ISSUES IN MARKET LIQUIDITY

A RISK MANAGER'S VIEW

Stephen McCarthy

National Australia Bank

GFC – A QUICK RECAP

Catalyst: USD Housing Crash

The over-Leveraged Financial sector experienced large losses

Negative Liquidity spiral occurred as
- Banks' balance sheets deteriorate i.e. Bad debts increase (Sub-Prime market)
- Banks' reduced RWAs, selling Assets
- Banks' risk management tighten, lending reduced, counterparty exposures minimized
- Trading/stock margins increase
- Liquidity vanishes, prices drop

Global Contagion E.g. through tranched securities (CDOs)

Extreme liquidity risk
- Extreme funding liquidity risk: banks may default
- Extreme market liquidity risk: dealers shutting down (no bids!)

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GLOBAL CONTAGION : MULTIPLIER EFFECTS

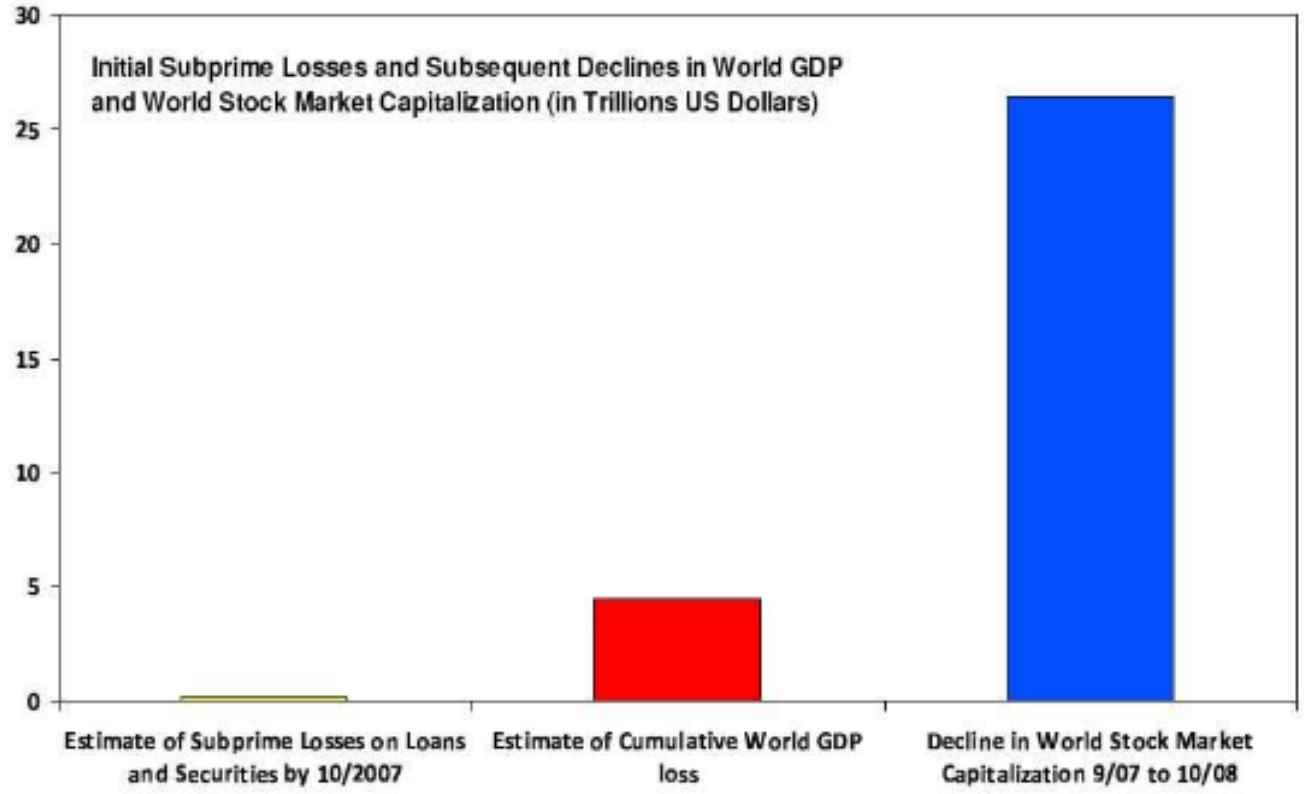

Fig. 1 Initial subprime losses (almost invisible in the figure) and subsequent declines up to November 2008 in World GDP and World stock market capitalization (in Trillions US Dollars). Source: IMF Global Financial Stability Report; World Economic Outlook November update and estimates; World Federation of Exchanges. Reproduced from Blanchard (2008)

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GFC – A QUICK RECAP

Prudential Regulators' interpretation of the crisis

A lethal combination of:

1. Poor Liquidity Management
2. Inaccurately measured and mispriced Risk
3. Excessive Leverage

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LIQUIDITY CONTEXTS

Liquidity has many forms and can be described in a number of contexts.

System Liquidity

Funding Liquidity

Market Liquidity

Structural Liquidity

As a psychological concept

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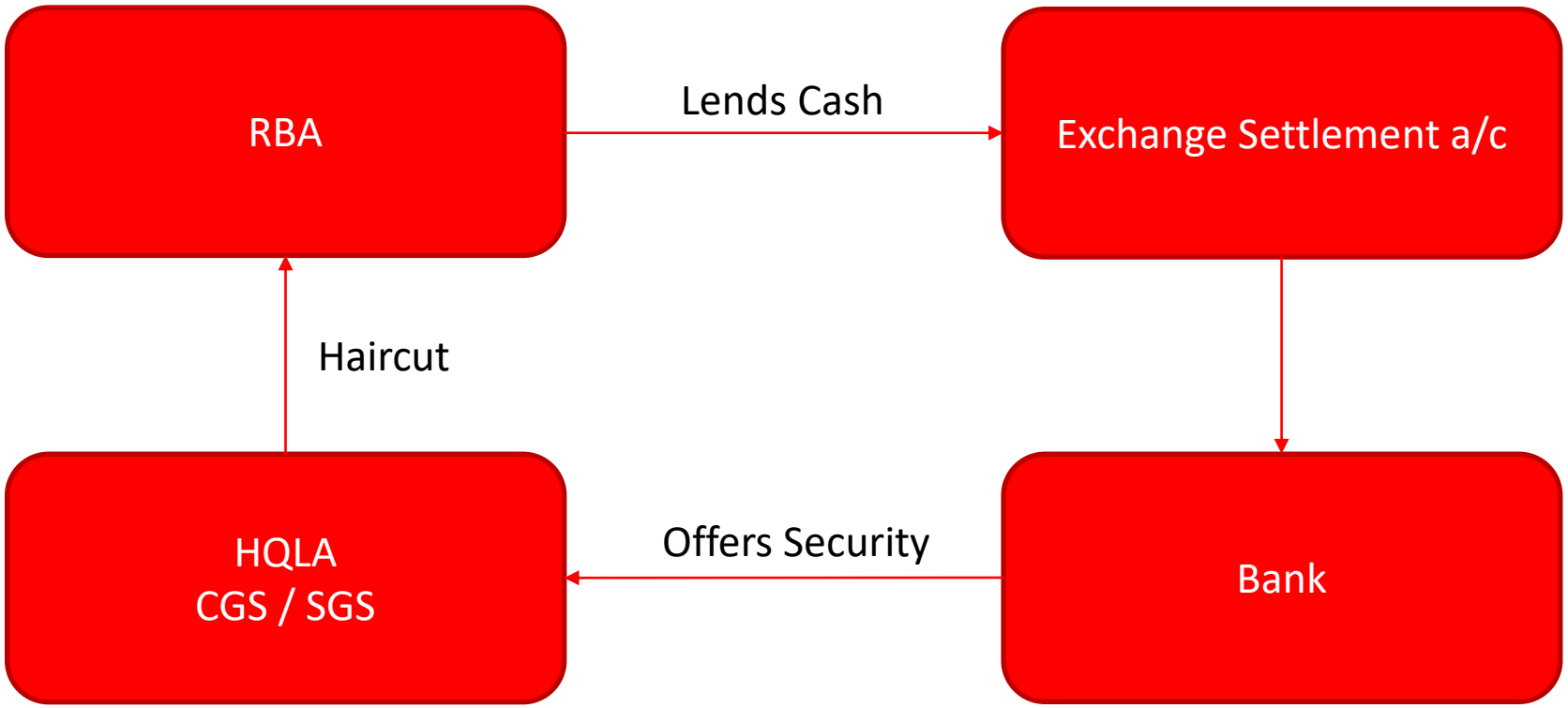
SYSTEM/STRUCTURAL LIQUIDITY

The Banking System's Liquidity position is managed to ensure that the cash rate trades at the target set by the Reserve Bank Board and to facilitate the settlement of financial institutions' payment obligations

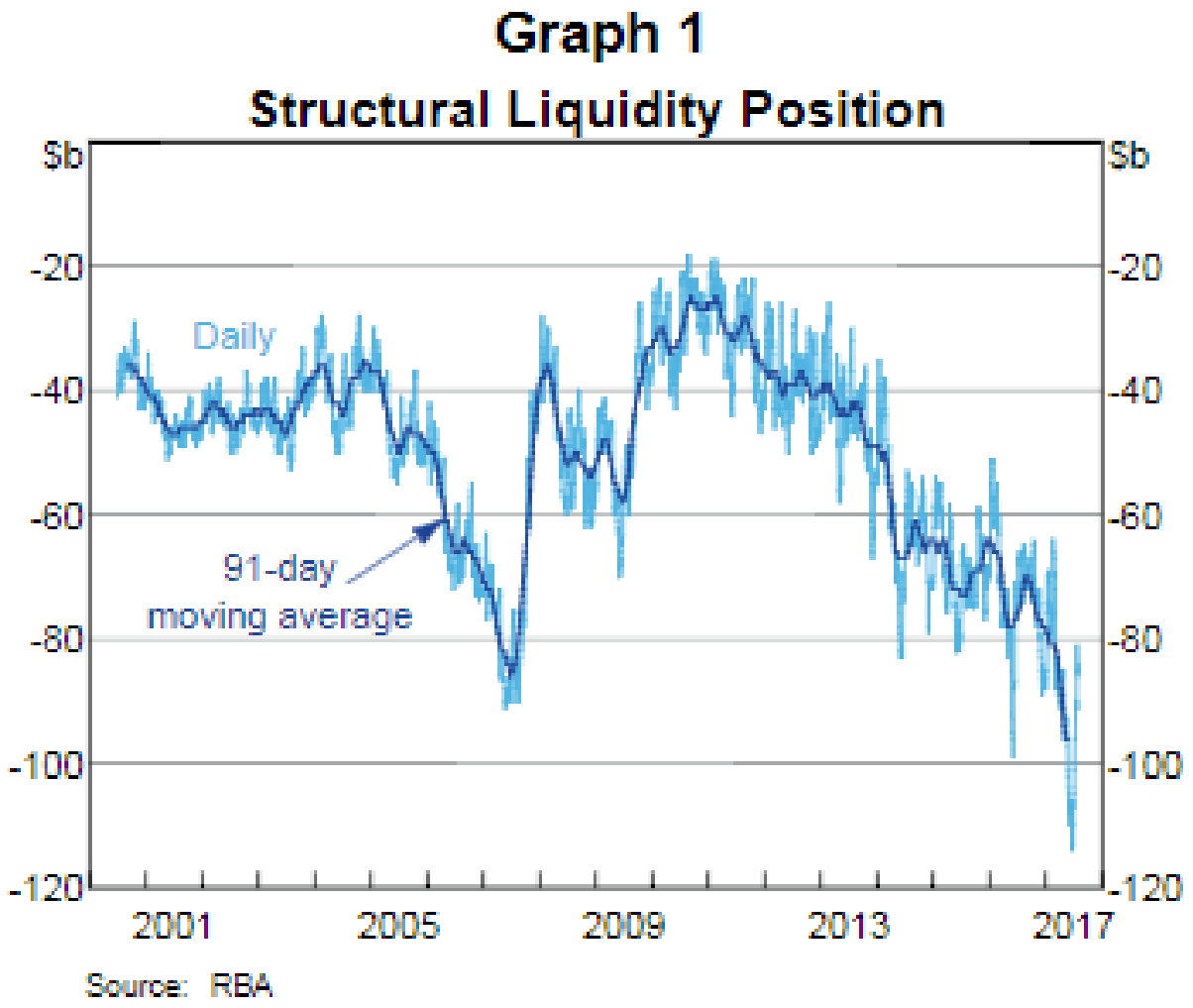
System Liquidity	Structural Liquidity	Target Cash Rate OCR = 1.5%
End-of-day balances held by FIs in their Exchange Settlement (ES) accounts.	Liquidity position that would exist in the absence of the RBA's domestic operations	ES > Demand => Cash ↓ ES < Demand => Cash ↑

REPURCHASE AGREEMENTS

A repurchase agreement, or repo for short, is a type of short-term loan much used in the money markets, whereby the seller of a security agrees to buy it back at a specified price and time. The seller pays an interest rate, called the repo rate, when buying back the securities.

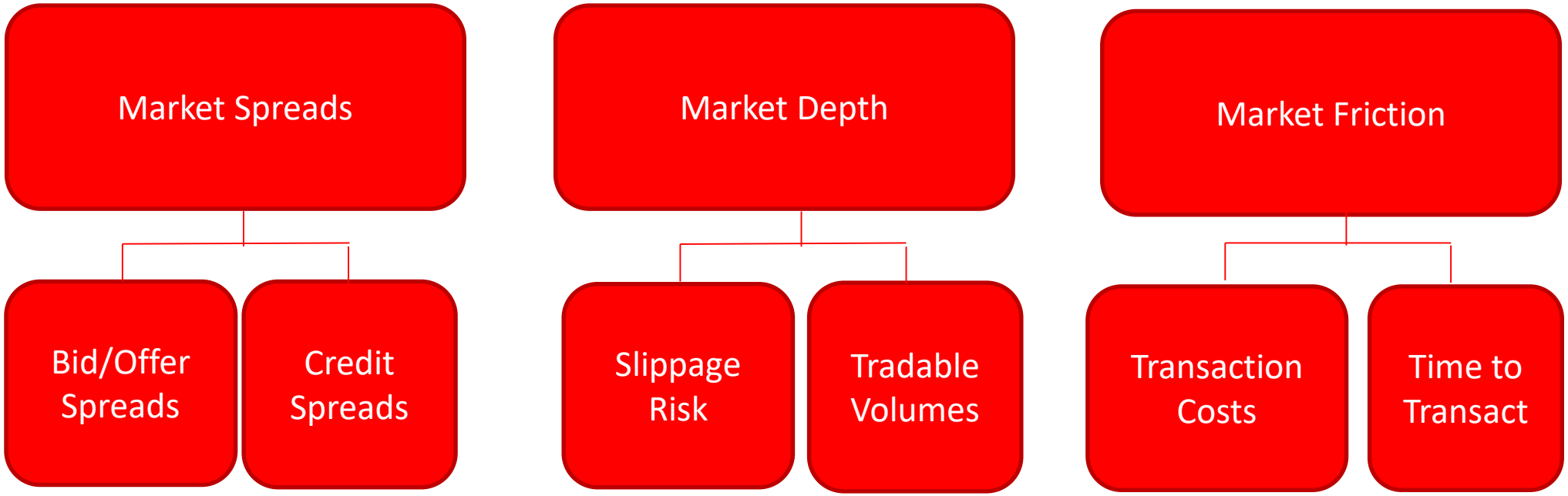


STRUCTURAL DEFICIT



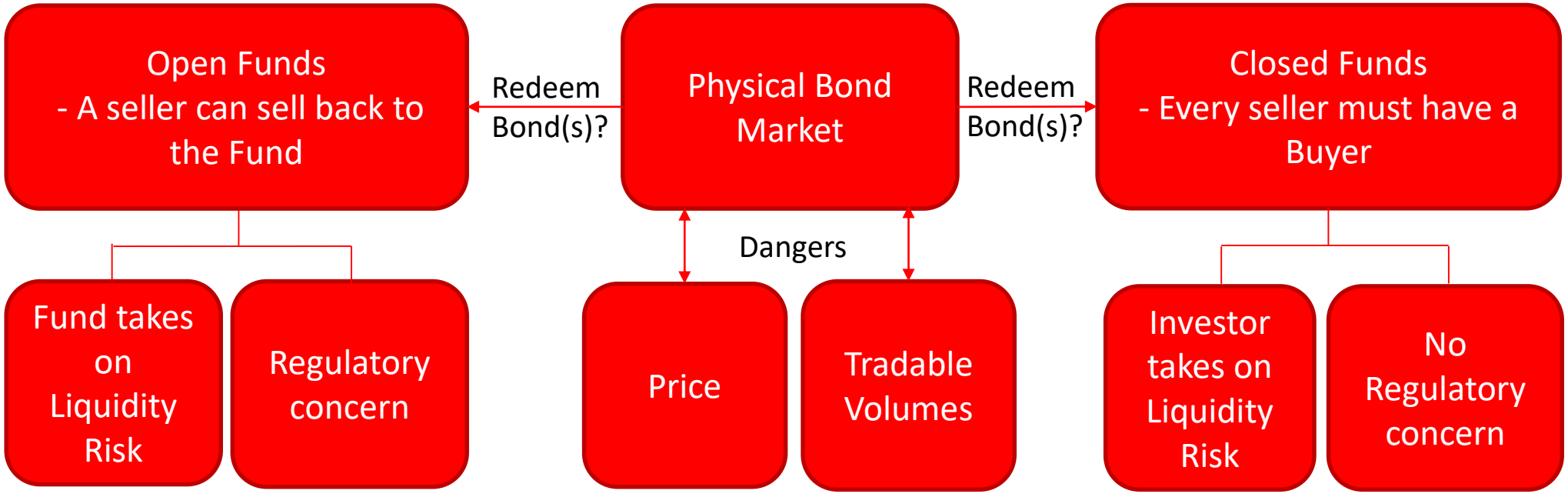
MARKET LIQUIDITY

Market Liquidity is essentially the ability to trade with minimum cost and time and for which there are ready and willing counterparties. i.e., the ease with which it is traded



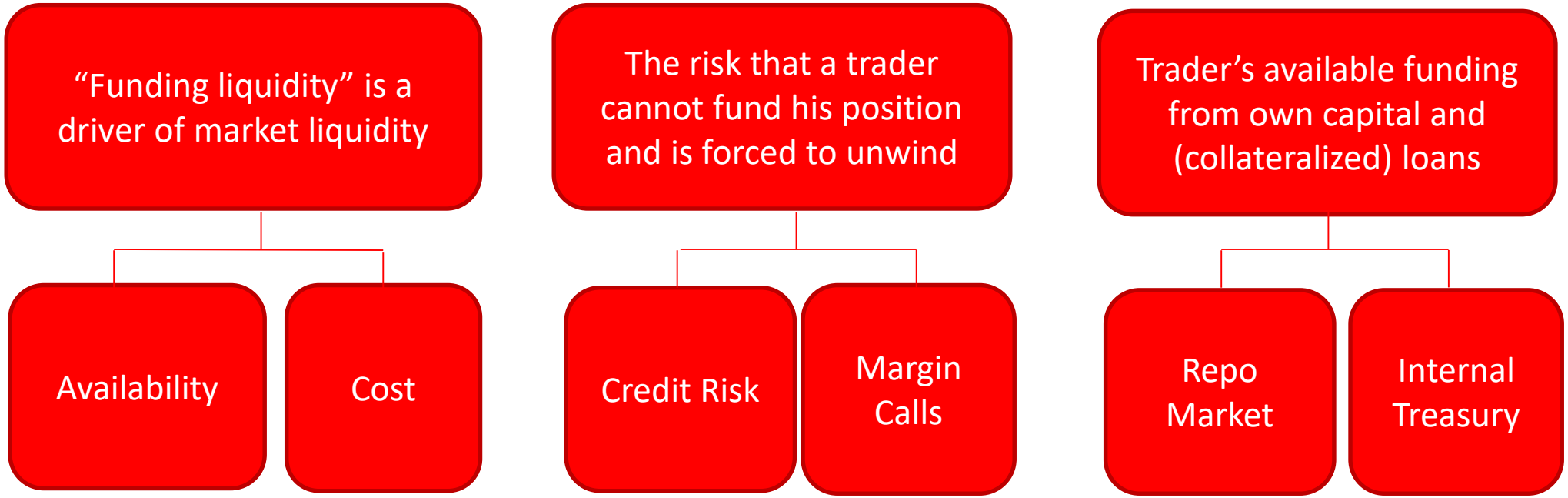
BOND EXCHANGE TRADED FUNDS

Bond ETFs are traded on many of the large exchanges.
The NTA of the ETF is based on the value of the underlying physical portfolio of bonds.



FUNDING LIQUIDITY

Funding Liquidity is essentially the ability to settle financial obligations accurately and timely. i.e., the ease with which funding can be obtained



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LIQUIDITY – A PSYCHOLOGICAL CONCEPT?

"Liquidity is a psychological concept not a monetary or financial concept."
Robert E Rubin. 70th United States Secretary of the Treasury. 2009

2009: US Labour Secretary Robert Reich "fundamental problem isn't lack of capital. It's lack of trust."

2009: Nobel economist Joseph Stiglitz "present financial crisis springs from a catastrophic collapse in confidence"

Argentina, 2001

The 2017 Edelman Trust Barometer reveals that trust is in crisis around the world. The general population's trust in all four key institutions — business, government, NGOs, and media — has declined broadly, a phenomenon not reported since Edelman began tracking trust among this segment in 2012.

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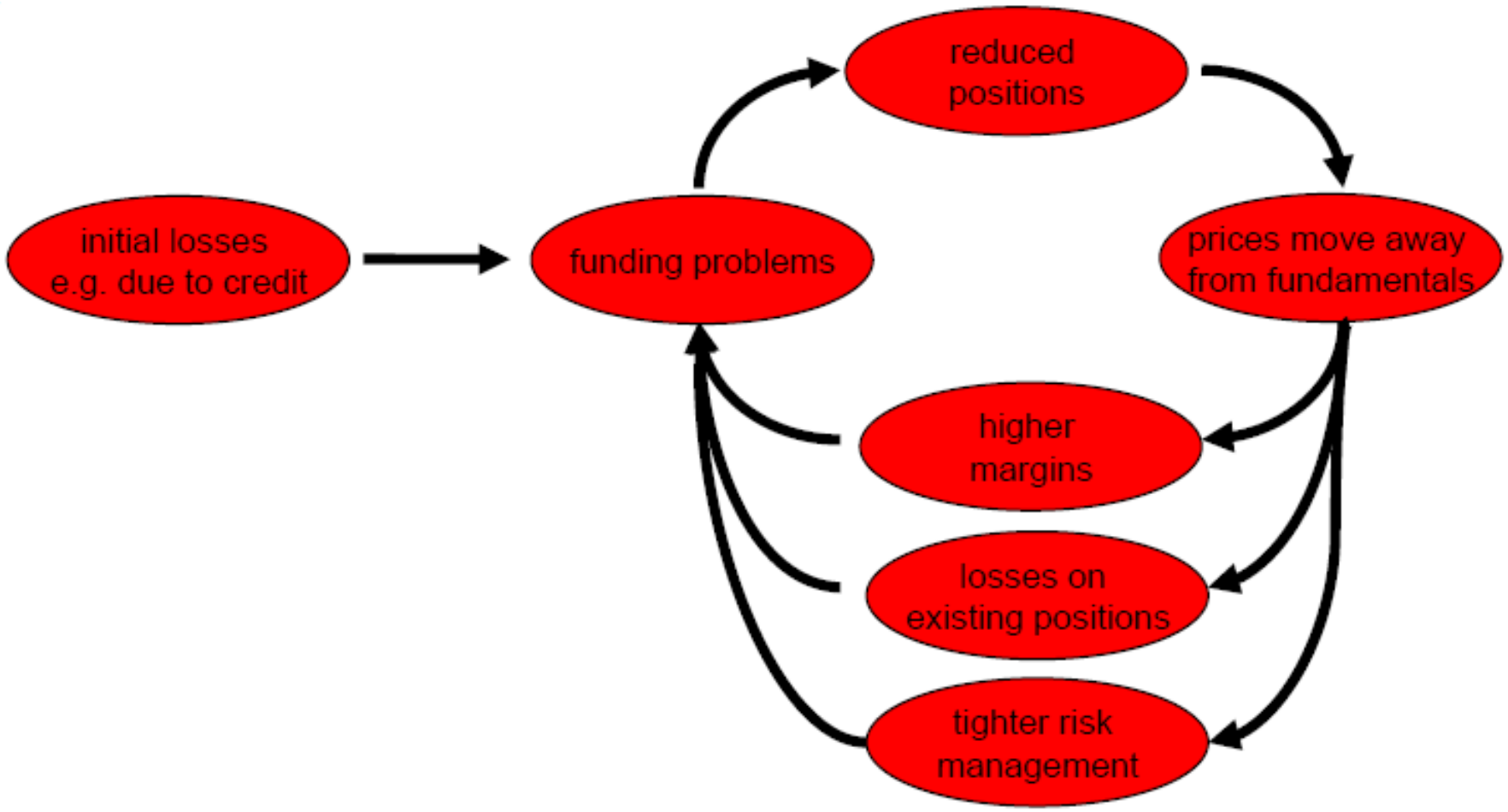
LIQUIDITY SPIRAL



Sources: Garleanu and Pedersen (2007) and Brunnermeier and Pedersen (2008)

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LIQUIDITY TRAP PRE-2008

Liquidity Trap is a scenario in which the central bank adds money into the market with the goal of stimulating the economy, but fails to lower the long term interest rates.

In times of recession, an economy can be faced with the problem of short-term interest rates reaching or nearing zero. This makes the monetary policy ineffective, and an external catalyst is besought to stimulate the economy.

The central bank does so by purchasing financial assets of longer maturity from commercial banks with the intent of lowering the long-term interest rate.

A liquidity trap takes place when these actions fail to lower the long-term interest rate.

SOURCE: http://macroeconomicanalysis.com/macroeconomics-wikipedia/liquidity-trap/

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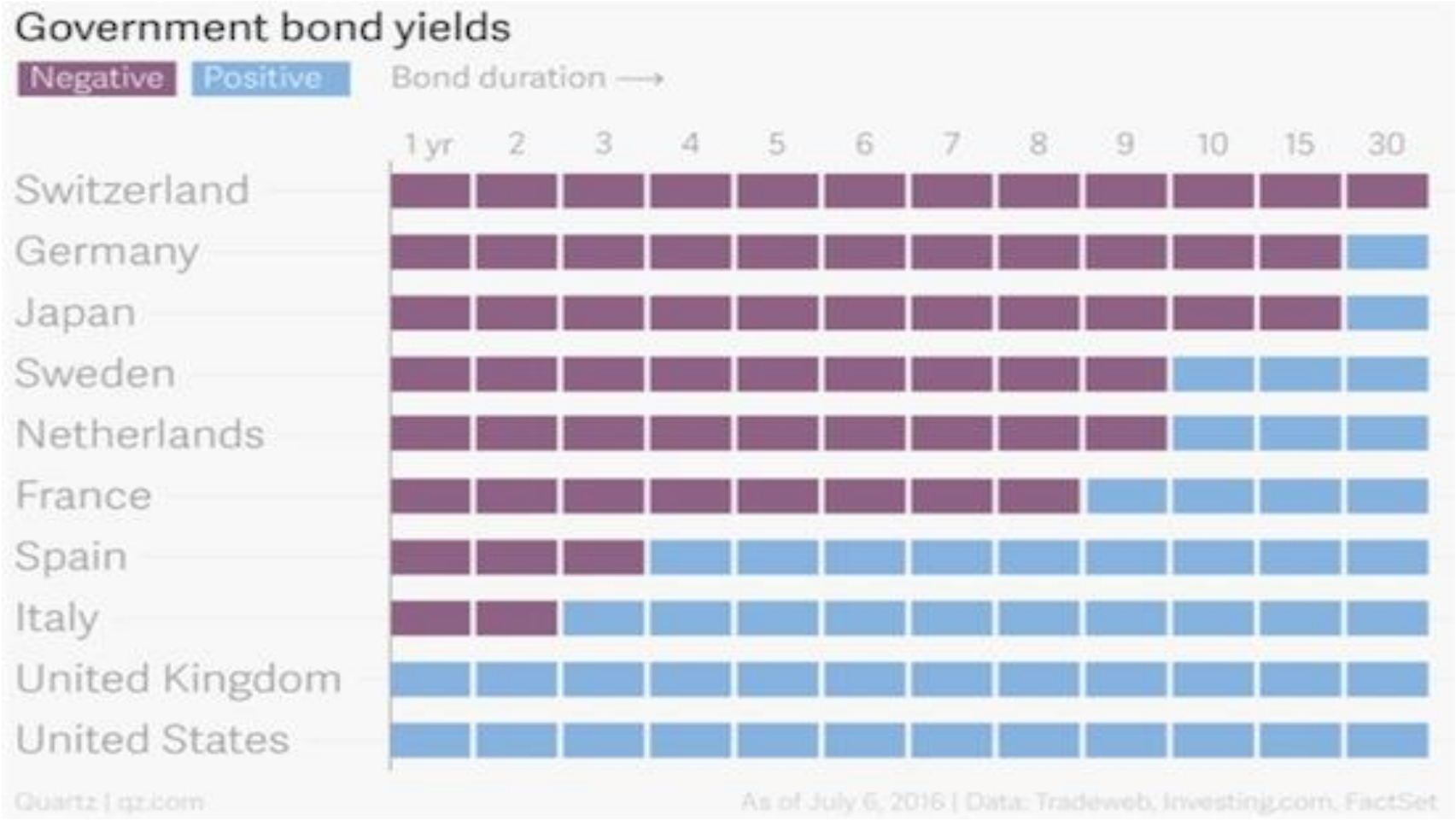
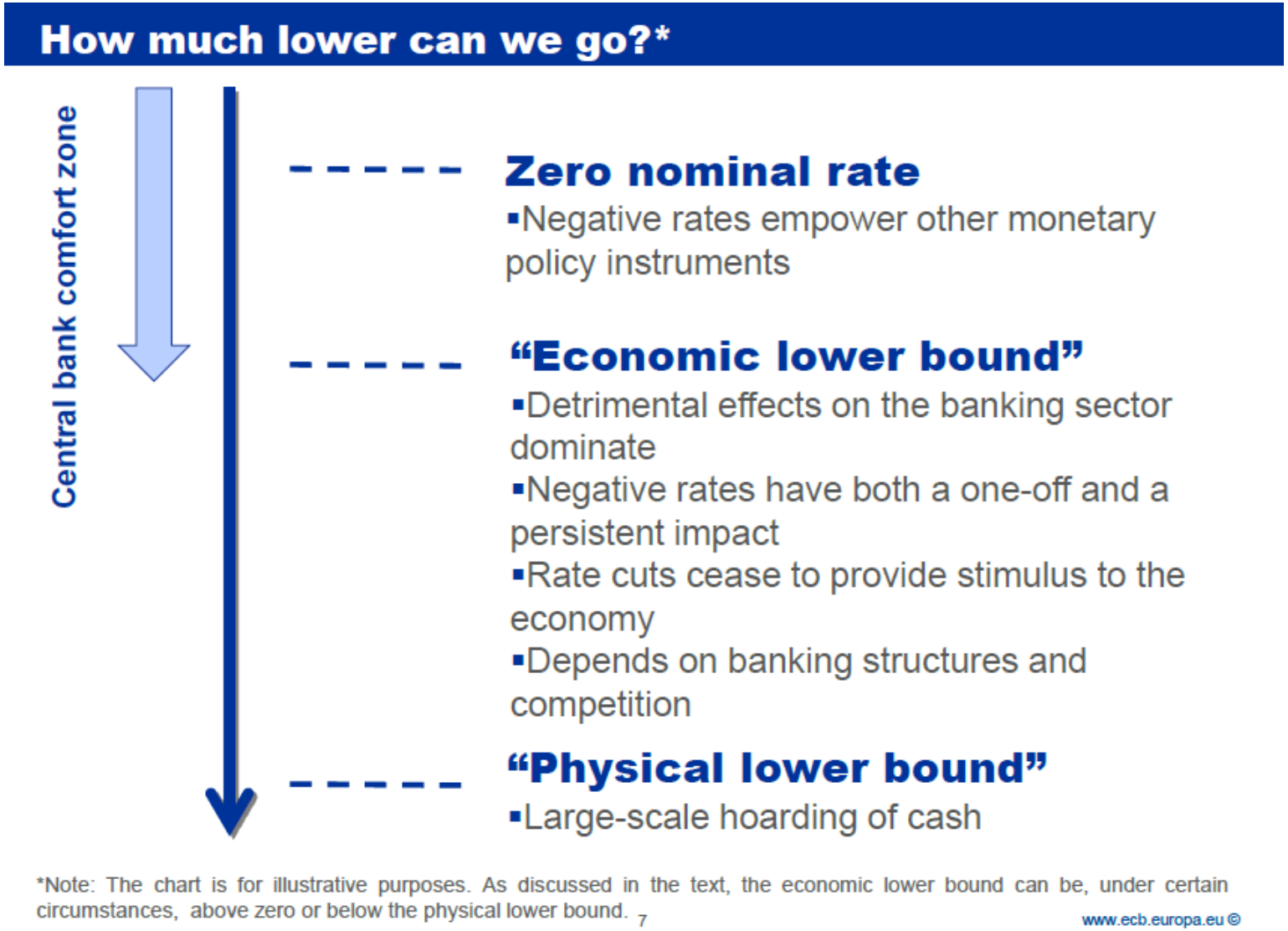
NEGATIVE NOMINAL INTEREST RATES

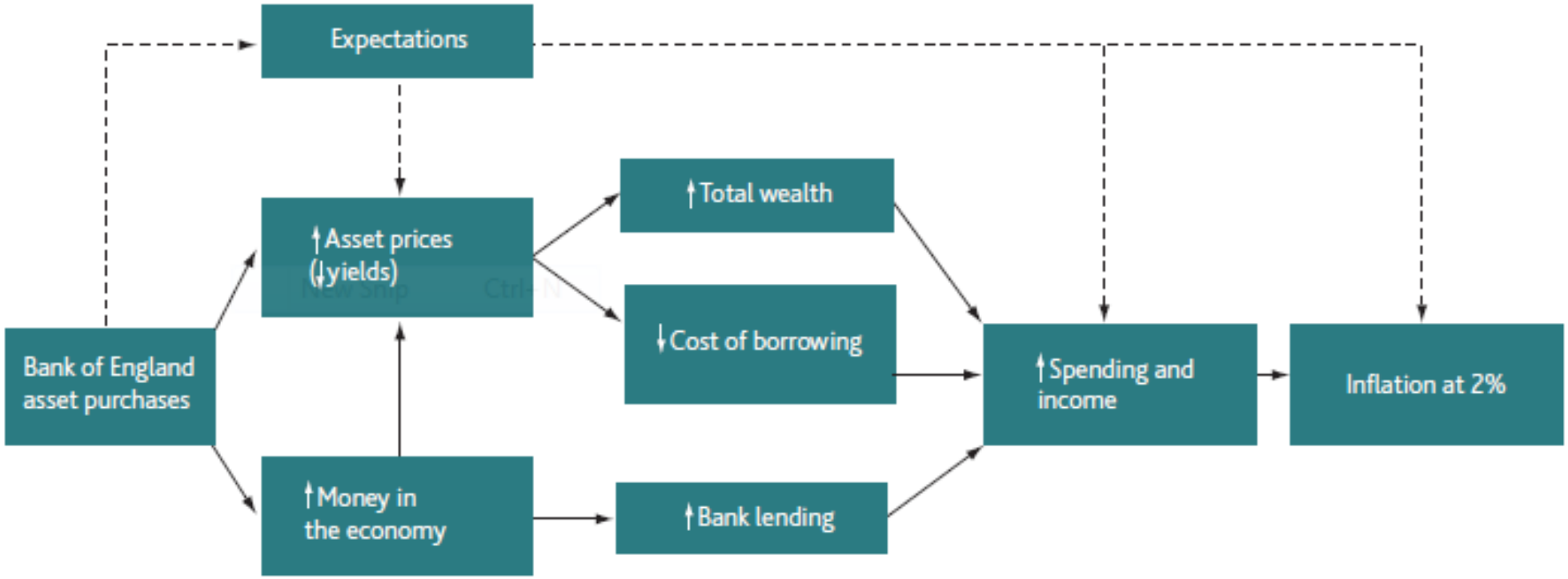


ECB VIEW


How much lower can we go?*
Central bank comfort zone
Zero nominal rate
▪Negative rates empower other monetary policy instruments
"Economic lower bound"
▪Detrimental effects on the banking sector dominate
▪Negative rates have both a one-off and a persistent impact
▪Rate cuts cease to provide stimulus to the economy
▪Depends on banking structures and competition
"Physical lower bound"
▪Large-scale hoarding of cash
*Note: The chart is for illustrative purposes. As discussed in the text, the economic lower bound can be, under certain circumstances, above zero or below the physical lower bound.
7
www.ecb.europa.eu ©

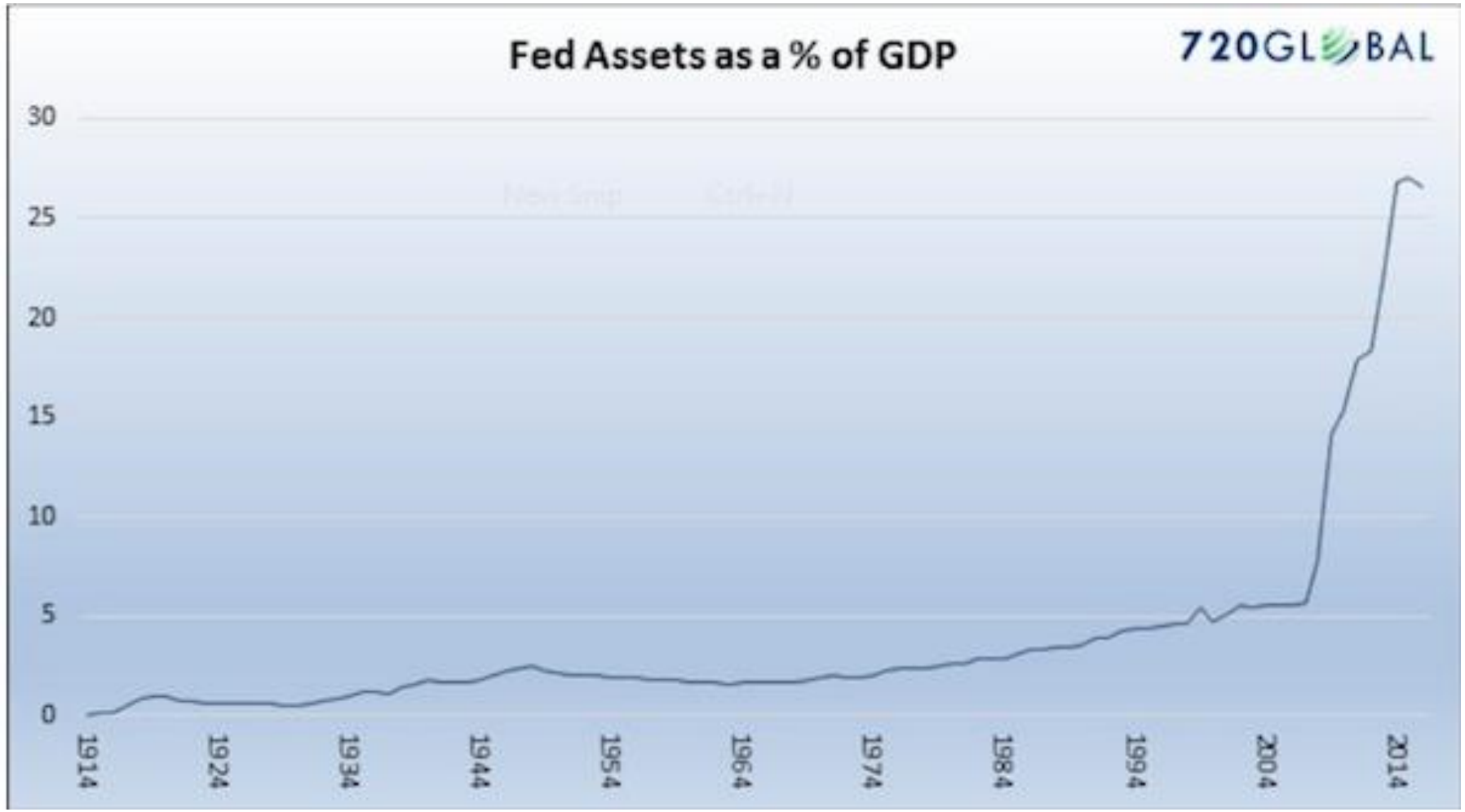
QUANTITATIVE EASING – A CENTRAL BANK'S VIEW

Figure 2 Stylised transmission mechanism for asset purchases



Source: BOE Quarterly Bulletin 2009

CENTRAL BANK DEBT ACCUMULATION - USA



CORPORATE DEFAULT LEVELS

Table 1

Global Corporate Default Summary (cont.)

	Total defaults*	Investment-grade defaults	Speculative-grade defaults	Default rate (%)	Investment-grade default rate (%)	Speculative-grade default rate (%)	Total debt outstanding (Bil. $)
2000	136	7	109	2.48	0.24	6.23	43.28
2001	229	7	173	3.78	0.23	9.87	118.79
2002	226	13	159	3.59	0.42	9.49	190.92
2003	119	3	89	1.92	0.10	5.06	62.89
2004	56	1	38	0.78	0.03	2.02	20.66
2005	40	1	31	0.60	0.03	1.50	42.00
2006	30	0	26	0.48	0.00	1.18	7.13
2007	24	0	21	0.37	0.00	0.91	8.15
2008	127	14	89	1.80	0.42	3.69	429.63
2009	268	11	224	4.18	0.33	9.89	627.70
2010	83	0	64	1.20	0.00	3.00	97.48
2011	53	1	44	0.80	0.03	1.83	84.30
2012	83	0	66	1.14	0.00	2.57	86.70
2013	81	0	64	1.06	0.00	2.29	97.29
2014	60	0	45	0.69	0.00	1.43	91.55
2015	113	0	94	1.36	0.00	2.75	110.31
2016	162	0	143	2.06	0.00	4.19	239.79

* This column includes companies that were no longer rated one year prior to default. Sources: S&P Global Fixed Income Research and S&P Credit Pro®.

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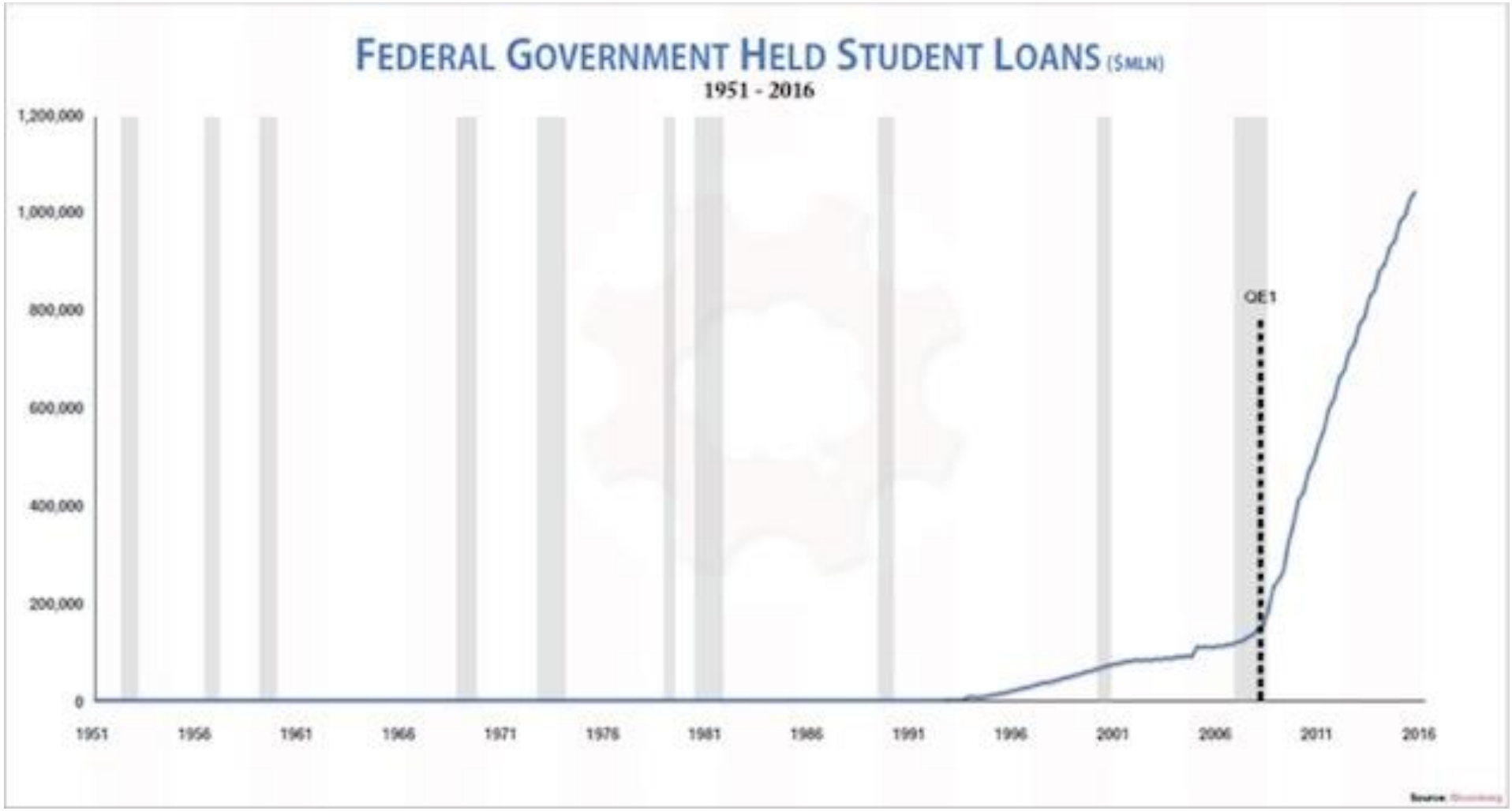
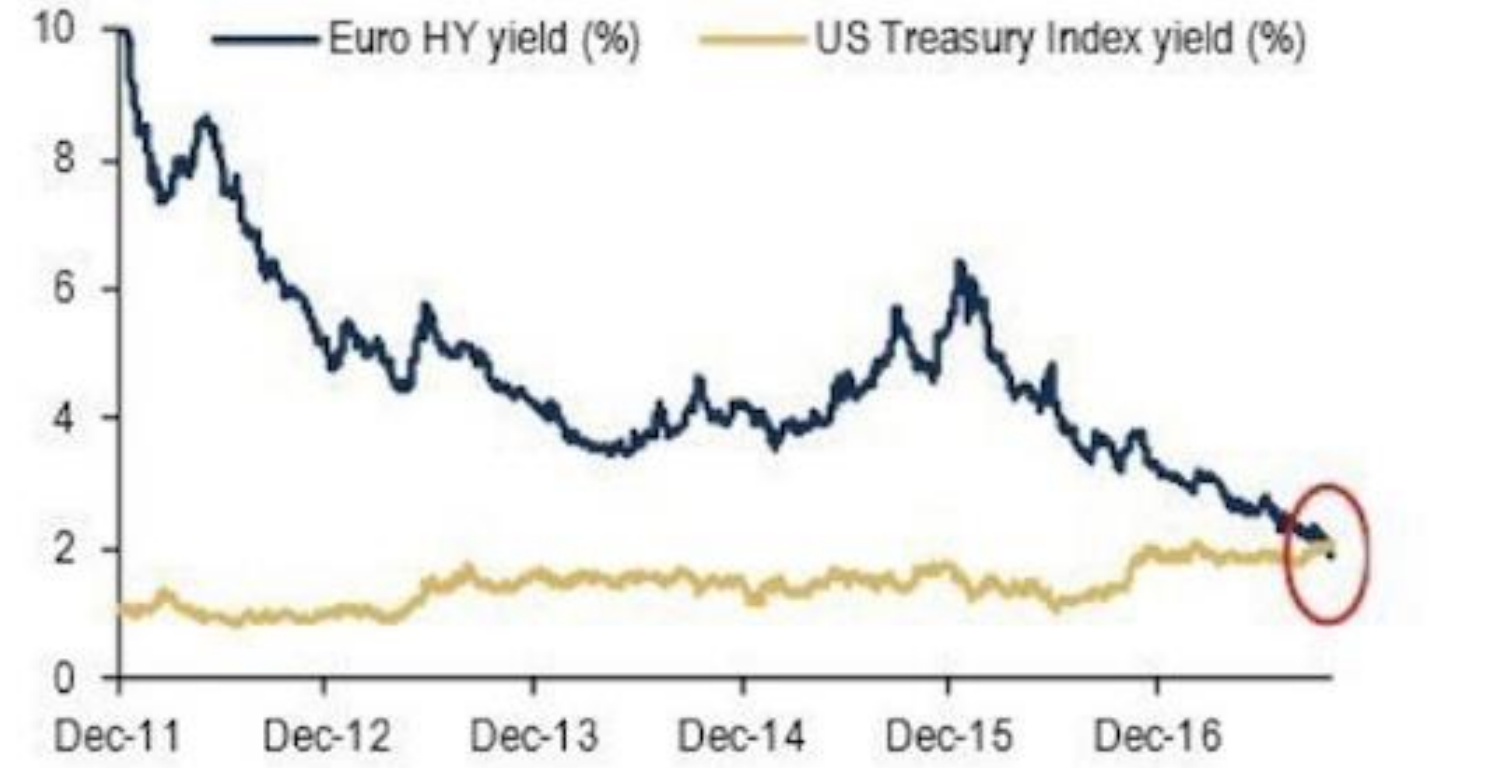
UNTRADABLE DEBT



Source : Grant Williams “Things that make you go hmmm…”

RELATIVE RISK

Chart 2: European HY yields now below 2%



Source: ICE BofAML Global Bond Indices, HE00 and G0Q0 (yield to worst).

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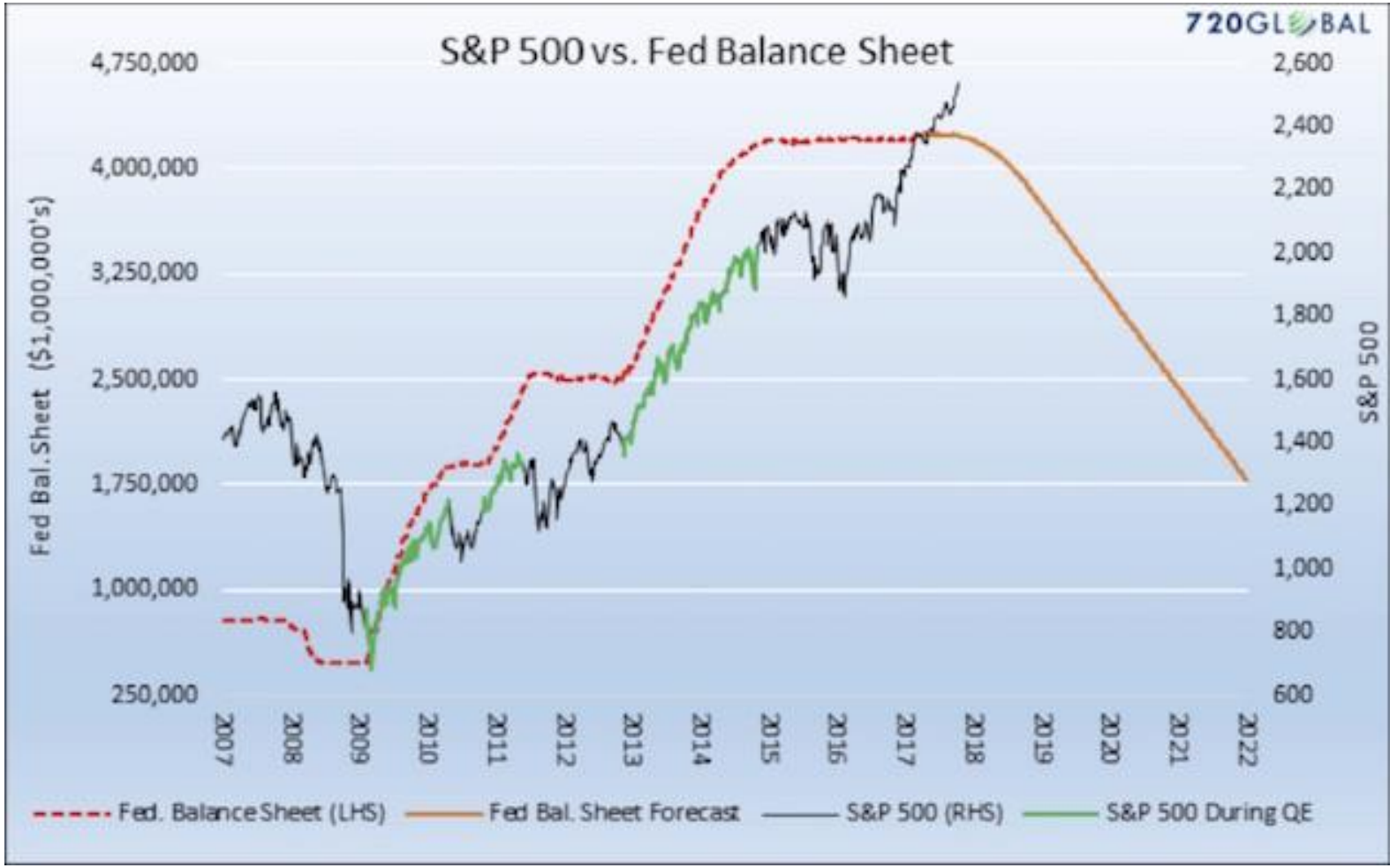
QUANTITATIVE TIGHTENING



Source: Michael Lebowitz of 720 Global.

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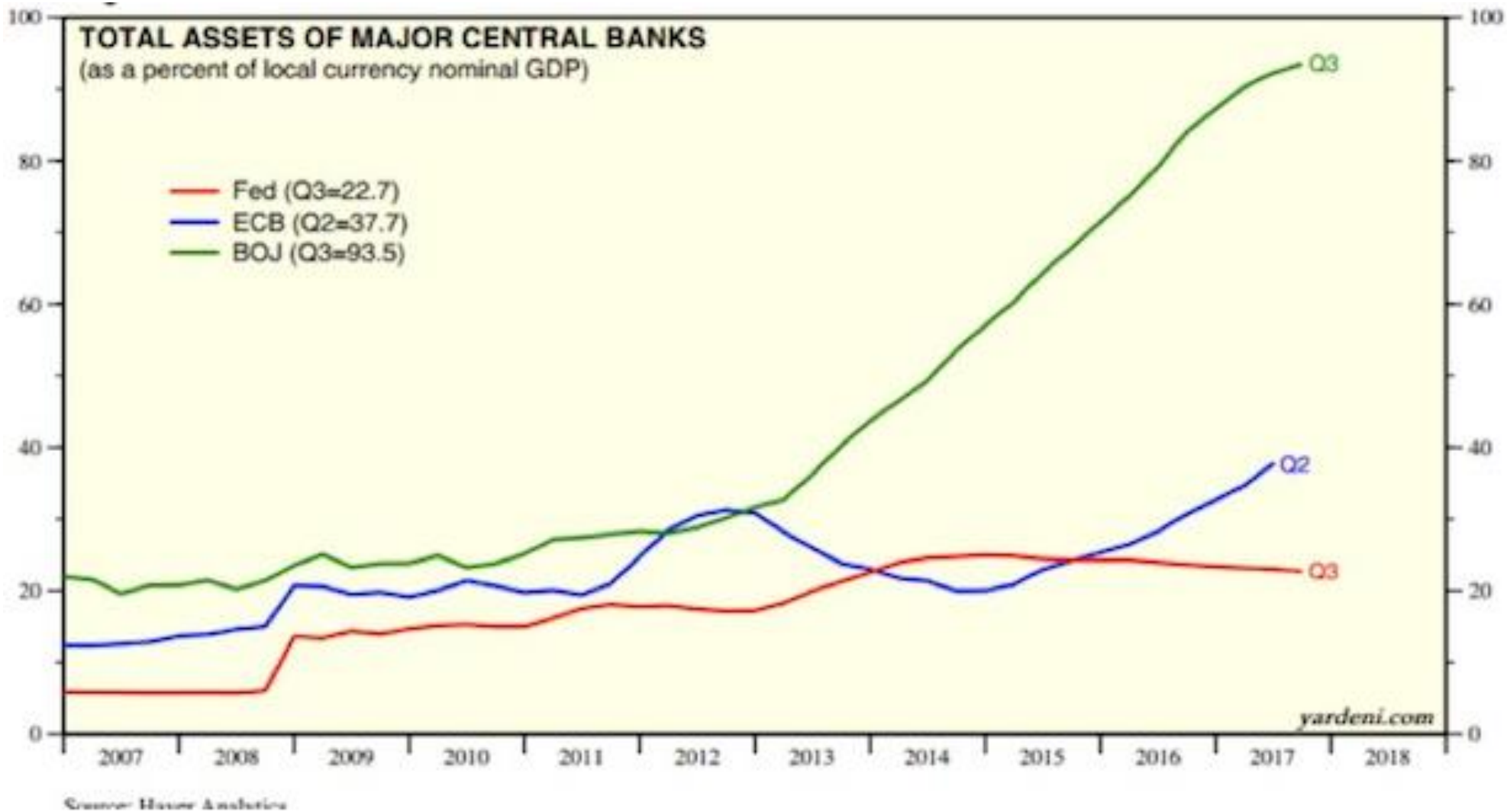
CENTRAL BANK DEBT ACCUMULATION – EUR, JPY



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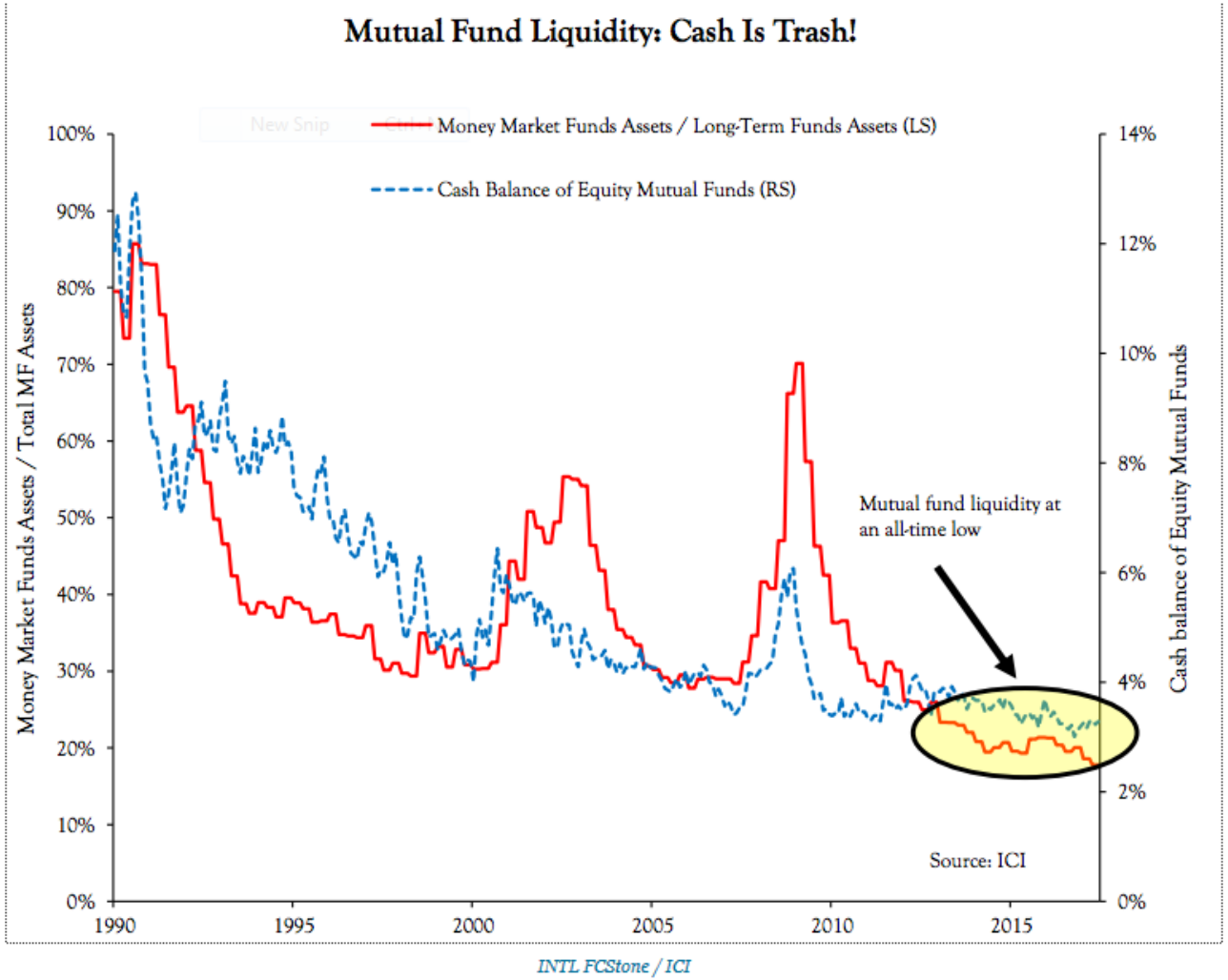
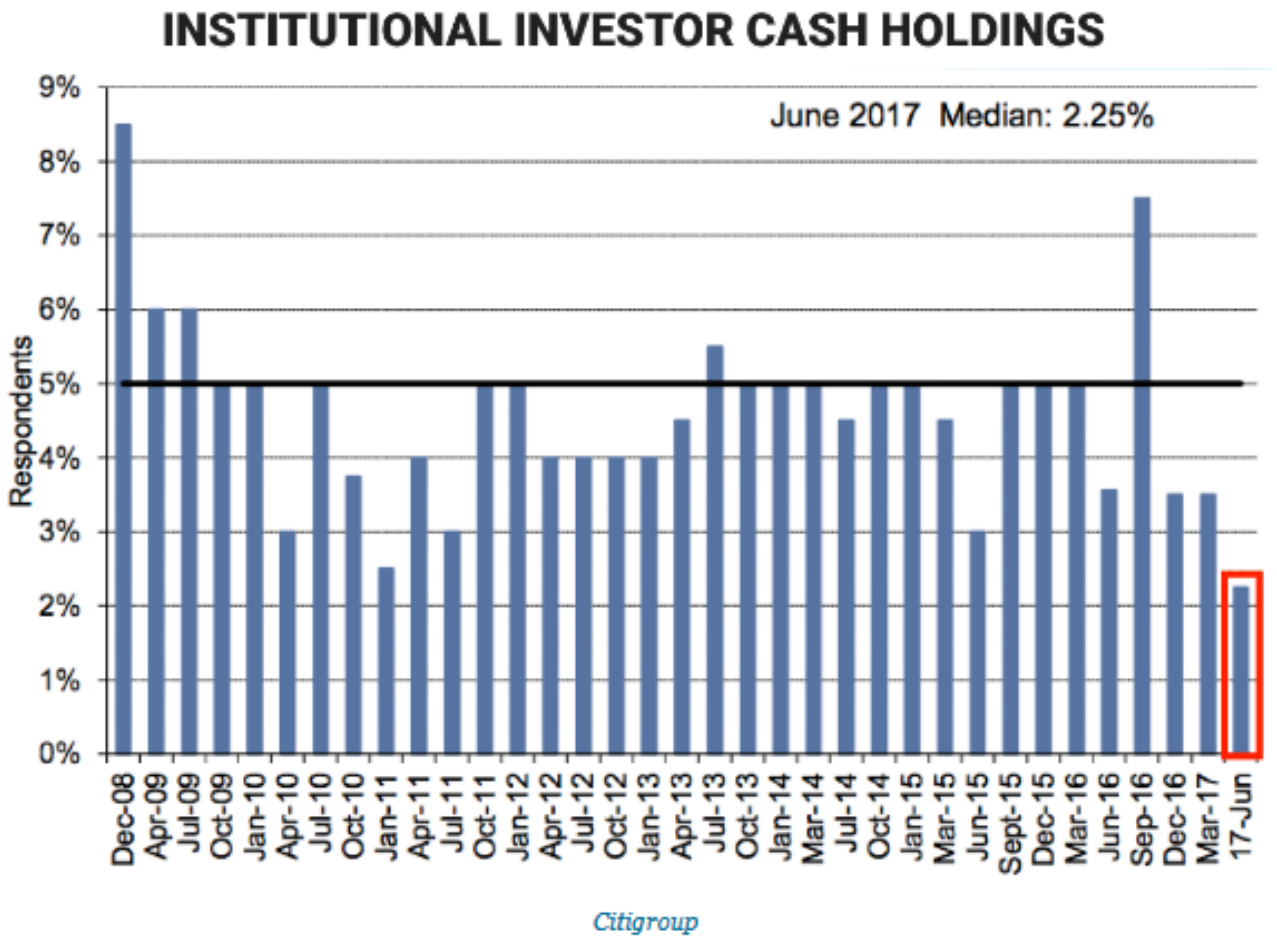
CASH HOLDINGS ARE SHRINKING



Both money market and mutual fund cash levels are at an all-time low.

EVEN LARGE INVESTORS



Citigroup

Institutional investors were holding the least cash since at least December 2008 back in June, which was and has continued to be a sign that confidence is overheating.

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REGULATORY MANAGEMENT OF BANKS

Since 2009, the BIS has issued a number of different policy announcements and decrees

BASEL Initiatives

- Principles for Sound Liquidity Risk Management and Supervision (2008)
- Central Clearing Counterparties: G20 Leaders, Pittsburgh Summit (2009)
- Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools (2013)
  - LCR – US vs EU, BOE stance
- Basel III leverage ratio framework and disclosure requirements (2014)
  - Leverage ratio – US preference as not risk weighted
- Basel III: The Net Stable Funding Ratio (2014)

Australian Tactical Responses

- RBA "open" window
- Committed Lending Facility – Each Bank must have minimum a $4bn deposit
- AUD Banks can access up to $50-$60bn if needed (Cost 15bp)
- Unencumbered Securities only can be used for Repurchase Agreements with the RBA.

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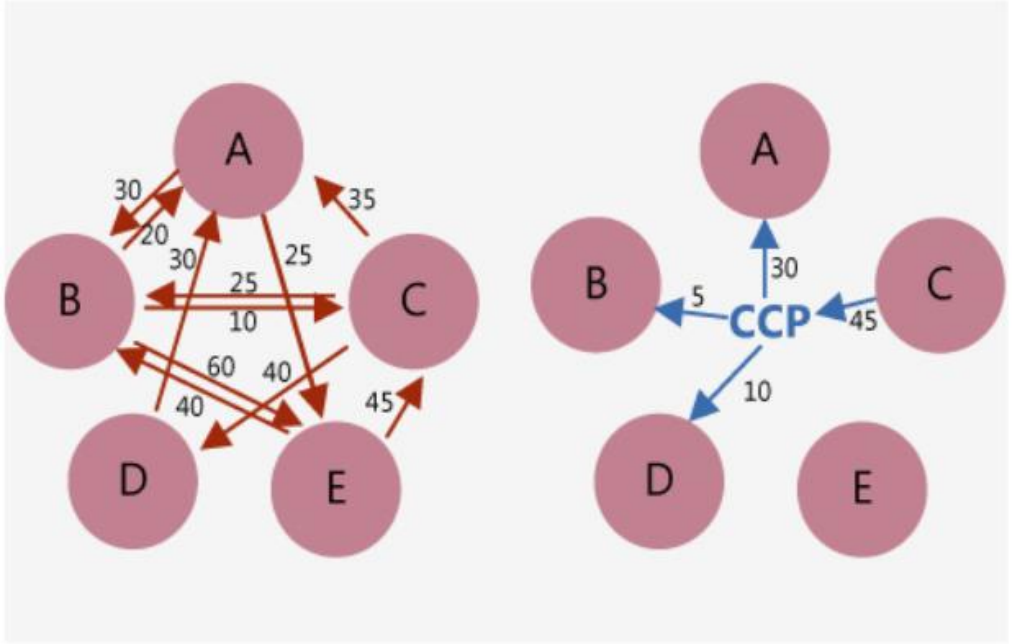
CENTRAL CLEARING HOUSES

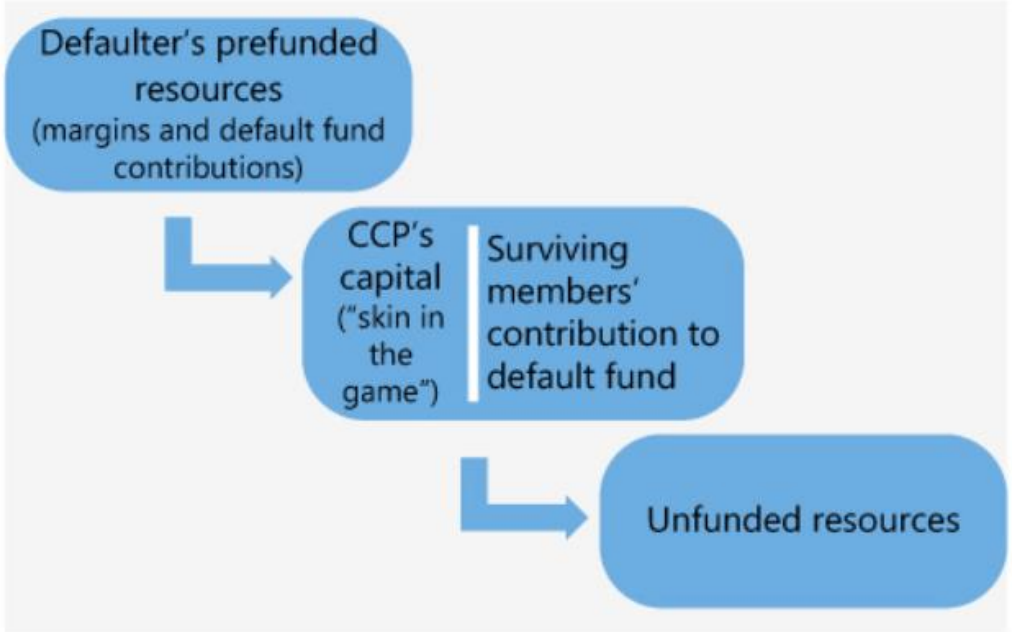
Exposures network and CCP waterfall

Graph 1

From non-centrally cleared to centrally cleared exposures

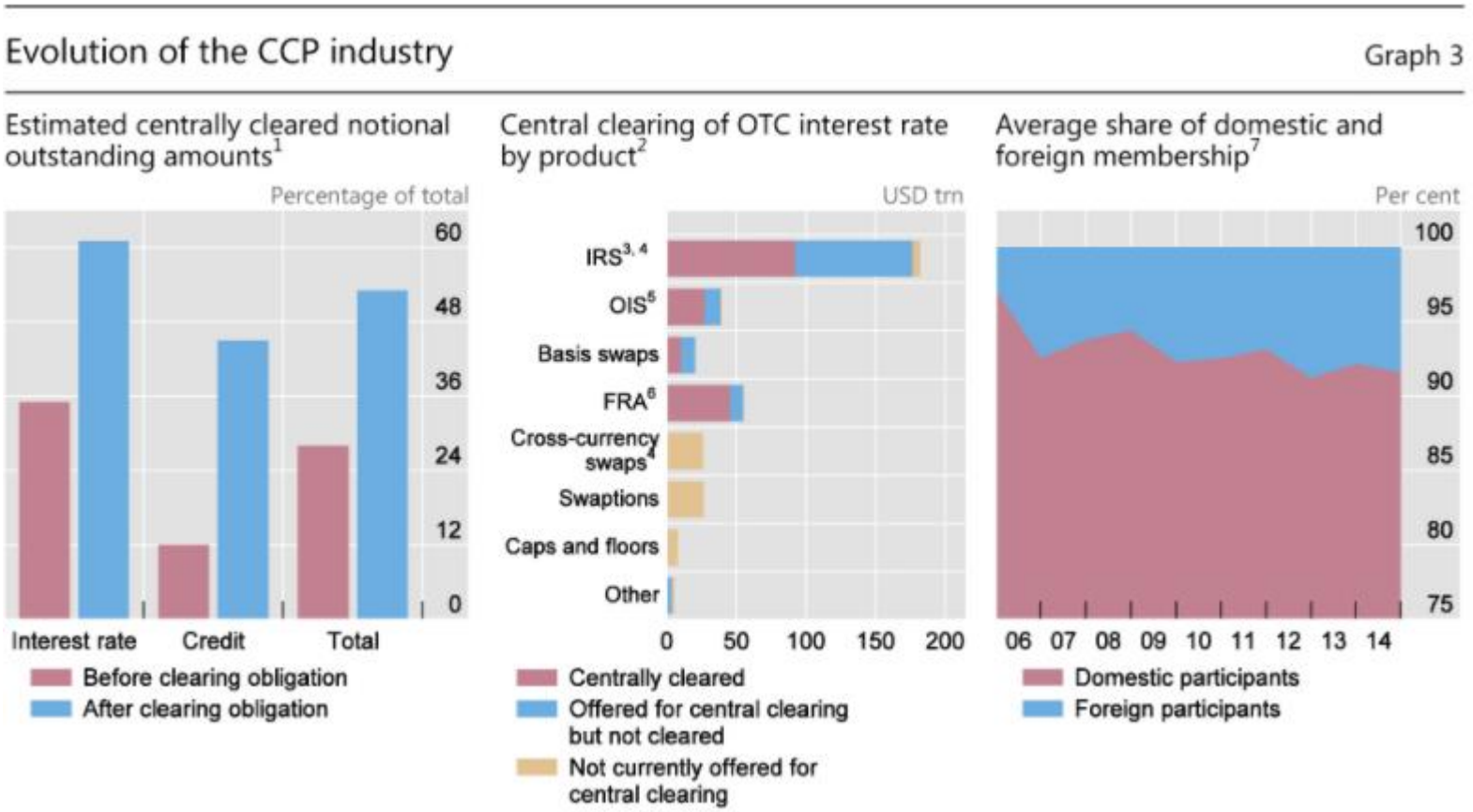


Waterfall of resources in the event of a CCP participant's inability to meet trading obligations



CENTRAL CLEARING HOUSES

To reduce the systemic risks resulting from bilateral trading, the G20 Leaders agreed at the 2009 Pittsburgh Summit that all standardised derivatives contracts should be traded on exchanges or electronic trading platforms and cleared through central counterparties (CCPs).



Source: Bank for International Settlements

LIQUIDITY COVERAGE RATIO (LCR)

$$LCR = \frac{\text{High Quality Liquid Assets}}{\text{Total Net Cash Outflows over 30 days}} > 100\%$$

HQLA
(High Quality Liquid Assets)

LEVEL 1	LEVEL 2 (≤ 40% of Total HQLA)	
	LEVEL 2A	LEVEL 2B ≤ 15% of Total HQLA
No Haircut required. Liquid assets including Cash, Sovereign Bonds and Central Bank reserves	15% Haircut required Includes certain Sovereign bonds, Covered or Corporate bonds.	Subject to 25% - 50% Haircut. Includes low rated Corporate bonds, RMBS and some equities

Net Cash Outflows = Cash Outflows – Cash inflows in a stressed scenario for 30 days

The LCR metric aims to ensure that "a financial institution maintains an adequate level of unencumbered high quality assets which are sufficient to cover outflows in a defined survival period, 30 days, under acute short term stress scenarios"

This is purely a REGULATORY view of safety.

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NET STABLE FUNDING RATIO (NSFR)

$$\text{NSFR} = \frac{\text{Available amount of Stable Funding}}{\text{Required amount of Stable Funding}} > 100\%$$

NSFR
(High Quality Liquid Assets)

Available amount of Stable Funding	Required amount of Stable Funding
Includes Customer Deposits, long term wholesale funding and Equity DOES NOT include hot money eg short term wholesale funding	Includes NET assets required to be funded.

The NSFR metric aims to ensure that "long term assets are funded by long term stable funding"

The objective is to:

1. Promote resilience of bank's liquidity profile
2. Encourage a sustainable maturity structure
3. Incent banks to fund with stable sources of funding.

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LEVERAGE RATIO (LR)

$$LR = \frac{\text{Capital Measure}}{\text{Exposure Measure}} > 4\%$$

LR
(a non-risk weighted Ratio)

Capital Measure	Exposure Method
Tier 1 Capital comprising Common Equity Tier 1 and/or Additional Tier 1 instruments	Accounting based value of: • On- Balance sheet positions, • Securities financing • Off-balance sheet items.

No netting is allowed

The *Leverage Ratio* is a non-risk-based measure of a bank's Tier 1 capital relative to its total exposures, and is intended to be a backstop to the risk-based capital requirements.

"US view - The concern, in some instances, is that the risk-weighted approach may lead to insufficient levels of capital."

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COMBINED IMPACT OF LCR, NSFR AND LR

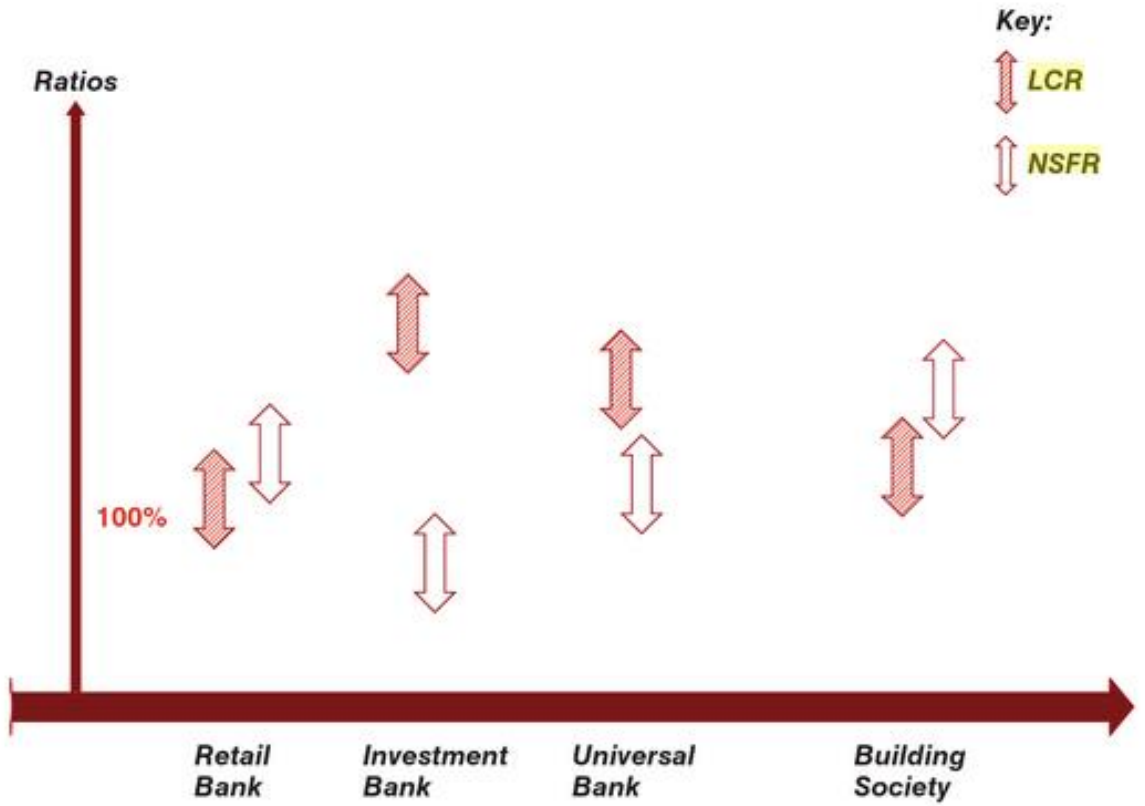

FIGURE 12.1 Illustrative Relative Ranges for LCR and NSFR Levels for Different Business Models
Source: PwC analysis

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THANK YOU

Source: NY Times Magazine

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