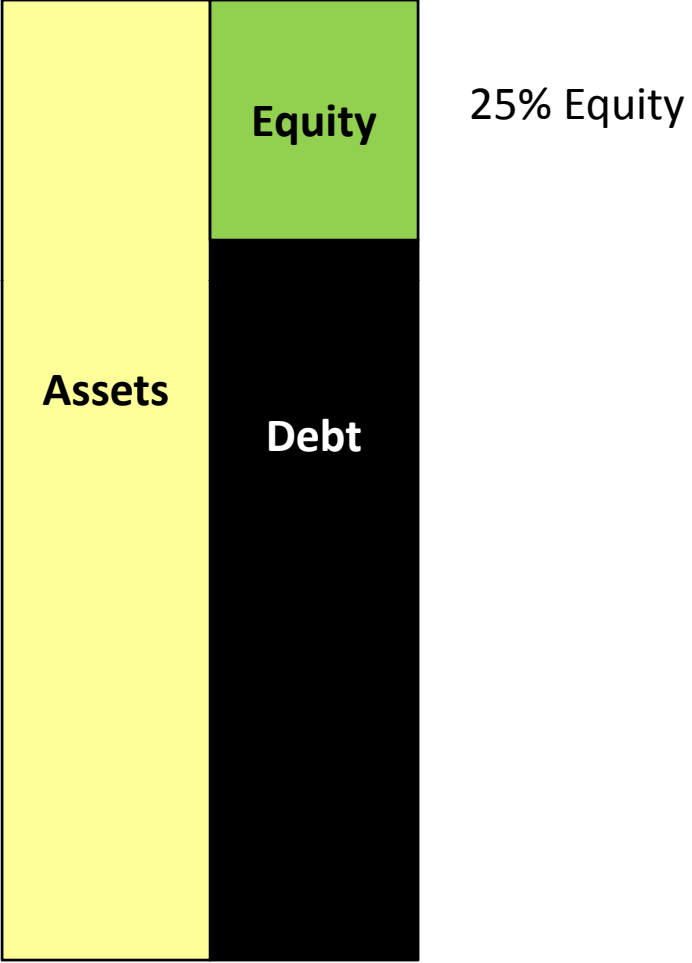
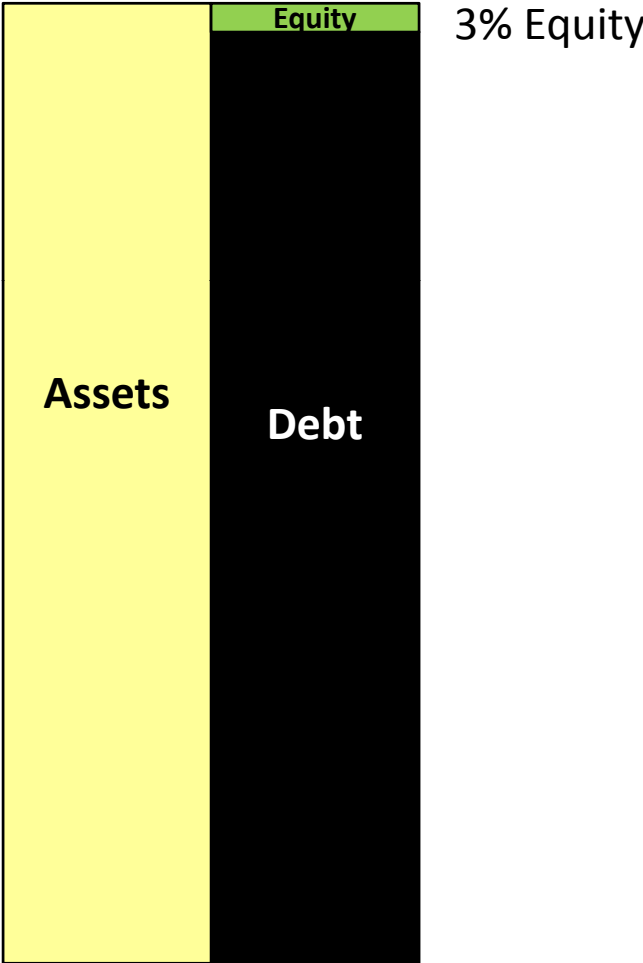
# The Big Challenge: Wedge between Private Incentives and the Public Good

- It is straightforward to neutralize the tax subsidy.
  - Abolish corporate tax
  - No deductibility above certain leverage level
  - Tax incentives to equity
- Difficult and undesirable to commit to no bailouts
  - Charging for guarantees is difficult, moral hazard remains.
  - Prevention is even more critical.
- Equity is the best preventative approach:
  - *Self insurance at market price!*

# How Much Equity?

- Basel II and Basel III Capital Requirements
  - Tier 1 capital Ratio: Equity to *risk-weighted assets*:
    - Basel II: 2%,
    - Basel III: 4.5% - 7%.
    - Definitions changed on what can be included.
  - Leverage Ratio: Equity to *total* assets:
    - Basel II: NA
    - Basel III: 3%.
- Basel III based on Flawed Analyses of Tradeoff
- Asymmetric Loss Function
  - Consequences of too little: financial crisis, repeat of 2008
  - Consequences of too much: ???

# Basel (3%) Versus Prudence (25%)



# How Much Equity?

- Why not 20-30% of total??
- Easiest source of equity: retained earnings:
- Banks have access to equity markets.
  - Valuation of equity depends on risk and return
  - Low current valuations due to high leverage and losses (debt overhang creates dilution)
  - Rights offerings can be a way to raise equity.
- Requirements should not be one “number”
  - Need a range; buffers concept is sensible.
- Re-examine problematic risk weights system.



# Effective Reform is Essential

- The financial system is excessively fragile.
- Fragility is an neither necessary nor useful.
- Regulation is critical; conflicted interests and externalities are not resolved by markets.
- Much higher equity requirements attack fragility and correct distortions and inefficiencies.
- Resistance from bankers is based on private considerations; on these issues they are conflicted with the public.
- Basel III is flawed and insufficient.