Bank Regulatory Reform: Impact on The Formation of Asset Prices

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Fake Empires

Faulty Assumptions

1. Markets are continuous
2. Times series are stationary
3. Investors are risk adverse, rational and unbiased
4. Outcomes are independently and individually distributed (I.I.D)
5. Regression analysis is predictive
6. Markets and security prices can be modeled with high precision
7. Negative interest rates don’t make sense
8. The existence of an stochastic discount factor (SDF) ensures the law of one price prevails
9. Most assets are redundant i.e. they can be replicated or spanned by other assets
10. …..we can easily go on and on

Key Market Metrics

1. G3 Government bond rates
2. Swap Spreads
3. G4 FX rates
4. Bank CDS spreads
5. P/E ratio T12m and forward
6. Earnings growth, margins and dividend yields
7. 5y5y inflation expectations and real rates
8. IG and HY spreads- cash and synthetic
9. Option Skew and CBOE put call ratio

High Level Issues

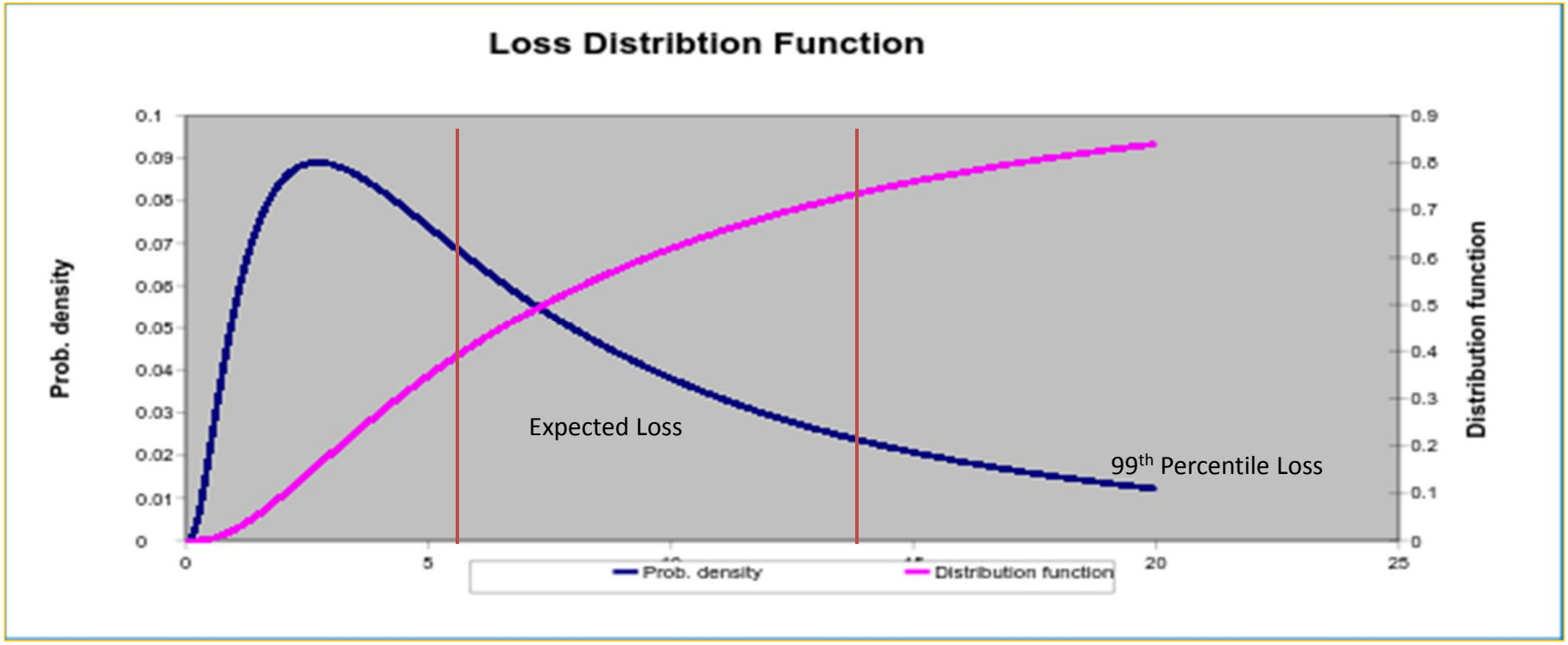
1. Regulatory approach is highly fragmented
2. Regulatory jurisdiction is unclear, both domestically and internationally
3. Rules and interpretations are not internally consistent
4. Heavy handed regulation can stifle growth and innovation
5. Regulators may promote the political concerns of special interest groups rather than advocating market efficiency and public welfare….
6. How to measure costs and benefits of regulation
7. Balancing the social costs of wide systematic failure versus the profitability of publically traded financial institutions
8. Detailed rules add more destabilizing complexity to the financial system
9. Precedent of environmental regulations
10. Financial regulators do not have a strong record of success

Complex, Interconnected Systems Defy Predictability

1. The Difference between risk and uncertainty
2. The role of feedback loops and latent risks
3. The ***Precautionary Principle*** in the absence of scientific or consensus evidence
4. Cognitive capture and the reliance on the expertise of financial institutions themselves
5. Self defeating regulation that seeks to avoid certain risk but will necessarily create other, potentially more harmful, substitutes risks
6. The availability heuristic and probability neglect

Sources, Allen, H. (2012). A New Philosophy For Financial Stability Regulation. Loyola University of Chicago Law Journal Vol 45. CGA, 2016

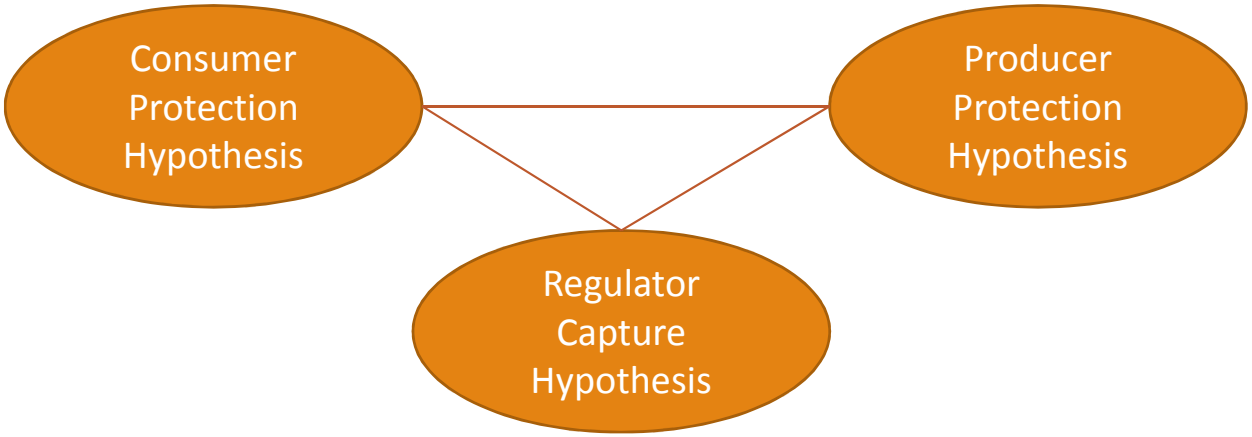
Loss Distribution Function



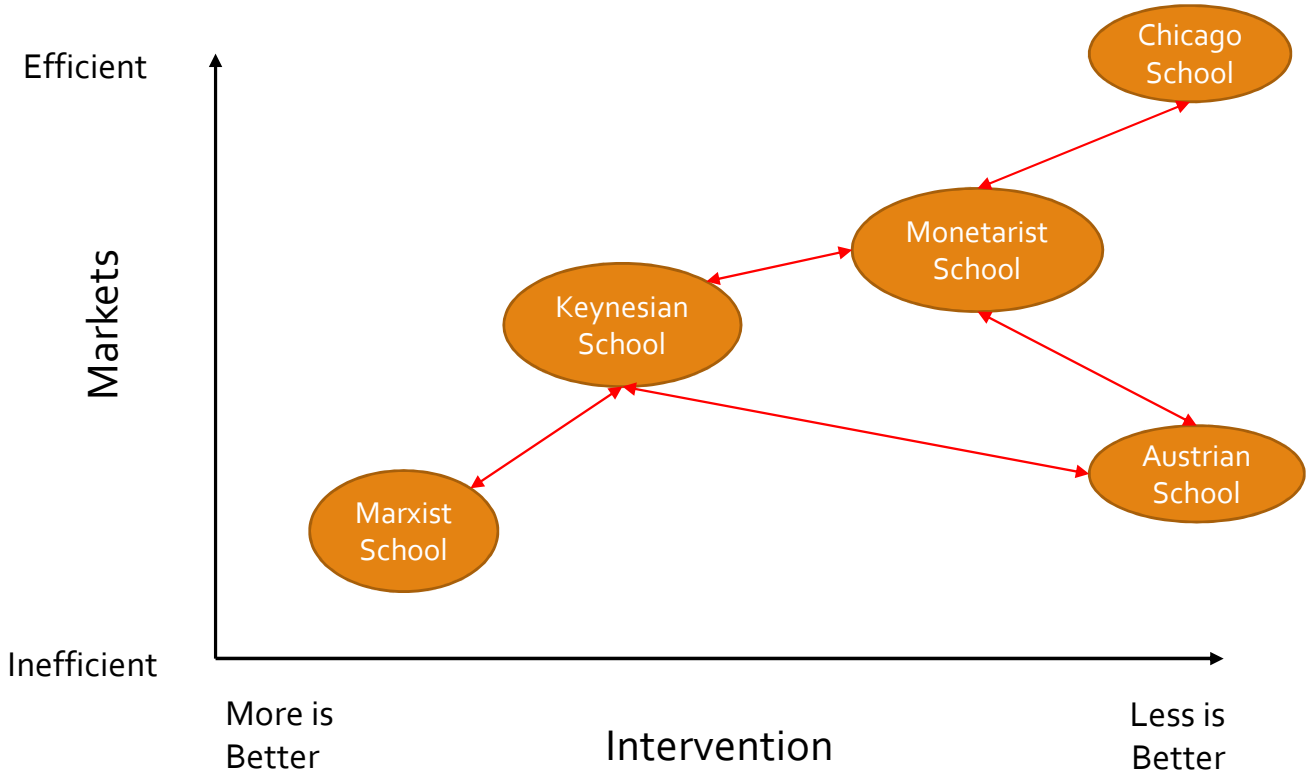
Regulatory Approach

A Problem For Your Consideration

We will attempt to analyze the positive effect of government regulation on security prices. In this context, 'positive' means measuring the actual effects rather than the intended effects. There are three extreme theories. One theory is that the public interest and welfare is enhanced by regulation. At the other extreme, a theory holds that regulation simply protects the interests of the regulated industry. The last theory holds that the regulator itself benefits the most from regulation.



Modern Regulatory Approaches



The Regulators

Federal Financial Regulators and Organizations				
Prudential Bank Regulators	Securities and Derivatives Regulators	Other Regulators of Financial Activities	Coordinating Forum	Self Regulatory Organizations
Office of the Comptroller of the Currency (OCC)	Securities and Exchange Commission (SEC)	Federal Housing Finance Agency (FHFA)	Financial Stability Oversight Council (FSOC)	Financial Industry Regulatory Authority FINRA
Federal Deposit Insurance Corporation (FDIC	Commodities Futures Trading Commission (CFTC	Consumer Financial Protection Bureau (CFPB)	Federal Financial Institutions Examinations Council (FFIEC)	Exchange SROs
National Credit Union Administration (NCUA)	-	-	President's Working Group on Capital Markets (PWG)	National Futures Association NFA
Federal Reserve Board (FRB, or the Fed)	-	-	-	Public Company Accounting Oversight Board PCAOB

Source: Congressional Research Service Who Regulates Whom and How. 2015, CGA Global Advisors

Ways To Regulate Financial Firms and Services

1. Regulate certain types of financial institutions
2. Regulate a particular market
3. Regulate a particular financial activity
4. Regulate for systemic risk
5. Self regulation and market forces

Source: Congressional Research Service Who Regulates Whom and How. 2015

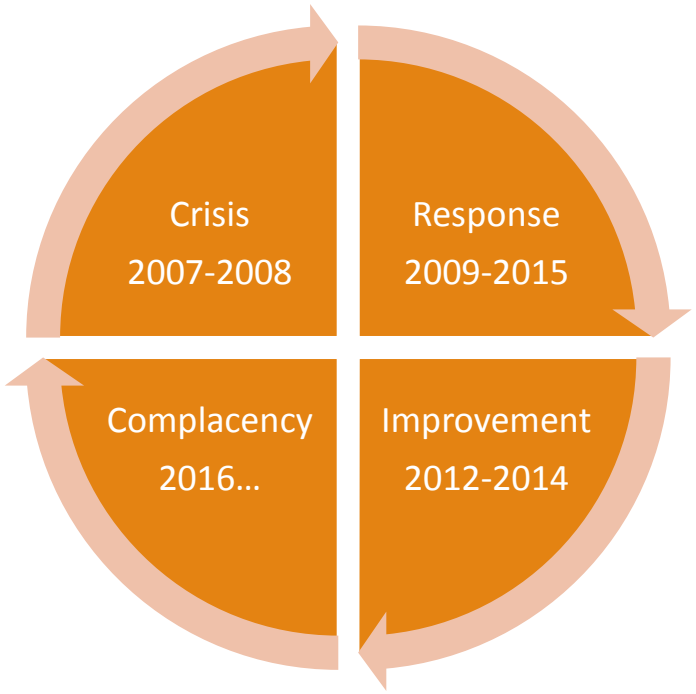
Regulatory Assurance

1. The burden of honoring financial commitments is shifted from market participants to the regulators
2. Moral Hazard
3. Too Big To Fail – TBIF
4. Compulsory contributions to default funds e.g. exchanges and clearing houses
5. Tax payer assistance for public sector superannuation funds
6. Substitution of regulatory judgment for that of market participants

Potential Sources of Financial System Protections

1. Banks and other financial institutions via M&A
2. Private insurance
3. Central banks
4. Public insurance e.g. FDIC
5. Tax payer assisted bailouts
6. Bank recapitalizations

The CRIC Cycle



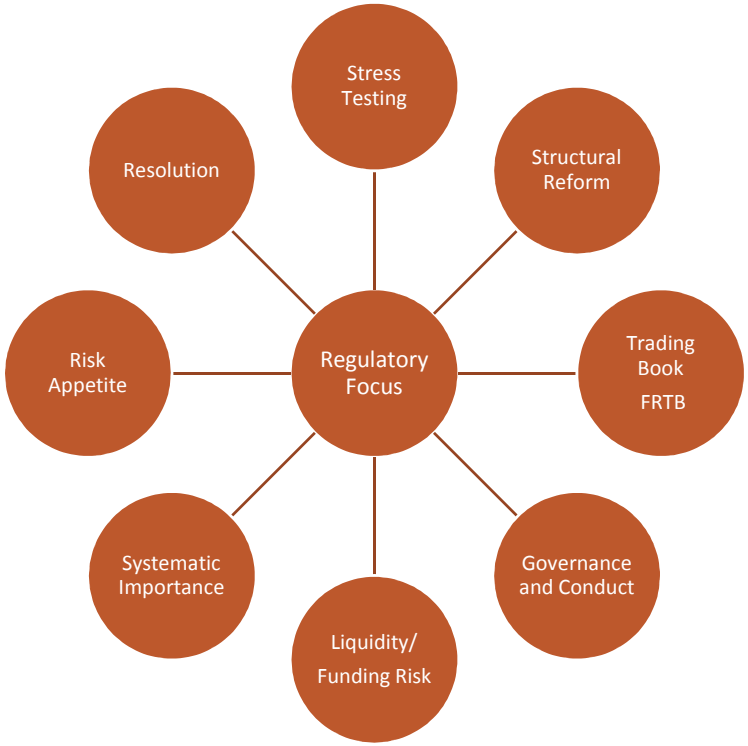
Source: Morgan Stanley Research, 2012

The Initial Response Phase

The 2008 Global Financial Crisis (GRC) involved both a liquidity and a solvency dimension. The systematic aspect, equally destructive to the real and financial economy, added further urgency to the situation.

Solvency & Liquidity	BASEL III
Systematic Reform	Volcker Rule
Market Infrastructure	OTC Reform
Resolution	Orderly Liquidation Authority
Behavior	Claw backs

Forward Regulatory Agenda



Source: E&Y.com, CGA 2016

Policy Response Tools

1. Traditional role of lender of last resort- access to the discount window, Term Auction Facility (TAF), Primary Dealer Credit Facility (PDCF), Term Securities Lending Facility (TSLF), bilateral currency FX swap agreements with foreign central banks
2. Provision of liquidity directly to borrowers and investors in private credit markets- Commercial Paper Funding Facility (CPFC), Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), Money Market Investor Funding Facility (MMIFF), and the Term Asset-Backed Securities Loan Facility (TALF)
3. The Fed and other central banks expanded their traditional tool of open market operations to support the functioning of credit markets, put downward pressure on longer-term interest rates, and help to make broader financial conditions more accommodative through the purchase of longer-term securities for the Federal Reserve's portfolio
4. The largest banking institutions were placed in the Supervisory Capital Assessment Program (SCAP) that administer stress tests led by the Federal Reserve in cooperation with the Office of the Comptroller of the Currency (OCC) and the FDIC.

Channels of Regulatory Transmission

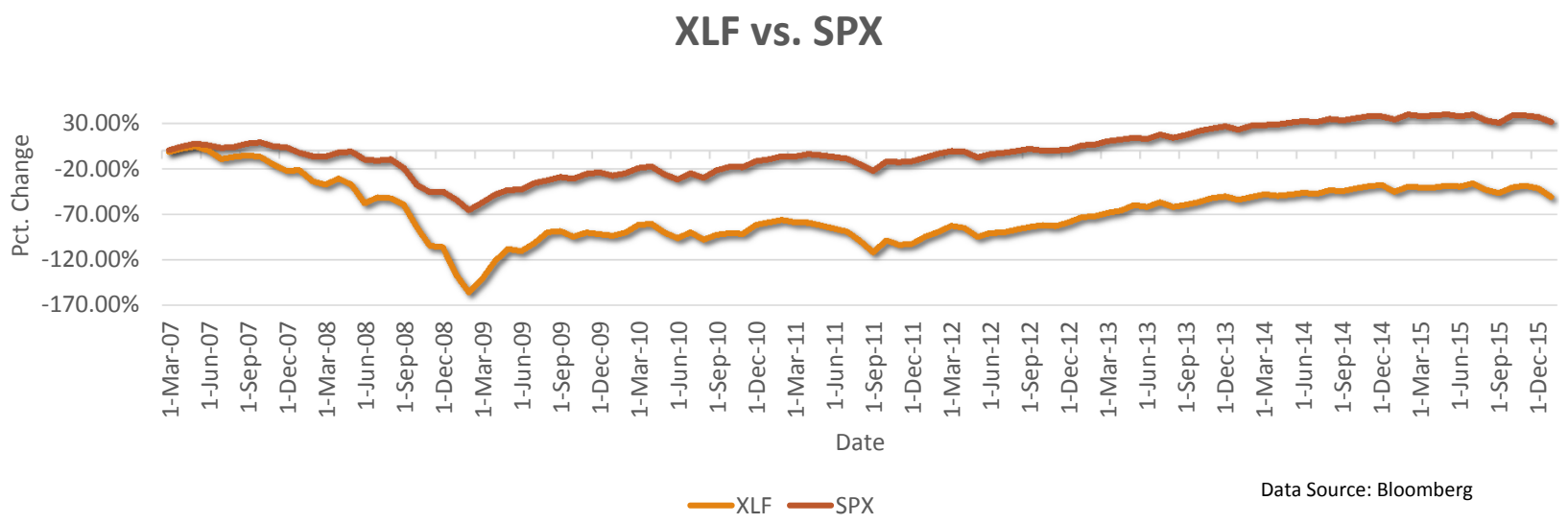
Channel	Example	Has it Worked?
Credit availability	Credit growth	Mixed
Asset valuation	Stocks, real estate	Yes
Portfolio balance	Allocation to risky assets	No
Risk premium	Term and uncertainty premiums	Yes
Reflation	Higher CPI	No
Exchange rates	Stable real exchange rates	No
Safety and soundness	Healthy banking system	?

Dodd Frank – The Main U.S. Response

Transactional Regulation	Example
Platform trading	Swap Execution Facility or SEFs
Clearing obligation	Central Counterparty Clearing
Margin obligations	Exchange of collateral for uncleared trades
Automated affirmations and reconciliations	Use of electronic confirmation services e.g. Markit
Business conduct rules	Suitability and representations
Documentation requirements	Trade documentation e.g. ISDAs
Pre trade transparency	Publish live price quotes
Post trade transparency	Publish price/terms of executed trades
Trade repository	Report details of executed trades

Asset Class Impact

U.S. Bank Performance 2007-2015



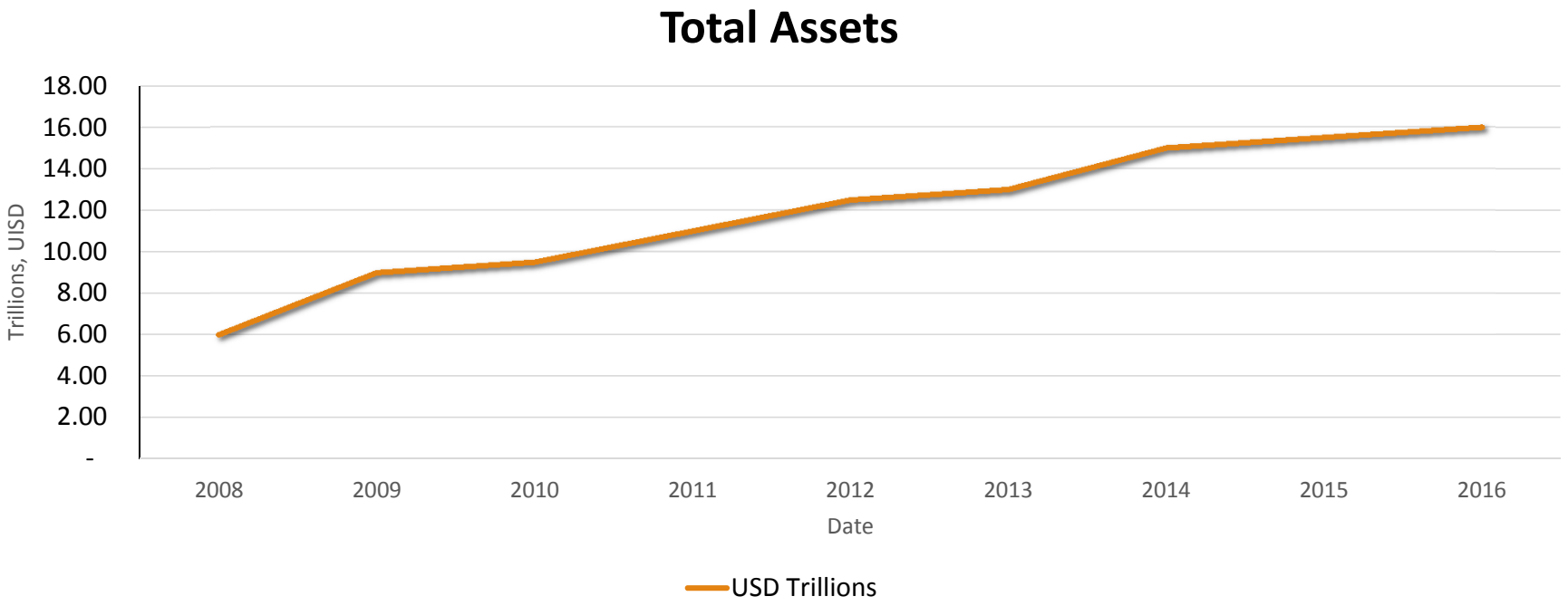
Data Source: Bloomberg

Excluding dividends, the S&P 500 has outperformed a basket of market cap. weighted U.S. financial stocks by ~80%. Note that the dividend yield on is roughly equivalent on XLF and on SPX.

Capital Effectiveness: What Can The Banks Do?

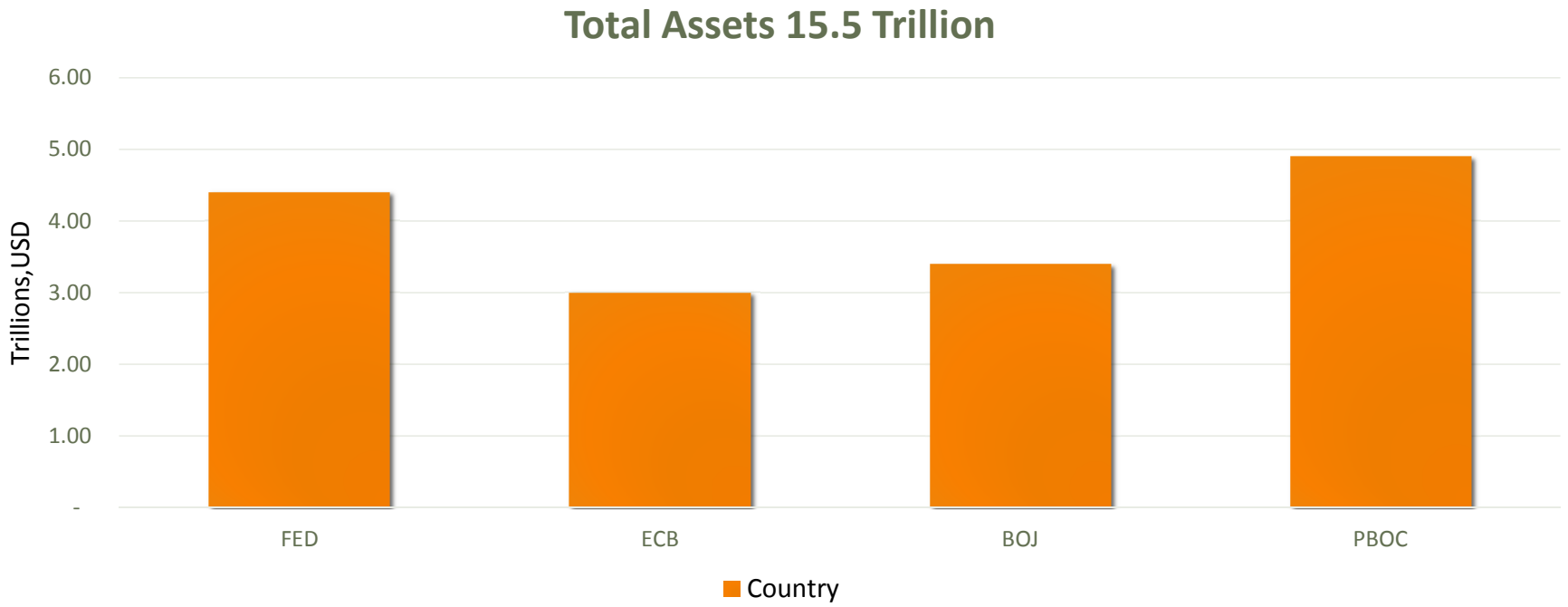
1. Generate internal growth
    i. Capital spending
    ii. Research and development e.g. new products
    iii. New geography or regions
    iv. Adopt a market share strategy
2. Purchase external growth
    i. M& A
    ii. Joint ventures/ partnerships
    iii. Recapitalize e.g. rights issue
3. Change Capital Structure
    i. Increase leverage
    ii. Change dividend policy
    iii. Recapitalize the bank e.g. a rights issue
4. Repricing of client service
5. Exit the Business or change jurisdictions

Total Assets Of Major Central Banks



Source: Yardeni.com

Major Central Bank Assets G3+China

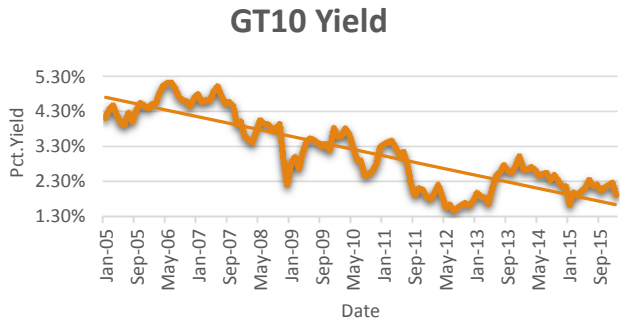


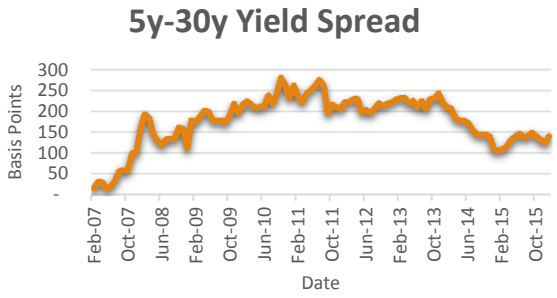
Source: Yardeni.com

Quantitative Easing Timeline

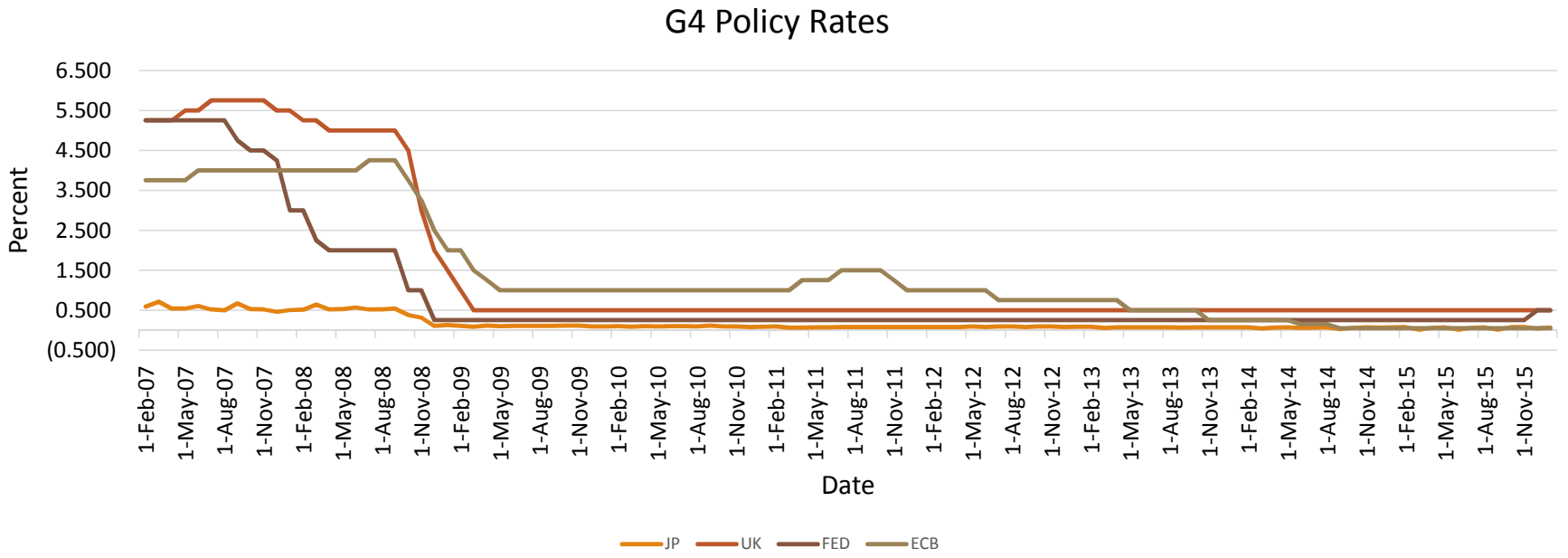
Zero Interest Rate Policy Dec 08 - Dec 15

- QE1: Dec 08-Mar 10
- QE2: Nov 10-Jun 11
- Operation Twist 2011
- QE3: Sep 12-Oct 14
- 25 bp Rate Rise Dec-15





G4 Short Rates 2007-2016



Source: Bloomberg, L.P.

Debt Monetization

1. Governments can finance deficits by issuing debt or by printing money. In G4 countries, the central bank controls the money supply, the leaving the government only one option to financing deficit speeding – issuing debt.
2. Involves a two step process of converting government debt into money
   - Treasury Department issues debt
   - Central bank purchases debt on the open market and rebates the interest income earned , after administrative expenses, back to the Treasury department
3. The motivation of debt monetization matters i.e. why does the FED want to reduce the supply of outstanding debt
4. The central bank does not have to purchase *government* securities to monetize the debt , it can and has purchased MBS, corporate, and private label asset backed securities
5. The Fed has expressed a desire to neutralize the potential effect of its massive acquisition of securities on the monetary aggregates by paying interest on bank excess reserves and/or by offering banks term deposits that bear a market rate of interest

Decomposition of a Treasury Note

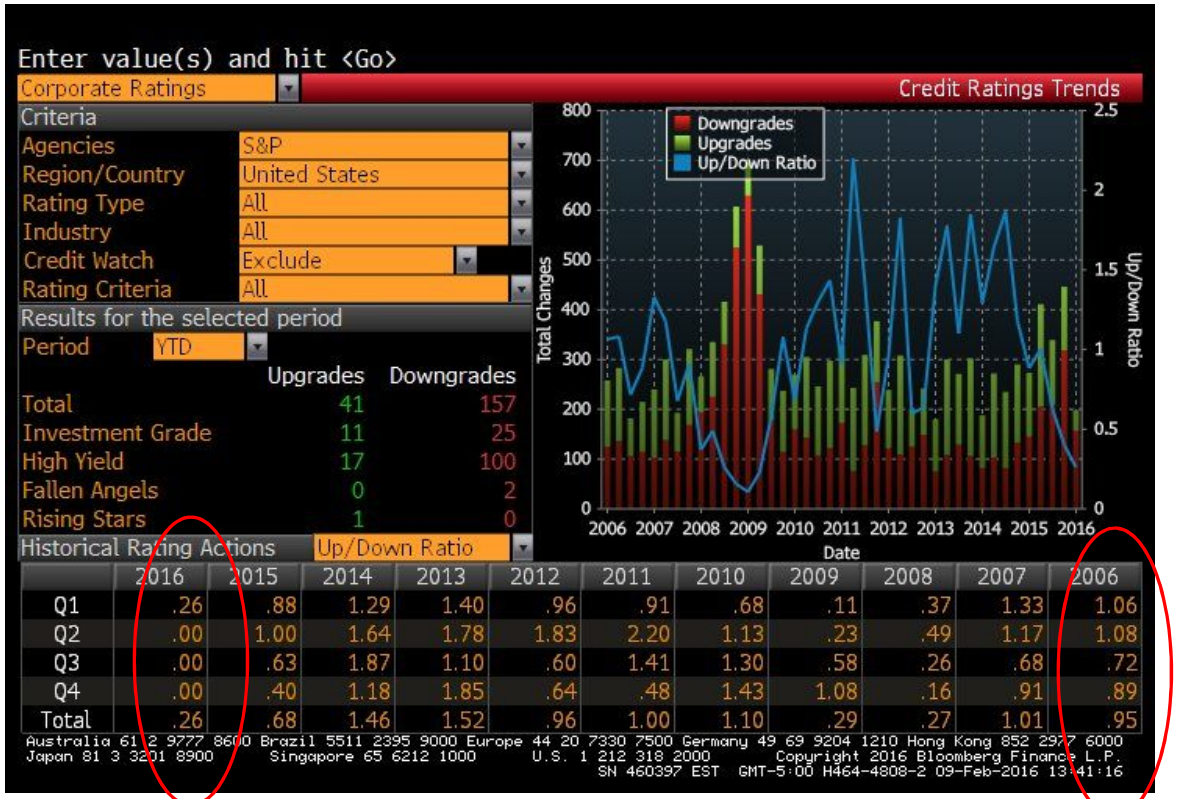
Latest Reading[1] -0.81%

Latest Reading[1] +0.95%

Latest Reading[1] +1.59%

$\sum_{i}$ 1.59 .95 – .81 1.73% .*Thi e* *T*10*o* *Feb* 9,2016

Rating Agencies- Generally Lagging The Cycle



1. The number of global defaults in 2014 declined to 60 from 81 in 2013. This helped push the global speculative-grade default rate down to 1.42% from 2.28% at the end of 2013.

2. The one-year global Gini ratio rose to 93 in 2014, which is the second highest in 34 years. This is largely attributable to the roughly 91% of the rated defaulters in 2014 beginning the year with ratings of 'B-' or lower.

3. The overall rate of rating actions decreased in 2014. The downgrade rate decreased to 8.4% from 9.4% in 2013, while the upgrade rate declined to 9.3% from 11.4%. Ratings stability increased, with the rate of unchanged ratings hitting a 10-year high of 74.5%. •

4. Consistent with past years, the U.S. continues to account for the majority of defaults globally in 2014, at 55%. However, this is the lowest percentage in the past 34 years. Following the U.S., emerging markets accounted for just over 25% of the remaining defaulters.

Possible Dichotomy At The Federal Reserve

Monetary Policy

1. Lower risk premiums
2. Increase market liquidity
3. Encourage bank lending by lowering rates
4. Toxic asset relief
5. Steepish yield curve to improve Net Interest Margin (NIM)

Macro Prudential Policy

1. Increased capital requirements
2. Constrained leverage
3. Encourage retention of High Quality Liquid Assets (HQLA)
4. Regular Stress tests (CCAR)
5. Mandate tighter lending standards

Common Ground: Euthanasia of the Rentier[1]

1. A rentier is a person or entity receiving income derived from patents, copyrights, interest, dividends etc.

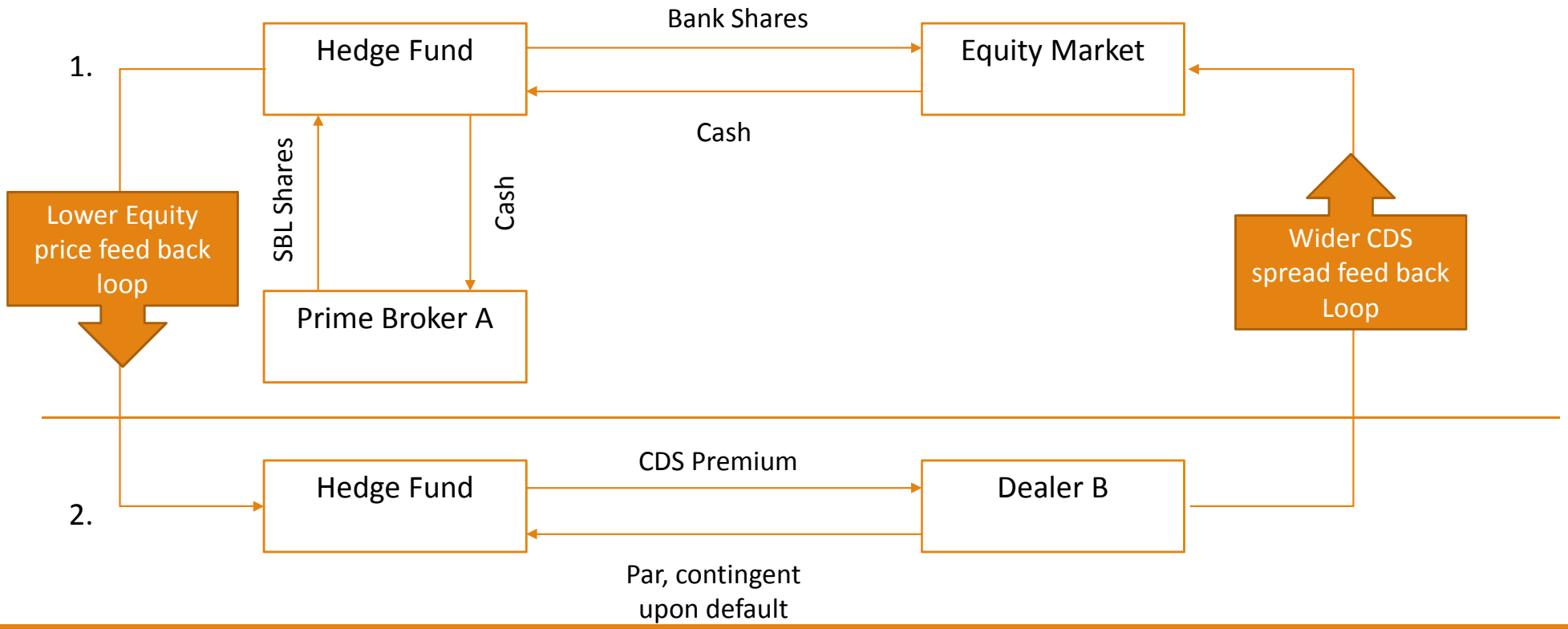
Attraction of Short Dated Bonds and CDS

If we assume that near and far dated bonds trade at similar dollar prices after an event of default (given the Par less Recovery assumption), then the market must assume much higher spreads for the shorter dated maturities to account for the same amount of dollar price discount compared with longer dated bonds.

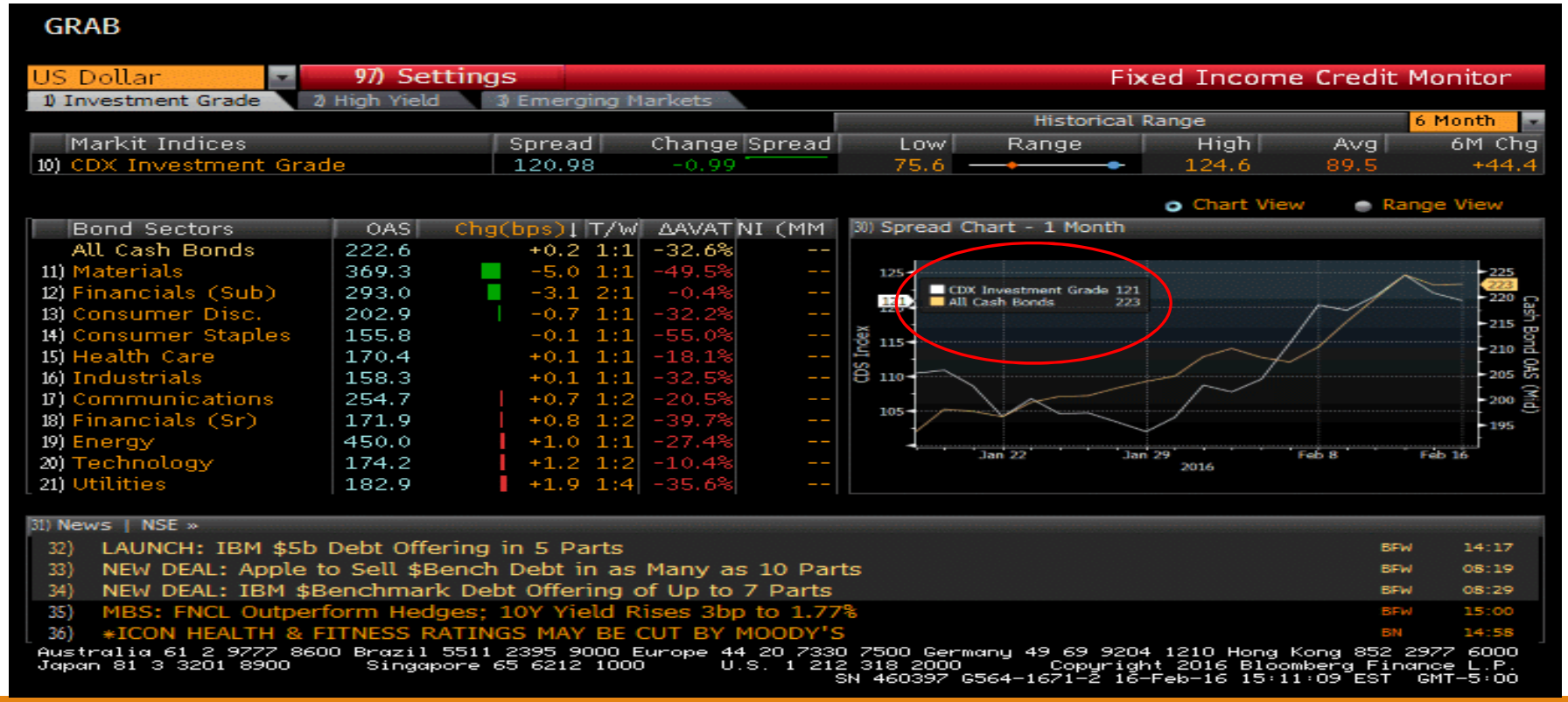
	Greece 3 Year ZCB	Greece 15 Year ZCB
Future Value	€60	€ 60
Present Value	€ 100	€ 100
Number of Years	3	15
Implied RFR + Spread[1]	~ 1,700 bp	~ 334 bp

1. Calculations assume continuous compounding, assumes 60% recovery

Trade For A Banking Crisis



CDS-Cash Basis U.S. Investment Grade



CDS-Cash Basis U.S. High Yield

Leveraged Lending Regulatory Guidance

1. Given the supervisory concern noted with leveraged lending, the agencies expect that all firms with leveraged loan exposure will:
2. Establish underwriting standards to prevent the origination of new non-pass credit.
3. Establish policies to enhance the credit position of non-pass borrowers seeking refinance of current credit structures.
4. Set prudent limits for leveraged transactions to highly cyclical industries that would struggle to meet obligations during a down cycle.
5. Set prudent limits for leveraged transactions that do not result in increased cash flow for the borrower, such as dividend recapitalizations.

Impact of Basel III Regulations on Prime Brokers

The BCBS sought to address perceived weaknesses in the market in three ways which will drive changes in the prime brokerage funding model:

1. Increasing bank capitalization - Increasing capital requirements will force banks to carefully consider how much and to which businesses and clients they allocate capital.
2. Reducing bank liquidity risk - The new liquidity metrics, Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR), will increase the duration of prime brokers' financing, which will reduce rollover risk but will increase cost.
3. Constraining bank leverage - The proposed leverage ratio will also serve to reduce available balance sheet and off-balance sheet commitments for client business. The increasing scarcity of balance sheet will likely increase its cost.

JPM Investor Services (2014)

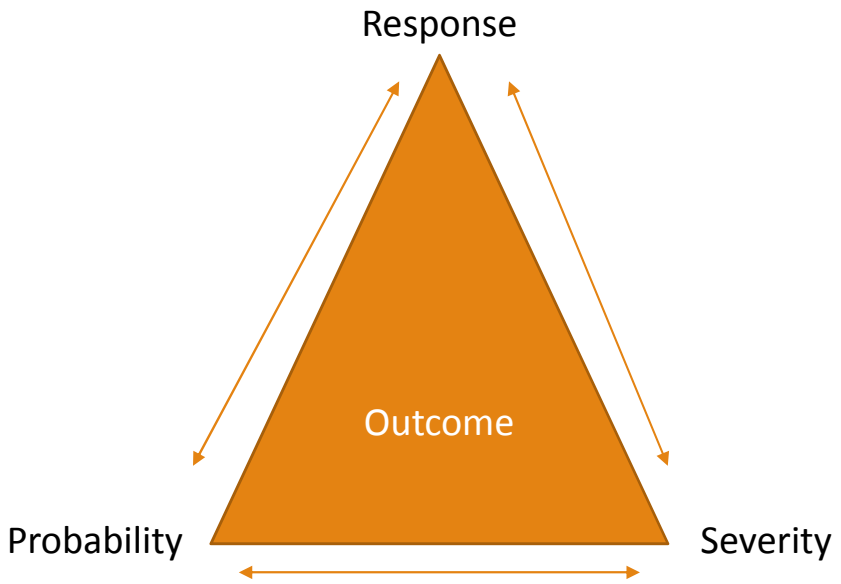
Risk Management

Key Corporate Decisions

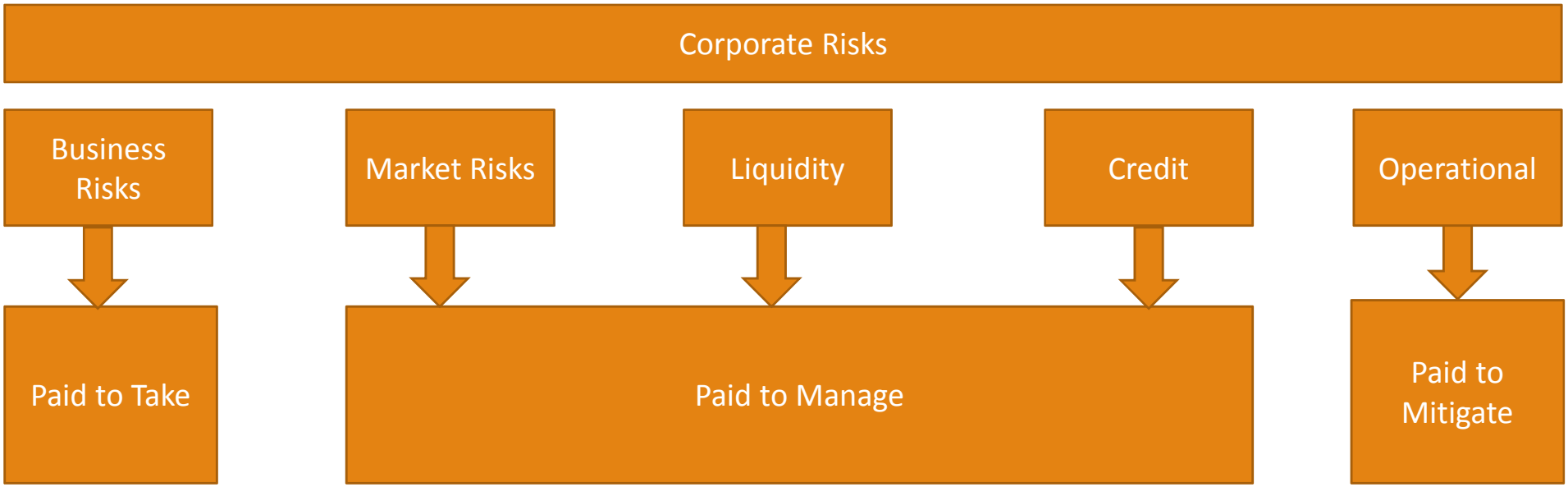
1. Operating decisions – govern-in place assets
2. Investment decisions – govern growth and disposal assets
3. Financing decisions - govern the optimal capital structure and dividend decisions

Dimensions of Risk

1. Firm or business risk versus market
2. Operating versus financial
3. Continuous versus episodic
4. Catastrophic versus routine
5. Random versus deterministic
6. Bounded versus unbounded
7. Transparent versus latent
8. Micro prudential versus macro prudential



Modern Risk Management



Ten Functional Bank Risk Areas

1. Loan portfolio analysis
2. Treasury activities
3. Trading and capital-markets activities
4. Internal controls and audit
5. Supervisory ratings – CAMELS[1]
6. Information systems
7. Fiduciary activities
8. Private banking
9. Retail banking activities
10. Payments system risk

1. C.A.M.E.L.S = ***C***apital adequacy; ***A***ssets quality; ***M***anagement Capability; ***E***arnings; Liquidity (also called asset liability management); ***S***ensitivity (sensitivity to market risk, especially interest rate risk)

Framework and Methodologies

Value at Risk (at N standard deviations)

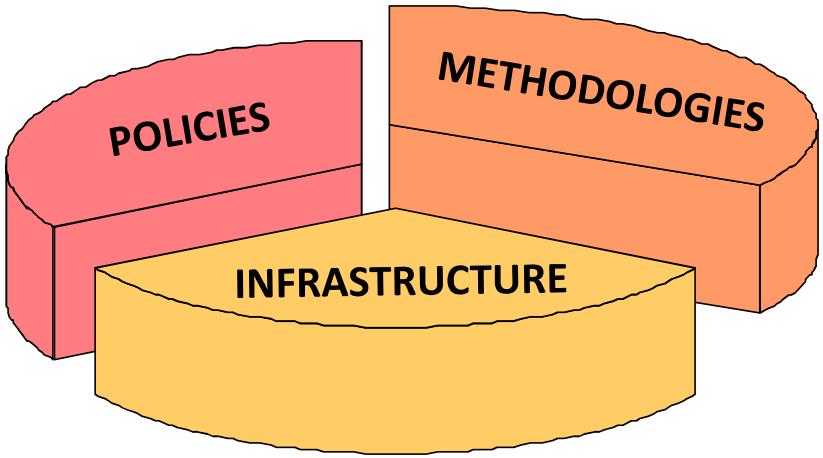
1. Transaction risk
2. Portfolio risk (capture correlation effect)

Event Risk

1. Reasonable Paranoia
2. Scenario Testing
   (e.g. volatility and correlation slippage)

Best Practice Risk Management

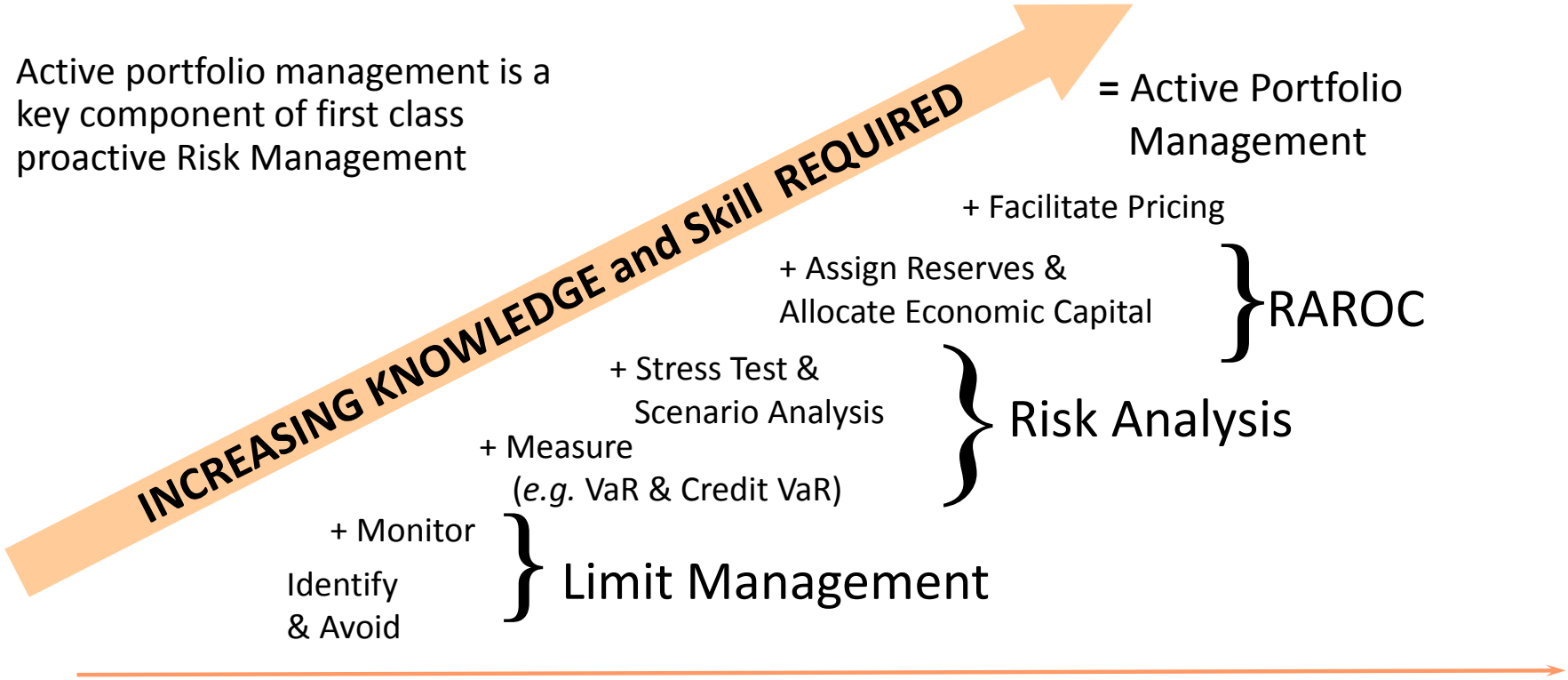
Framework for Risk Management can be benchmarked in terms of:



- Policies
- Methodologies
- Infrastructure

Risk Management Actions

Risk Management Framework



Bank Capital Management

Bank capital = bank net worth or total asset less total liabilities

Purpose of bank capital:

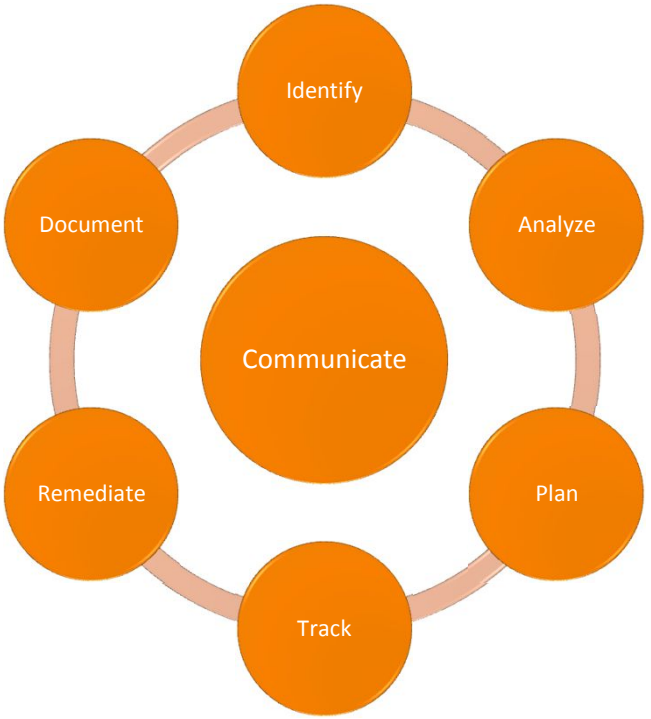
1. Absorbs losses on assets
2. Provides base for leveraging debt
3. Is a source of funds
4. Serves to maintain confidence of financial markets
5. Risk sharing with equity holders

Regulators specify minimum capital per riskiness of assets and loss absorbing capacity of liabilities

ROE = ROA x leverage; measure needs to be in excess of the cost of equity

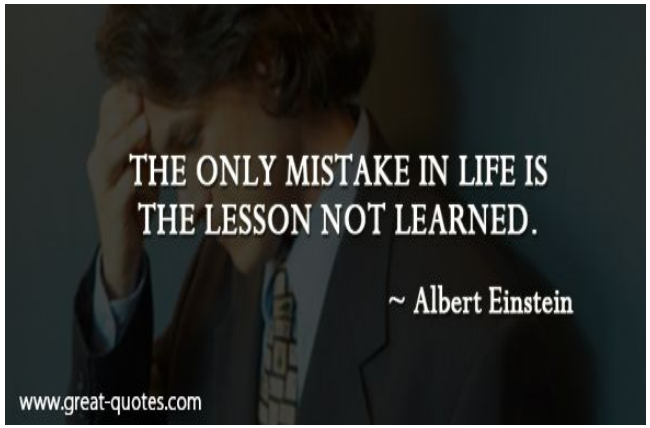
Risk Assessments

1. What can go wrong?
2. Can it happen here?
3. How likely is it to happen?
4. What will the consequences be?
5. What are the mitigating controls?
6. Are the control's effective?
7. Is senior management aware of the situation?



Key Lessons Learned

1. Liquidity and funding are key to life
2. Be creative when identifying potential liquidity outflows
3. Adequate capital does not mean adequate liquidity
4. Size is important – of firms and of specific risk positions
5. “Tail risk” is problematic
6. Good risk management processes do not equal good risk management



Goldman Sachs Risk Management Presentation SGSB 2015.

Investment Implications

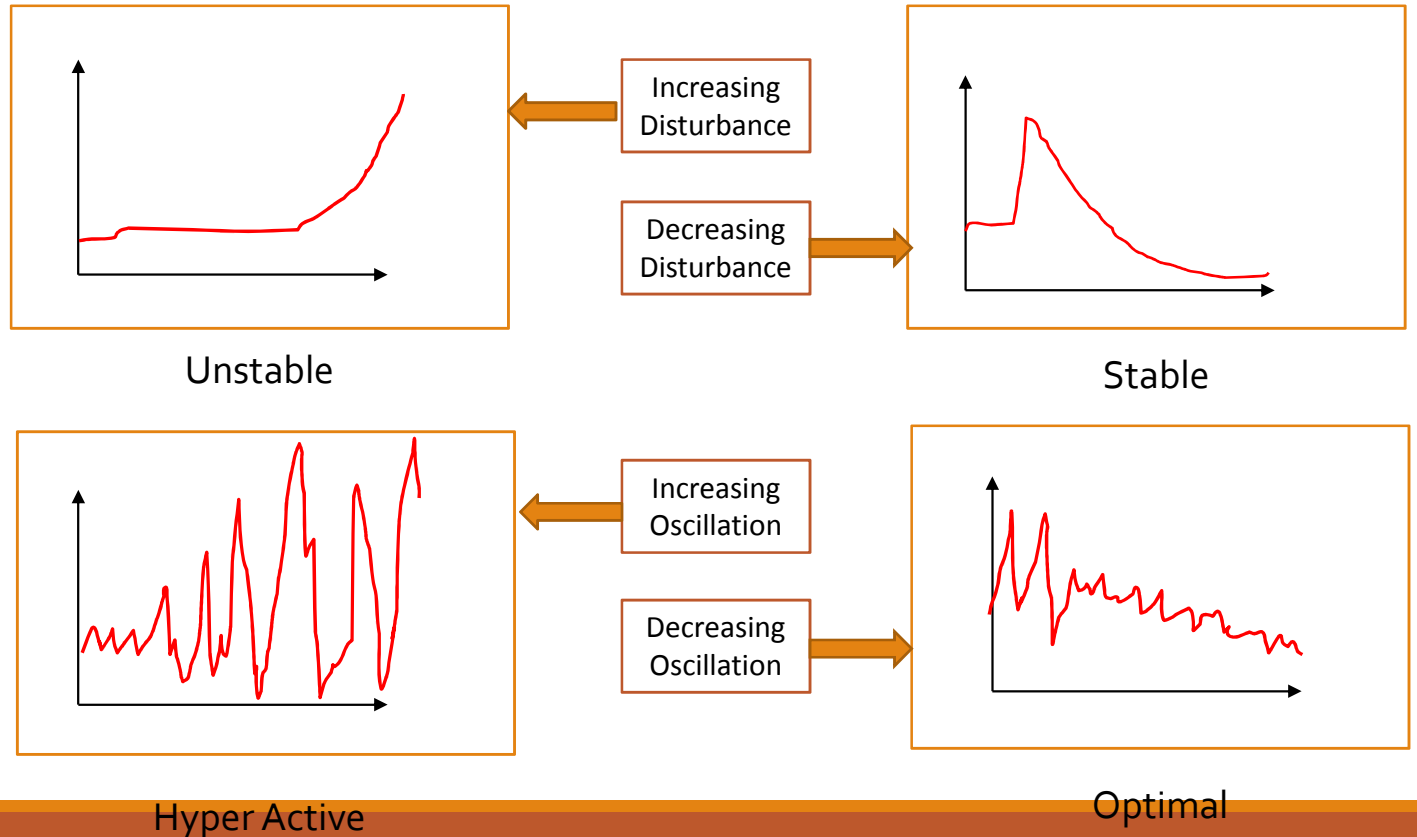
- The financial economy should continue to outperform the real economy
- Government bonds yields should remain low regardless of Federal Reserve action
- Equities are "cheap" compared to government bonds, but are very expensive on an absolute basis
- Deflation is perhaps a much bigger concern than inflation
- Bubbles in a sector that create productive assets with earnings power (e.g. Biotech) are very different from a bubble in a scarcity asset such as gold or oil
- Regulators possess an enormous amount of market power and their actions cannot be ignored
- This period of 'secular stagnation' will of course end at some point…

Systemic Market Manipulation

Distasteful But Not Illegal	
Market Protocol	Example
Forced liquidity schemes	Market making
Point in time trading	Libor and FX fixes
Preferred market access	Primary dealer system
Preferred security holdings	HQLA - Treasuries
Preferred counterparties	CCPs
Model based valuations	IRB approach

By their own admission, regulators are highly influential market forces that can significantly distort the fair formation of asset prices. For example, U.S. banks are required to hold substantial amounts of treasury bills and notes, regardless of the Bank's own assessment of the attractiveness of such holdings.

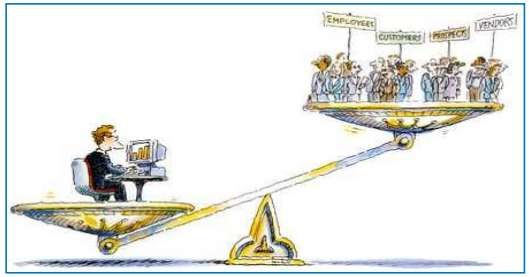
Market Disturbances and Oscillation



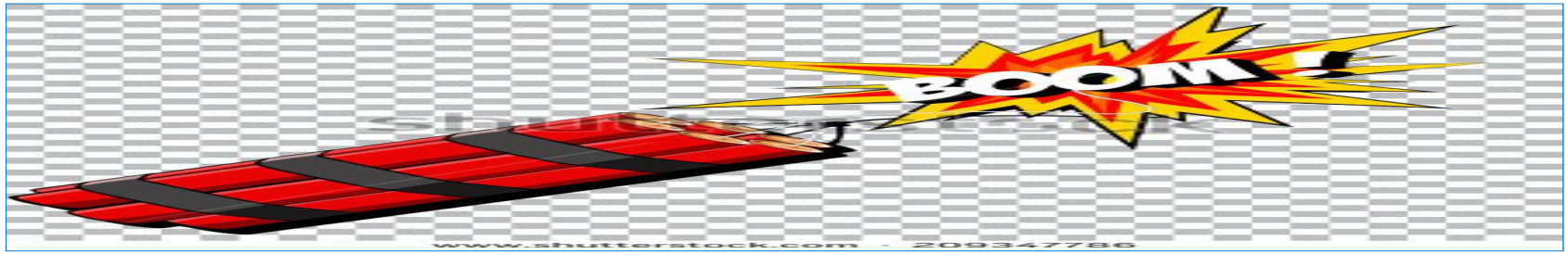
A Lasting Example

- BASEL III initial capital constraint of 6% of RWAs plus countercyclical and TBTF buffers raise requirement to about 11%
- Sovereigns are zero risk weighted; a bank can purchase $100m of an Italian BTP @2% and pay a $2m dividend or it can ….
- Loan $100m to a BBB Italian corporate at 6%; if the bank makes the loan it must raise $5m of additional capital ((11% less 6%)*$100m) to maintain its original capital ratio
- Which transaction do you think the bank prefers?
- Know the rules: accounting, tax considerations and capital

The Regulatory Squeeze



Macro Imbalances ⟷ Regulatory Squeeze ⟷ Shadow Banking



The New Normal

- Historic low nominal and real interest rates
- Approx. $2 trillion of sovereign government bonds trade at negative rates
- Debt burden high and growing relative to output and income
- Below trend GDP
- Below trend CPI
- Real wages stagnation

The 5Ds of low or negative real interest rates

- Delusion – false hope placed in policy makers
- Disincentive to reduce leverage
- Distraction from the real economy to the financial economy
- Distortion- price discovery mechanism is broken
- Disruption of business model for financial intermediaries (e.g. banks, insurance)

Disclosures

Although markets are cyclical, financial knowledge is cumulative. The material presented here has benefited enormously from the work and discoveries of countless academic and practitioner pioneers in the fields of finance and economics. A deep debt of gratitude is owed to the original thinkers and to those who consistently challenge the accepted norms.

The role of the student of finance is to be knowledgeable and respectful of the theory, equations and mathematics of the markets, while maintaining a healthy degree of skepticism as to their utility.