Bank Leverage, Welfare and Regulations

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Riksbank
October 16, 2018
My daughter came home from school one day and said, ‘daddy, what’s a financial crisis?’

And without trying to be funny, I said, ‘it’s the type of thing that happens every five, seven, ten years.’

Jamie Dimon, January 2010
(to Financial Crisis Inquiry Commission)
Italy political crisis hits financial markets
BBC News, May 29, 2018

“The Sequel to the Financial Crisis is Here”
Frank Partnoy, Financial Times, July 31, 2017

“The Next Financial Crisis is Closer than You Think,”
Tim Lee, Washington Post, October 10, 2018

Leading the list are Australia, Canada and Sweden.

Sweden offers a case study in financial crises.

Private debt in general and mortgage debt in particular is one of the most reliable indicators of trouble ahead.

Sweden’s indicator of financial vulnerability is higher than ahead of its 1992 crisis.

Riksbank, Sweden’s central bank, has been warning about the risks from the housing market, and worrying in public about the strength of its banks.
[These events] present a challenge to standard economic theory…. policies to prevent future financial crises will depend on a deeper understanding of the processes at work.

Asymmetric information is key, precisely in the complex securities that [the standard theory] called for.


Kenneth Arrow, 1921-2017
Natural Disaster? Sudden “Shock” to Beliefs or Valuations?
The financial crisis was avoidable
Widespread failures in financial regulation
Breakdown in corporate governance
Explosive and excessive borrowing.
Lack of transparency
Government was ill-prepared and responded inconsistently
Widespread breaches in accountability at all levels.

The crisis reflected distorted incentives and failure of rules and governance.
This essay argues that “free markets” lead to inefficient fragility in banking.

The problem: banks are unable to commit to maintaining efficient liquidity and safety because additional borrowing benefits their shareholders at existing lenders’ expense.

Leverage regulation in banking is beneficial even without systemic risk considerations.

Historical Equity/Asset Ratios in US and UK

- Mid 19th century: 50% equity, unlimited liability
- After 1940s, limited liability everywhere in US
- “Safety nets” expand
- Equity ratios decline

Total Liabilities and Equity of Barclays 1992-07

JPMorgan Chase Balance Sheet
Dec. 31, 2011

Loans = $700B less than
Deposits = $1.1T

Other debt (GAAP): $1T
Other debt (IFRS): $1.8T

Equity (book): $184B
Equity (market): $126B

Significant off-balance-sheet commitments

“Bank Holding Company:”
A conglomerate.

Hyun Song Shin, “Global Banking Glut and Loan Risk Premium,” IMF Annual Research Conference, November 10-11, 2011; Figure 22.
JP Morgan Chase: “Fortress?”
Dec. 31, 2011 (in Billions of dollars)
The Mantra in Banking: “Equity is Expensive”

Expensive to whom?
Why?
Are banks so special and different that none of what we know about the economics of corporate funding applies?

Bank Debt is Special by Providing “Liquidity”

Does it follow that it is efficient for banks to have little equity? NO!!!

+ Bank equity is subject to the same economic forces as other corporations
+ Default destroys liquidity benefits
+ Safer banks have fewer runs.
Central Banks: Very Special

Do Banks “Create” Money by Lending?

The liquidity benefits of deposit and other debt affect their valuation by lenders.

Interest rate and trust in the bank safety (or in safety nets) also affect lenders’ valuation.

Permitting banks to “create” deposits by lending or calling some liabilities “money” does not change the fact that they are legal obligations of the banks.
Economics has replaced the naïve fallacy of composition of the banker with other half truths, perhaps equally misleading. These have their root in the mystique of “money” --- the tradition of distinguishing sharply between those assets which are and those assets which are not “money,” and accordingly between those institutions that emit “money” and those whose liabilities are not “money”

“Commercial Banks as Creators of ‘Money’”
James Tobin, 1967

Modigliani and Miller (M&M) and Banking
A Five Decade Long Debate

The main message of Modigliani and Miller (1958) is NOT that the funding mix (capital structure) of banks, or of any firm, is irrelevant.

The assumptions for “irrelevancy” are not true in reality.

The key conclusion is that rearranging how risk is allocated does not by itself change the cost of funding.

The impact of any change in funding mix must be examined through its effect on the total cash available to investors when frictions (such as taxes and bankruptcy costs) are taken into account
The banker sitting next to me was lamenting the profitable lending opportunities being passed up by capital constrained banks, when I broke in to ask: “Then, why don’t they raise more capital?” . . . “They can’t,” he said. “It’s too expensive. Their stock is selling for only 50 percent of book value.” “Book values have nothing to do with the cost of equity capital,” I replied. “That’s just the market’s way of saying: We gave those guys a dollar and they managed to turn it into 50 cents.”


**Government (Taxpayers)**

**Shareholders**

**Other lenders**

(TLAC, Co-Cos, Bail-in Debt)

**Short-term secured lenders**

**Depositors**

(unsecured, insured)
**Capital Structure: The Static “Mindset”**

- **Modigliani and Miller’s approach and “Tradeoff Theory”** assume capital structure is set once, to maximize total firm value.

- **“Dynamic models” often assume “reset” to maximize total value.**
  - We know that with debt in place, shareholders may ...
    - take negative NPV projects (shift risk to creditors)
    - pass up positive NPV projects (Myers 1977)

- **Agency conflict also affects funding decisions once debt is in place**
  - Critical insight for understanding economics of high leverage

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**Banks vs Non Bank Corporations Leverage**

<table>
<thead>
<tr>
<th>Non Banks (without regulation)</th>
<th>Banks or BHC (with “Capital Regulation”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have risky, long term, illiquid assets</td>
<td>Ditto</td>
</tr>
<tr>
<td>Can use retained earnings (or new shares) to invest and grow</td>
<td>Ditto</td>
</tr>
<tr>
<td>Rarely maintain less than 30% equity/assets, often much more</td>
<td>Rarely have more than 6% equity/assets, sometimes less</td>
</tr>
<tr>
<td>Sometimes don’t make payouts to shareholders for extended periods (Google, Berkshire Hathaway).</td>
<td>Make payouts to shareholders if pass “stress tests” (unless indebted to government)</td>
</tr>
</tbody>
</table>
## Borrowing and Downside Risk

<table>
<thead>
<tr>
<th><strong>Heavily Indebted Non Banks</strong> (no safety net)</th>
<th><strong>Heavily Indebted Banks</strong> (many supports)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May become distressed/insolvent</td>
<td>Ditto</td>
</tr>
<tr>
<td>Inefficient decisions</td>
<td>Ditto</td>
</tr>
<tr>
<td>May default or file for bankruptcy</td>
<td>May remain insolvent</td>
</tr>
<tr>
<td>✓ Shareholders are wiped out</td>
<td>✓ Depositors maintain balances</td>
</tr>
<tr>
<td>✓ Lenders are paid by seniority</td>
<td>✓ Secured lenders are protected</td>
</tr>
<tr>
<td>✓ Assets are depleted</td>
<td>✓ Access to Fed, Bailouts in crisis</td>
</tr>
<tr>
<td>Lenders try to protect themselves when lending, hard to borrow.</td>
<td>Can keep finding lenders despite opacity, risk, and extreme debt.</td>
</tr>
</tbody>
</table>
Zombie (Insolvent) Borrowers: Opaque and Dysfunctional

Unable to raise equity
“Gamble for resurrection”
Anxious to take cash out
Avoid equity
Sell assets, even at fire-sale prices
Underinvest in worthy “boring” assets
Try to hide insolvency in disclosures
Lobby policymakers for supports

The Leverage Ratchet Effect

Asymmetric forces in leverage adjustments cause equilibrium leverage outcomes to be history-dependent.
Static “Tradeoff Theory” and Leverage Adjustments

Some Leverage Ratchet Effect Observations

- “Optimal” static debt level (maximizing total firm value) is unstable;
- With debt in place, shareholders resist leverage reduction, yet choose to increase leverage/indebtedness even if high.
- Leverage levels are history-dependent and agency conflicts reinforce distortions and inefficiencies on both sides of balance sheet.
- Responses to ratio-based requirements in covenants or regulations may be inefficient (e.g., bias to asset sales); other tools may be better.
Leverage Ratchet Example

With (non-negotiable) debt in place, shareholders want to increase leverage – even if new debt is junior. Tradeoff-optimal level unstable.

\[
V(D^*) = V^E(D^*) + V^G(D^*, D)
\]

Leverage Reduction with Asset Transactions

Three ways to reduce leverage ratio. Which way will shareholders choose (if forced)?

<table>
<thead>
<tr>
<th>Initial Balance Sheet</th>
<th>Balance Sheets with Reduced Leverage (lower debt to assets)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt/Assets = 0.9</td>
<td>Debt/Assets = 0.8</td>
</tr>
<tr>
<td>Equity: 10</td>
<td>Equity: 20</td>
</tr>
<tr>
<td>Assets: 100</td>
<td>Assets: 12.5</td>
</tr>
<tr>
<td>Liabilities: 90</td>
<td>Liabilities: 80</td>
</tr>
</tbody>
</table>

A: Asset Liquidation
B: Pure Recapitalization
C: Asset Expansion
Bias towards Asset Sales to Reduce Leverage

If assets are identical but distinct, shareholders’ preferences for leverage reduction are

1. Asset sales
2. Pure recapitalization
3. Asset purchases

If assets have different riskiness, shareholders prefer to reduce leverage by selling safer assets first.

Basic intuition: desire to shift more risk to existing creditors.
Shareholders’ Preference over Buying/Selling Assets/Securities Relevant for Covenants or Regulation to Control Leverage
Figure 7, “The Leverage Ratchet Effect”

Proposition 9

Indifference (Prop. 7)

<table>
<thead>
<tr>
<th>Leverage Decreasing $\downarrow$</th>
<th>Shareholder Preference over Sell/Buy:</th>
<th>Shareholder Gain in Perfect Market:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A/D$_3$ $\succ$ E/D$_3$ $\succ$ E/D $\succ$ E/A $\succ$ A/D$_a$</td>
<td>+/- $-$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leverage Increasing $\uparrow$</th>
<th>Shareholder Preference over Sell/Buy:</th>
<th>Shareholder Gain in Perfect Market:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D$_3$/A $\succ$ D$_3$/E $\succ$ D/E $\succ$ D$_3$/A $\succ$ A/E $\succ$ 0 $-$</td>
<td>$+$ $+$ $+$ $-$ $-$</td>
</tr>
</tbody>
</table>

A = Assets, D$_s$ = Senior Debt, D$_j$ = Junior Debt

“The Maturity Rat Race”
Free Markets Do Not Produce Efficient Outcome

- Fragmented lenders.
- Costly (or impossible) coordination
- Free rider problems
- Contracts work poorly to create effective commitments and trust
- Banks have always been fragile but it does not follow that they have ever been efficient.
- Safety nets exacerbated conflicts of interest and inefficiencies, unless regulation is effective.

Relevance and Implications for Banking

- Guarantees eliminate creditor discipline; insured depositors are unsecured yet passive.
- Effective regulation is beneficial; a form of commitment; replaces missing market forces. Benefits are larger given negative externalities of distress or failure
- Expanding safety net and providing more safe collateral would exacerbate distortions.
- To avoid inefficient adjustment (fire sales, credit crunch), regulators must manage adjustments rather than give ratios
  - **Key tools:** mandate retention, equity issuance
  - **Inability to respond = failure of “market stress test”**
- “Safe harbor” exemptions for repos and derivatives are too strong and counterproductive.
The Great Distortion: Senseless Debt Subsidies!

*The Economist, May 16, 2015*

U.S. tax revenues forfeited as a result of interest deductibility as % of GDP

- **Financial Firms**
- **Non-Financial Firms**
- **Mortgages**

Sweden's tax loss for mortgage tax relief amounted to around SEK 20 billion in 2016. This sum is expected to increase when interest rates rise

*Riksbank Financial Stability Report, 2018*

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**Basel Capital Regulation**

(No Science, highly complex)

<table>
<thead>
<tr>
<th>Basel II</th>
<th>Basel III</th>
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<tbody>
<tr>
<td>“Common equity Tier 1 capital” to risk-weighted assets: <strong>2%</strong></td>
<td></td>
</tr>
<tr>
<td>“Common Equity Tier 1 Capital” to risk-weighted assets (RWA): <strong>4.5%</strong></td>
<td></td>
</tr>
<tr>
<td>» Plus 2.5% conservation buffer</td>
<td></td>
</tr>
<tr>
<td>» Plus 1.5% “Tier 1” to RWA</td>
<td></td>
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<tr>
<td>Leverage Ratio: “Tier 1” to total</td>
<td></td>
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<tr>
<td>» Basel III: <strong>3%</strong></td>
<td></td>
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<tr>
<td>» US: BHC: 5%, insured banks: 6%</td>
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<tr>
<td>“Tier 2” (loss-absorbing debt)</td>
<td></td>
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<tr>
<td>“Tier 2”/TLAC (loss-absorbing debt).</td>
<td></td>
</tr>
</tbody>
</table>
Tripling almost nothing does not give one very much.

Martin Wolf, “Basel III: The Mouse that Didn’t Roar,”
Financial Times, Sep 13, 2010

If at least 15% of banks’ total, non-risk-weighted, assets were funded by equity, the social benefits would be substantial. And the social costs would be minimal, if any.

If handled properly, the transition to much higher equity requirements can be implemented quickly and would not have adverse effects on the economy. Temporarily restricting bank dividends is an obvious place to start.

Banks Remain *Extremely* Heavily Indebted

Source: Financial Stability Report, Riksbank 2018

Risk Weights Undermine the Purpose of Regulation

Complex; illusion of “science,” ignore interest rate risk, and correlation of “tail events.”

Manipulable, distortive, and political

» E.g., Favor government and traded assets over business lending

Low equity levels, intensify distorted incentives, risk weights used to “economize” on equity

» Add fragility, interconnectedness, systemic risk
Bad Regulations Matter
The Awful Case of Greece

French banks owned 40% of Greek government debt in 2010. Regulations (still) assume such loans are riskless (0 risk weight).

Who Owned Greek Government Debt, July 2015
Leading creditors (in euros): Risk shifted to “authorities” i.e., the public

<table>
<thead>
<tr>
<th>Country</th>
<th>EU Bailout Loans</th>
<th>Private Banks</th>
<th>Other</th>
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<tbody>
<tr>
<td>Germany</td>
<td>68.2bn</td>
<td>43.8bn</td>
<td>38.4bn</td>
</tr>
<tr>
<td>France</td>
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<tr>
<td>Italy</td>
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<tr>
<td>Spain</td>
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<tr>
<td>IMF</td>
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<td></td>
<td></td>
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<tr>
<td>ECB</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Netherlands</td>
<td>13.4bn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>11.4bn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>10.8bn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>7.5bn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>5.9bn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>3.7bn</td>
<td></td>
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</tr>
</tbody>
</table>

Source: Open Europe, BIS, IMF, ECB
Regulatory Measures are Uninformative

“Tier 1” capital ratios: What crisis?

Between summer 2007 and end of 2008, the largest 19 US institutions paid out nearly $80B to shareholders.

2006 was a great year in banking

Regulatory Measures are Uninformative

“Tier 1” capital ratios: What crisis?

Largest 19 institutions received ≈$160B under TARP (bailouts).

Fed committed $7.7 trillions in below-market loans to 407 banks.

“Tier 2 capital” proved useless to absorb losses (except Lehman).
Regulatory Measures are Uninformative

“Tier 1” capital ratios: What crisis?

[Graph showing capital ratios over time for 'No crisis' banks, 'Crisis' banks, 8% threshold, and Lehman failure 15 Sep 08]

Market-based measures

[Graph showing market-based measures with 'No crisis' banks, 'Crisis' banks, 5% threshold, and Lehman failure 15 Sep 08]

“Anything but Equity” Why?

[Charts showing before and after changes in capital structure for Too Little Equity, Much Safer, and Will it Work? Why do we need it?]

From: Andrew Haldane, "Capital Discipline," January 2011
Making Equity Regulations Work

- Safe target, e.g., 30% allowed down to 20%
- Prompt corrective action based also on market signals
- Avoid ratios, focus on amount, but asset sales might be useful.
- Sign that regulation is working: fewer zombie symptoms
- Also: better disclosure and tracking, coordination, simpler structures, better governance.

More equity: Not a silver bullet but best bargain in regulation: numerous benefits, no social cost.

“Shadow Banking” Bugbear

Crisis exposed ineffective enforcement.
+ Rules are meaningless unless enforced
+ Regulated banks sponsor entities in the shadow banking system.

Enforcement challenge is invalid argument against regulation:
+ Allow robbery?
+ Give up tax collection?
Invalid “Level Playing Field” Argument

Banks can endanger the entire economy

Banks compete with other industries for inputs (including talent); subsidies distort markets.

It is not a national priority that “our” banks are successful at the expense of society

Argument creates “race to the bottom”
“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, Deutsche Bank CEO, November 20, 2009 interview)
Just about whatever anyone proposes… the banks will claim that it will restrict credit and harm the economy…. 

It’s all bullshit

Paul Volcker, January 2010
(From Payoff: Why Wall Street Always Wins, Jeff Connaughton, 2012)

“Because we have substantial self-funding with consumer deposits, we don’t have a lot of debt…

John Stumpf, Wells Fargo Bank CEO, 2013
"Because we have substantial self-funding with deposits, we don’t need a lot of debt...

John Stumpf, Wells Fargo Bank CEO, 2013"

"US banks forced to hold $68 billion in extra capital.

Financial Times, April 8, 2014"
US banks forced to hold $68 billion in extra cash.

Telegraph. April 8, 2014
Every dollar of capital is one less dollar working in the economy.

Steve Bartlett, Financial Services Roundtable, Sept 2010
This rule will keep billions out of the Economy

Tim Pawlenty, Financial Services Roundtable, July 2015

"NONSENSE"

Tim Pawlenty, Financial Services Roundtable, July 2015
“Banks are forced to hoard money and they can’t take any risks. Dodd Frank prohibits them from lending.”

Gary Cohn, National Economic Council Director, February 3, 2017
From Banking Textbook

Bank capital is costly because, the higher it is, the lower will be the return on equity for a given return on assets.


FALSE

From Banking Textbook

Bank capital is costly because, the higher it is, the lower will be the return on equity for a given return on assets.

Equity, Risk, and Return on Equity (ROE)

 ✓ More equity:
   ▪ Higher ROE on upside
   ▪ *Lower ROE in downside*
   ▪ Less risk for equity
   ▪ *Lower required ROE.*

 ✓ *Chasing returns by taking risk or excessive leverage may harm shareholders!*

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Good or Bad?

<table>
<thead>
<tr>
<th>Meaningless distinctions</th>
<th>Proper questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit</td>
<td>Are worthy investments funded?</td>
</tr>
<tr>
<td></td>
<td>Is more credit always good?</td>
</tr>
<tr>
<td></td>
<td>✓ Wasteful investments in boom</td>
</tr>
<tr>
<td></td>
<td>✓ Booms are key predictors of bust/crisis</td>
</tr>
<tr>
<td></td>
<td>✓ Debt overhangs exacerbate recession</td>
</tr>
<tr>
<td>Debt</td>
<td>Why subsidies debt over other funding?</td>
</tr>
<tr>
<td></td>
<td>✓ Debt subsidies create unnecessary distortions and risk</td>
</tr>
<tr>
<td></td>
<td>✓ Find better delivery for desirable subsidies!</td>
</tr>
</tbody>
</table>

[Diagram showing ROE vs Return on Assets (before interest expenses) with 3% to 25% ROE and 0% to 20% Return on Assets]
Politics of Banking
Symbiosis and “bargains” banks-governments

“Banks are where the money is”
“National champions”

Guarantees appear free, invisible social cost, willful blindness
Central banks support governments and private banks

Banks seem sources of funding, not risk
Private banks get away with inefficient recklessness.

Willful Blindness: Excuses, Diversions and Spin

Much has been done
It’s very complicated
There will be “unintended consequences”
There are tradeoffs
We must maintain level playing field
We must fear the “shadow banking system”
We need cost-benefit estimates
etc., etc.............

“The Parade of Bankers New Clothes Continues: 31 Flawed Claims Debunked,” Admati and Hellwig, last revised 2015
Many Enablers of a Dangerous and Distorted System

Bankers and other financial sector employees
Institutional investors
Executives and boards of financial firms
Auditors and rating agencies
Supervisors and regulators
Central bankers
The media
Politicians
Academics/Economists

“With such friends [as academics], who needs lobbyists?”
Risk manager in a major systemic institution, 2016

Science is what we have learned about how to keep from fooling ourselves.

Richard Feynman

The size, complexity, and opacity of institutions and the system are alarming.
Shadow Banking
Pozsar, Adrian, Ashcraft, and Boesky, Federal Reserve Bank of New York, July 2010: revised February 2012
In “Normal Times”

Regulated Bank

- Assets
- Insured Deposits

Bank Holding Company

Shadow Bank Vehicle Sponsored by Bank Holding Company

- Assets
- Uninsured Deposit-like Claims

Source: Collateral and Financial Plumbing, Manmohan Singh, 2014
“Leverage: A Broader View,” Manmohan Singh and Zohair Alam
In “Troubled Times”

Regulated Bank

Assets
Insured Deposits

Assets taken Back on Balance sheet
New Insured Deposits

Bank Holding Company

Shadow Bank Vehicle Sponsored by Bank Holding Company

Assets
Uninsured Deposits
Deposit-like Claims

Investors can’t understand the nature and quality of the assets and liabilities... The disclosure obfuscates more than it informs.
Kevin Warsh, Jan. 2013

The unfathomable nature of banks’ accounts make it impossible to know which are sound. Derivatives positions, in particular, are difficult for outside investors to parse.
Paul Singer, Elliot Management, Jan. 2014

Wells Fargo: Quaint?
“What's Inside America's Banks?” Eisinger and Partnoy, Atlantic, Jan 2013

Off-balance sheet funding is higher now than in 2007.

“Leverage, a Broader View,” Singh and Alam, IMF, March 2018

Governance appears broken. Misconduct and fraud are pervasive."
“Banks have paid $321 billion in fines since the crisis (but they’ve made almost $1 trillion)”
CNBC, March 17, 2017

Danske’s €200bn ‘dirty money’ scandal
October, 2018
“Wells Fargo Leaders Reaped Lavish Pay Even as Account Scandal Unfolded”
*New York Times*, March 16, 2017

“Wells Fargo Hit With $1 Billion in Fines Over Home And Auto Loan Abuses”
*NPR*, April 20, 2018

“We deeply regret and apologize for the conduct and compliance failures, which were in contravention of our own policies ...”
- Douglas Flint, HSBC Chair

“Can I know what every one of 257,000 people is doing? Clearly I can’t.”
- Stuart Gulliver, HSBC CEO
“Wells Fargo Hit with $1 Billion Fines Over Home and Auto Loan Abuses”
NPR, April 20, 2018

Is the justice system working in the corporate context?

Thank You!

For more see:
https://admati.people.stanford.edu/advocacy
http://bankersnewclothes.com/
https://www.gsb.stanford.edu/faculty-research/excessive-leverage