

Citi's Online Academy
Effective Liquidity Management in unpredictable times

25 September, 2008



Table of Contents

1. Introduction – Naveed Sultan	1
2. CitiFX® Strategy Market Commentary – Mike Roseborough	1
3. Thoughts on Liquidity & Risk Management – Elyse Weiner	10
4. Managing Liquidity – David Li	16

1. Introduction – Naveed Sultan

2. CitiFX[®] Strategy – Mike Rosborough

Effective Liquidity Management in Unpredictable Times

“The Challenge in Foreign Exchange Markets”

Thursday 25th September 2008

Mike Rosborough, Director, Senior Global Currency Strategist

Market Commentary



The cost of managing FX risk has jumped dramatically...

EURUSD and USDJPY implied volatilities from options prices

Implied Volatility



• USD-JPY 1M Imp.\vol.
• USD-JPY 6M Imp.\vol.

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...even where the USD is not part of the FX pair and is...

EURGBP and CHFJPY implied volatilities from options prices

Implied Volatility



• EUR-GBP 1M Imp.\vol.



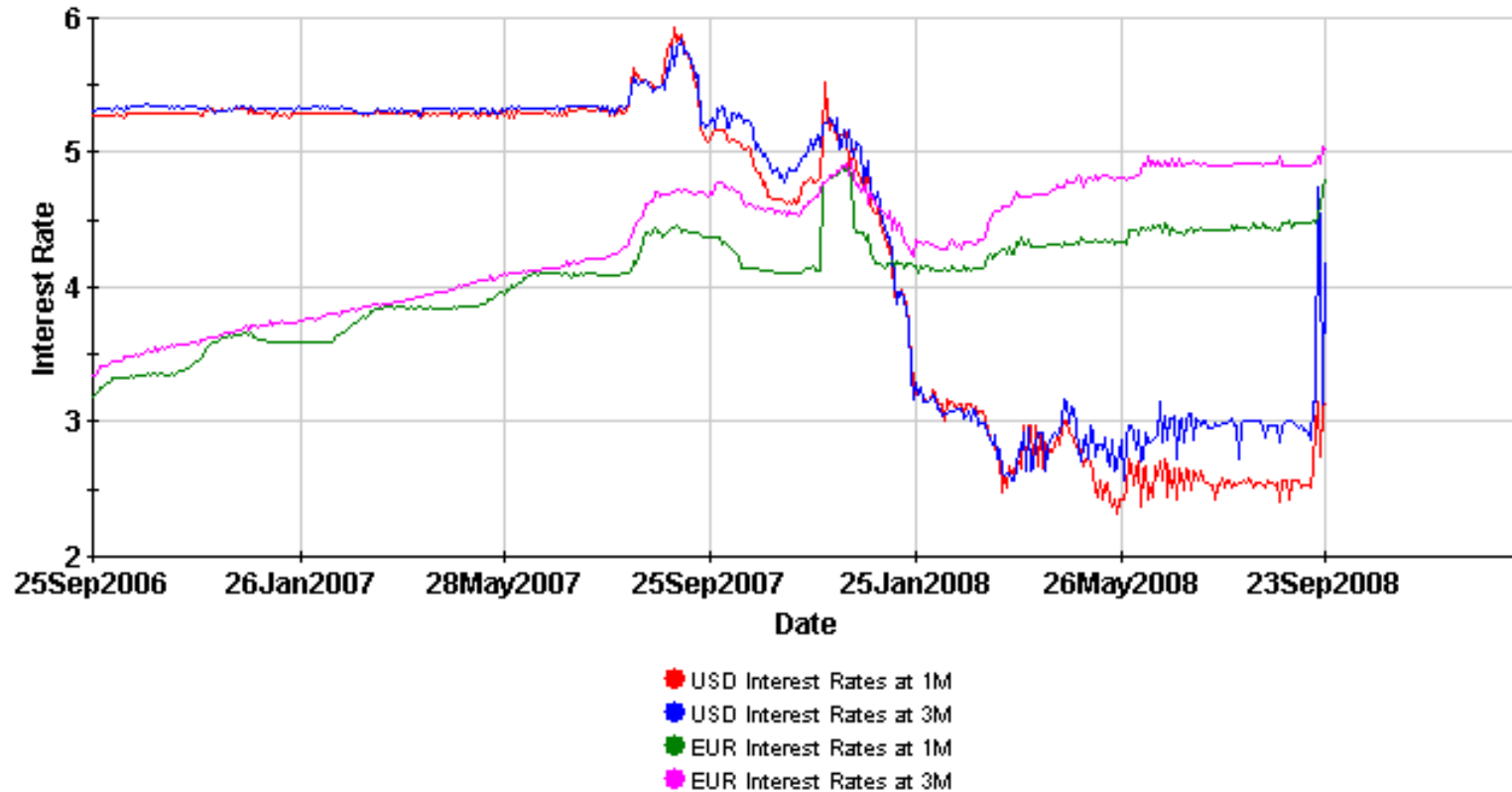
• CHF-JPY 1M Imp.\vol.

• CHF-JPY 6M Imp.\vol.

...compounded by illiquidity in USD forward markets...

Implied interest rates from foreign exchange forwards

Interest Rate

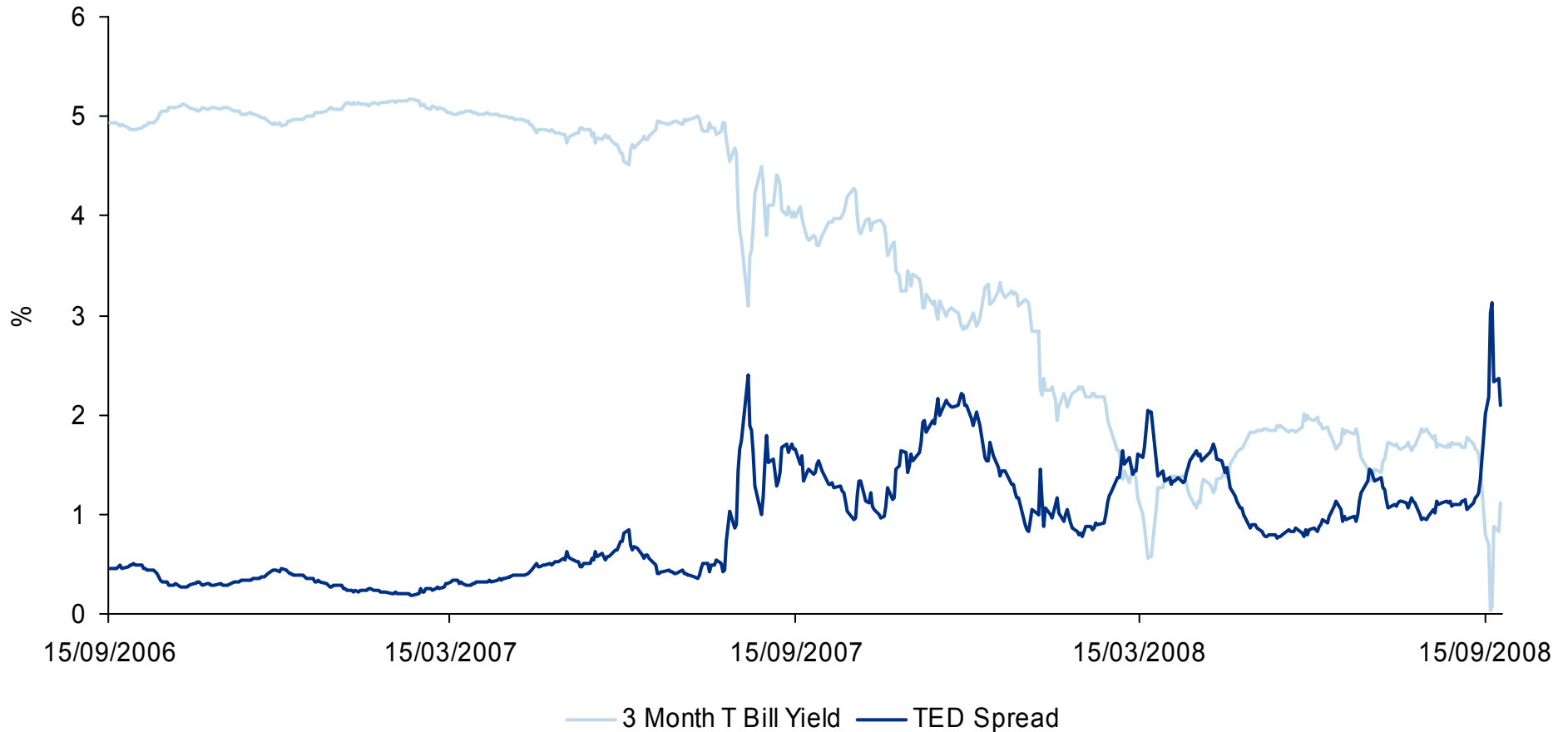


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...because of the fear of counterparty risk. What is a...

The risk free rate versus the cost of inter-bank borrowing has recently hit new highs

3 Month US T Bill Yields and the TED Spread



...Treasury manager to do? ... and what do we think?...

Strategies to survive if not thrive

- Hope and pray that a “TARP” is pulled over it? (You’re in good company there)
- Hedge only what you need to hedge!
- Sell volatility (and liquidity!) for profit? (If you’re brave but beware the tail risk)
- Hoard dollars?
- Evaluate your counterparties carefully and check prices!

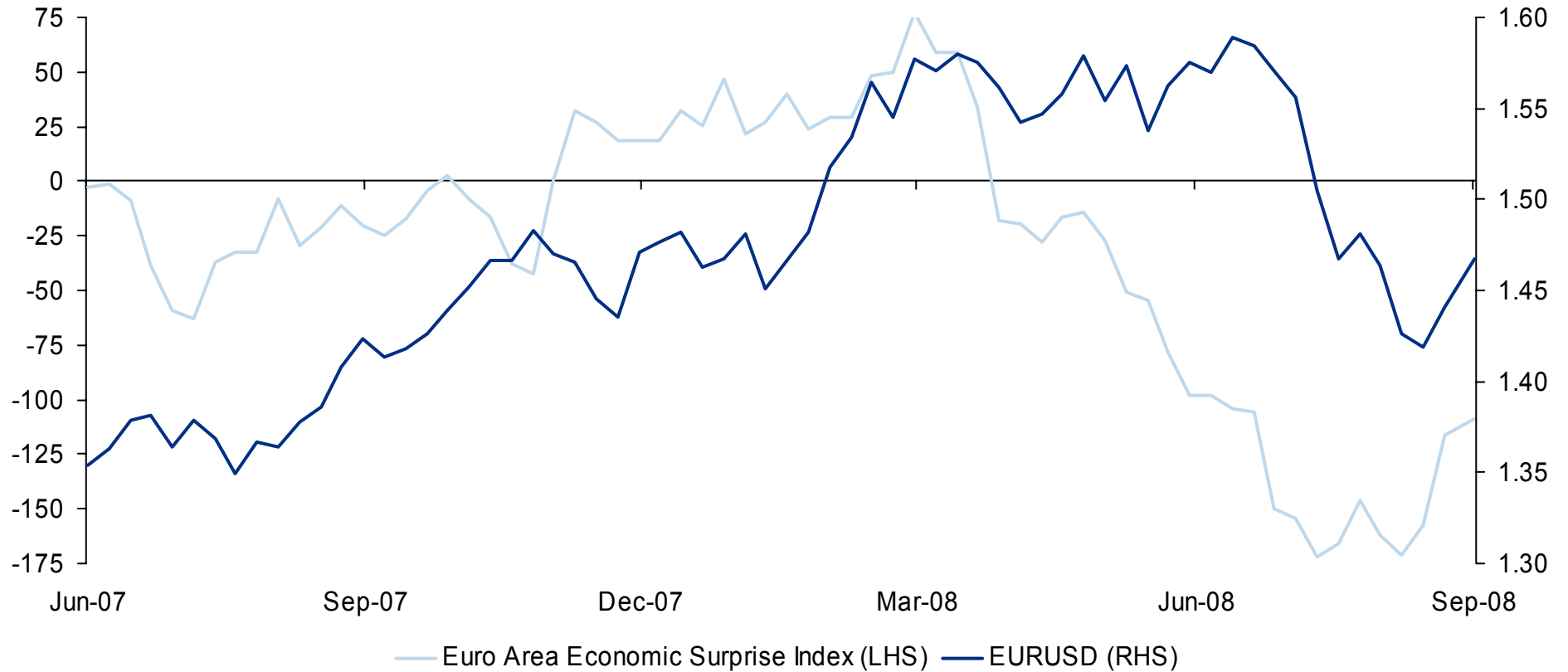
Think carefully about your breakevens and how long you will need to hedge

- Remember that the cost of an option increases with the square root of time
 - While it may seem prudent to roll one’s hedges short in the hope that the world will normalize from these elevated levels of volatility remember that the cost of an option increases with the square root of time rather than linearly. If a 1 month EURUSD option at the money forward at 12% volatility costs 2% of notional, a 3% increase in volatility raises the cost of the option to 2.5%. A 6 month option at 12% costs 4.86% of notional and 6.07% if the implied volatility rises to 15%. Inverted rather than upward sloping volatility curves makes a short tenor hedging strategy very expensive compared to a longer tenor hedge. Volatilities have to fall a lot to make the breakeven work if you hedge shorter than you need to in anticipation of falling volatilities and USD implied interest rates

...the decoupling trade worked well...for a while...

EURUSD

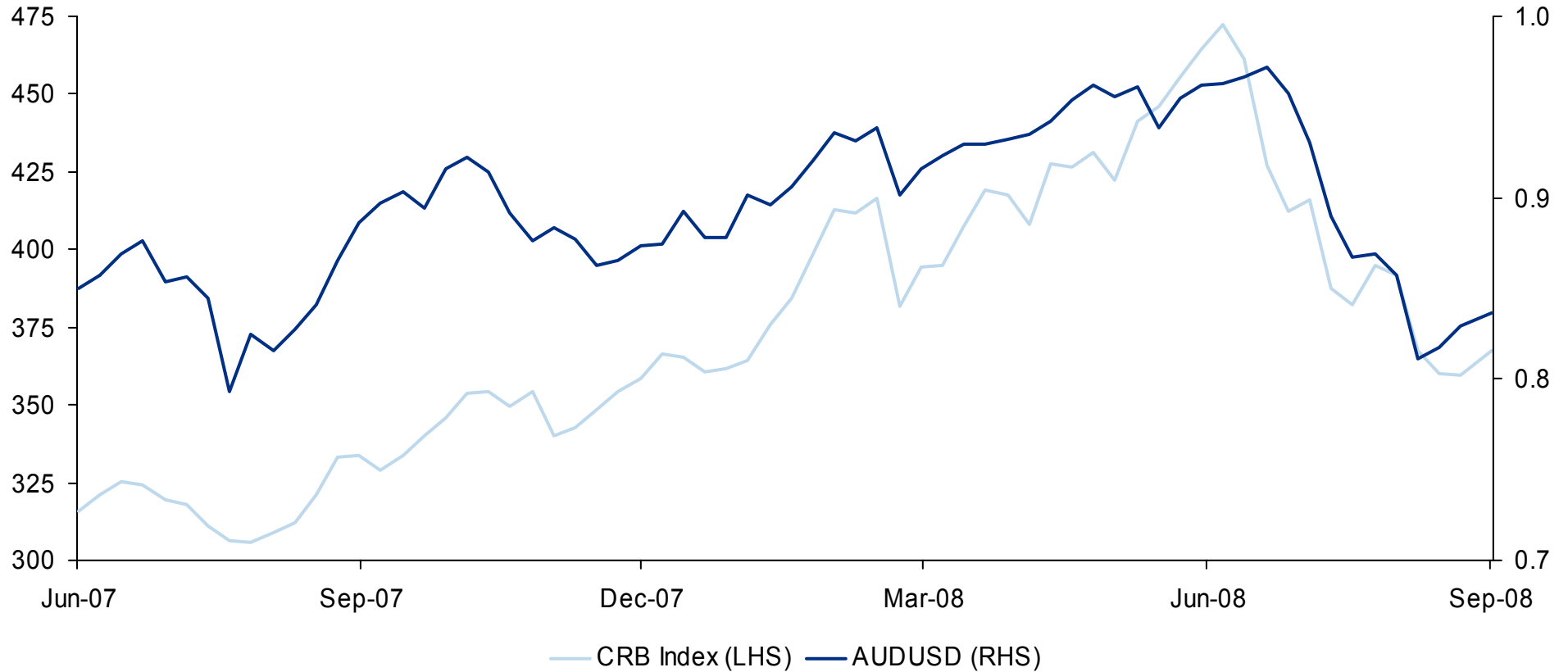
EURUSD versus the Euro Area Economic Surprise Index



...as did the commodity trade...but the only consistent...

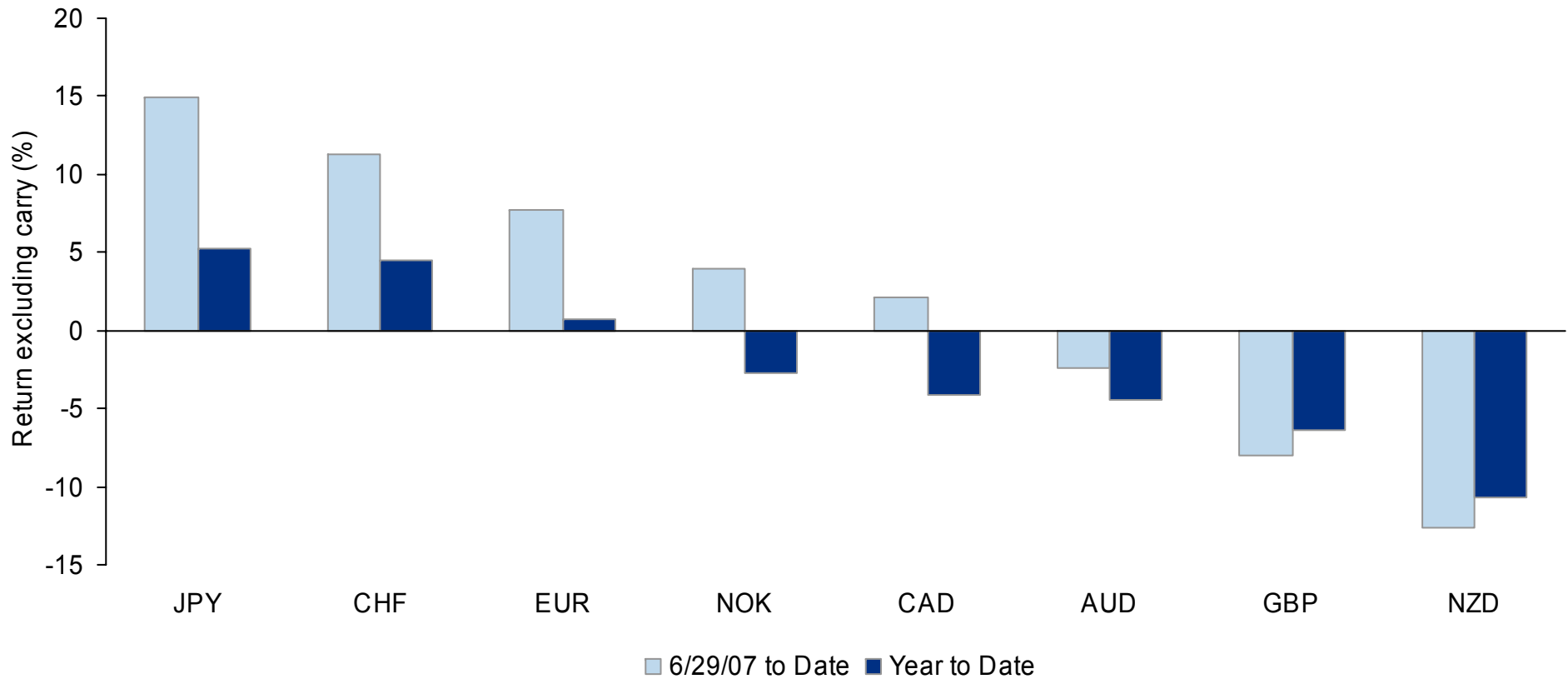
AUDUSD

AUDUSD versus the CRB



...winning trade has been risk aversion/de-leveraging

Currency performance versus the USD



Where to from here?

Why the TARP plan matters

- Becomes the line in the sand when other measures have failed
- Reduces the chance of further de-leveraging, leads to CHF and JPY underperforming and heads off a disorderly liquidation USD funded trades

If TARP succeeds

- In the 1989-92 US credit crunch and RTC workout period the USD sold off in line with financial stocks then staged a partial recovery. It then traded in a sideways range for an extended period. This is likely the model with a bias to some USD weakness from current levels as the market focuses its attention away from the financial crisis back towards the economic outturn and the relative returns from carry in a low interest rate world
- Should encourage a return to risk taking with carry trades (AUDJPY, EURJPY) outperforming

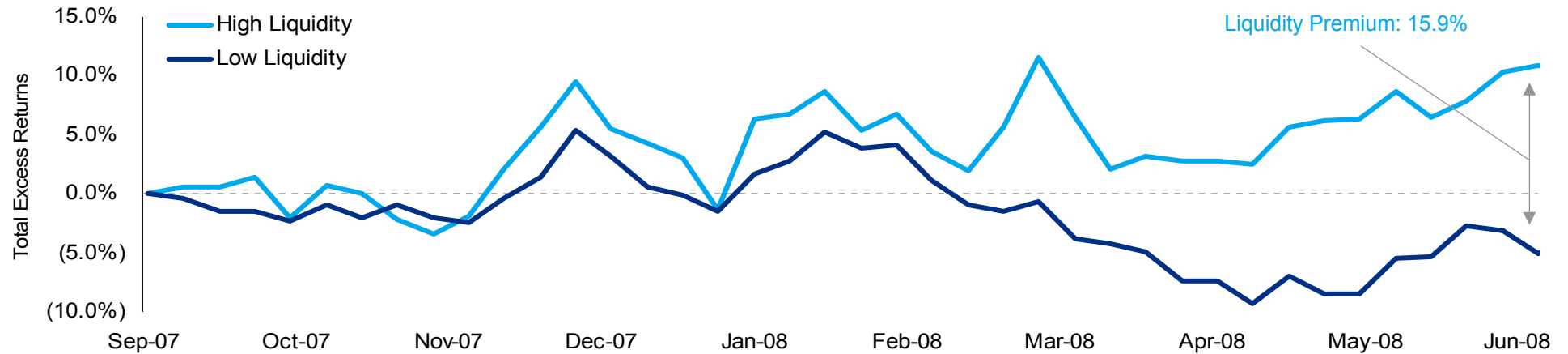
If TARP fails

- Volatility and liquidity issues will become acute, further de-leveraging will occur, JPY, CHF and other countries with current account surpluses could surge higher
- Look out below!

3. Thoughts on Liquidity & Risk Management – Elyse Weiner

In Tough Markets, Investors Focus on Liquidity...

Equity valuations suggest that the market is rewarding firms with ample liquidity...



Note: Analysis based on S&P/Citigroup PMI Global Index excluding Financials. All total excess returns are risk, market, and industry adjusted measures.

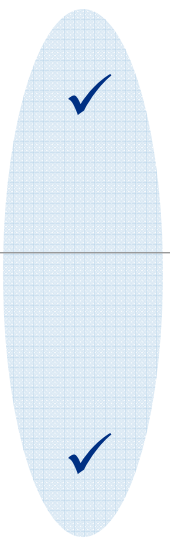
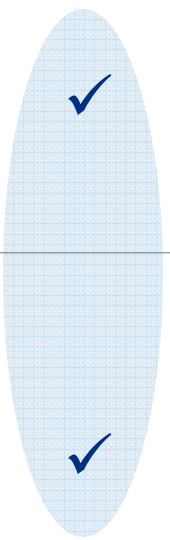
...and debt investors focus more on liquidity & cash flow than ratings

Liquidity – Major Issues to be Addressed

- How should you think about & address liquidity risk in the current environment?
- Assessing your current banking & liquidity approach – generating internal liquidity
- Managing counter-party risk & investing working capital cash – through the current situation & beyond

Liquidity Risk

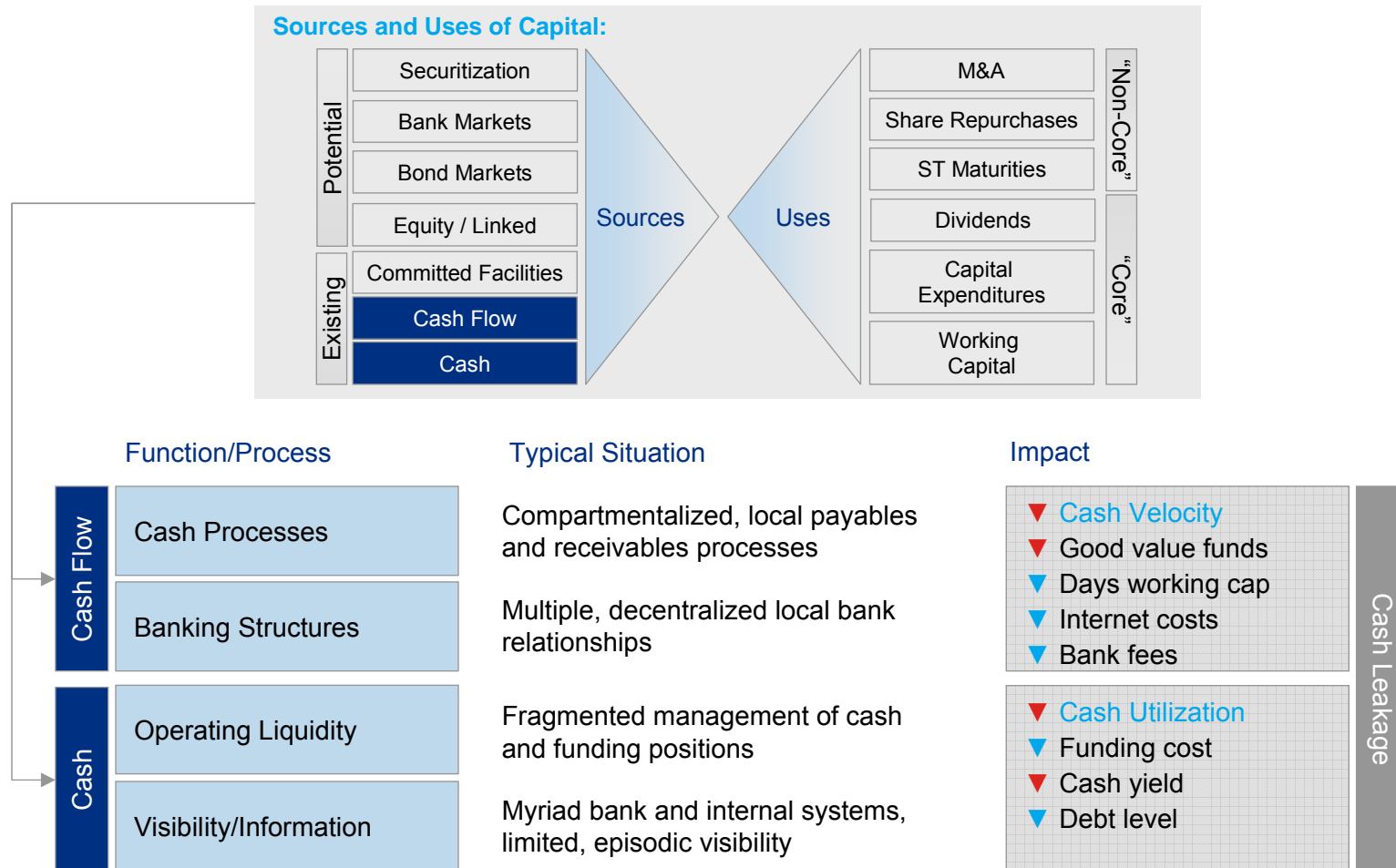
“Liquidity risk should be considered the ultimate operational risk...”⁽¹⁾

Category	Impact			Exposure Type	Measurement
	Liquidity	Balance Sheet	P&L		
Credit Access to, and non-impairment of, corporate assets	 ✓	✓	✓	<ul style="list-style-type: none"> • Cash & Cash Equivalents • Securities • Derivatives 	<ul style="list-style-type: none"> • Book value (cash), mark-to-market (securities, derivatives) • Measurement prevalent; accounting requirements • Frequency of measurement at least monthly, sometimes daily
Operational Ability to continue business operations	 ✓	✓	✓	<ul style="list-style-type: none"> • Operating services • Access to credit lines • Access to cash flow from operations • Contingent liabilities 	<ul style="list-style-type: none"> • More difficult to value, depends upon nature of business • Frequency depends upon ability to assign value • Loss of business, reputational risk and cost of repair • Often evaluated when business is put out to bid

(1) Source: The Five Changing Faces of Risk Management, Philippe Carrel, gtnews, 09 Sep 2008.

Banking & Liquidity Approach – Utilizing Internally Generated Liquidity

Why “buy” when you can “make” it yourself? By addressing cash leakage, companies can improve cash efficiency and free up liquidity.



Addressing Liquidity Risk

Counterparties and Instruments

- Credit ratings, CDS spreads
- Tier 1 capital ratio
- Regulatory position (e.g. commercial bank, direct clearing membership)
- Deposit base, diversification
- Business size, diversification
- Investment in technology
- Contingency procedures & redundant systems

Structures and Processes

- Operating cash management processes
- Cash visibility/timeliness
- Liquidity/cash concentration structures
- Cash positioning processes
- Investment policies and practices
- Controls and governance
- Contingency planning



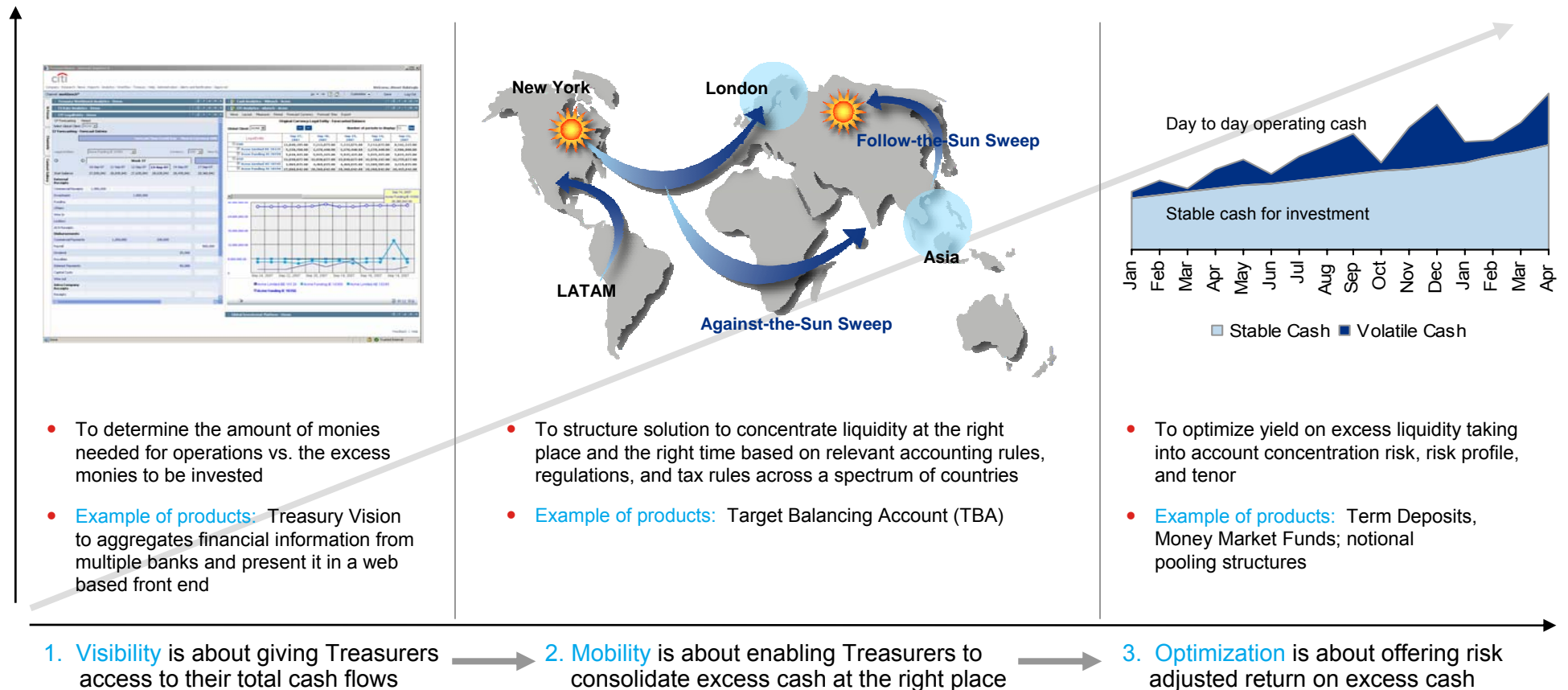
Mitigation Strategies

- Revisit Cash Management processes and banking structures to accelerate cash conversion cycles
- Assess Liquidity Management structures and practices to maximize visibility and access to cash
- Prepare liquidity contingency plan and liquidity buffers
- Rethink investment policies from a weighted, counterbalancing risk-adjusted perspective
- Demand transparency – internal and external

...In Conclusion

Moving the right amount of money, at the right time and the right place: Structure solutions with products and advices to utilize cash more effectively and optimize return.

Liquidity Management Methodology: Visualization, Mobilization, Optimization



4. Managing Liquidity – David Li

Capital, Ratings & Liquidity

Citi remains one of the strongest counter-parties in banking with diversification & clear disclosure.

Capital

- Citi raised \$48.5 Billion of Capital between November 2007 and May 2008
- Tier 1 capital ratio of 8.7%; recent sale of German business is expected to increase Tier 1 capital by about 60 bps

Ratings

- Citi remains one of the highest-rated financial institutions in the world.
 - Citigroup Inc. and Citibank, NA are rated AA-/AA by S&P, Aa3/Aa1 by Moody's, AA- by Fitch, AA by DBRS and AA by Rating and Investment Information (Japan).

Liquidity

- Citi's liquidity position remains extremely strong with access to diversified liquidity sources across a global platform.
 - The franchise benefits from a robust and diversified deposit base across multiple products and geographies as well as exceptional access to capital markets, short term money markets and secured financing markets.
 - As a nationally chartered bank, Citibank has access to the deep inter-bank markets including the Fed Funds market and Euro-Dollar markets, as well as time deposits from financial institutions and corporations.

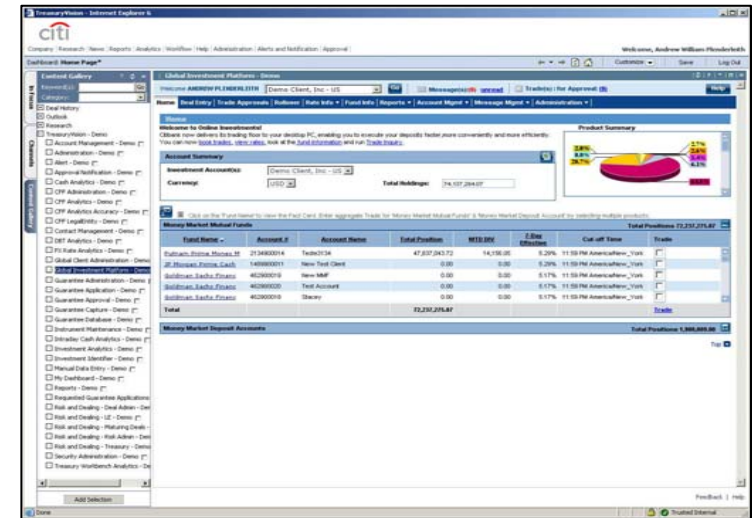
Investments – Safety, Liquidity and Yield

Investment Market Trends

- Relative priorities for short term investments: SAFETY & then LIQUIDITY trump YIELD
- Impact of market volatility has spread to additional working capital investment asset classes, most recently cash / money market funds
- Differentiation across counter-parties & investment instruments has also become more significant
- Significant deposit inflow into money centre banks & other safe haven assets

Citi's Investment Solutions

- Citi offers investment choices in 17 currencies across 21 countries through a single online channel (OLI)
- Range includes Citi bank deposits, High Interest Yield Accounts (HIYA) & 111 MMFs from 15 fund managers
- Regional liquidity desks and in-country teams can support more specialised transactions
- Investment objectives complemented by process automation
 - OLI: online research, reporting, quoting, execution, settlement
 - Automated investment sweeps & HIYA



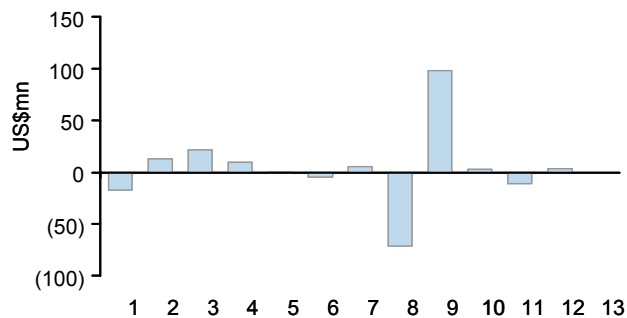
Quantifying The Impact of Liquidity Management

- Effective liquidity management delivers significant benefits in interest offset and liquidity
- There are **substantial scale economies**: Pooling benefit is maximised when globalised on cross-currency/regional basis

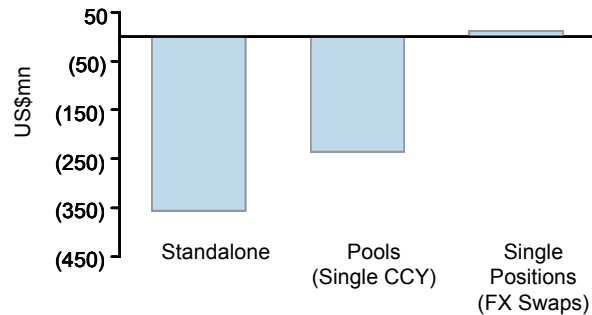
Interest Offset: Efficiencies Through Self-Funding

- Pooling structures offer interest saving by eliminating bank bid-offer through self-funding
- Self funding maximised when pooling is globalised

Case Study Balances



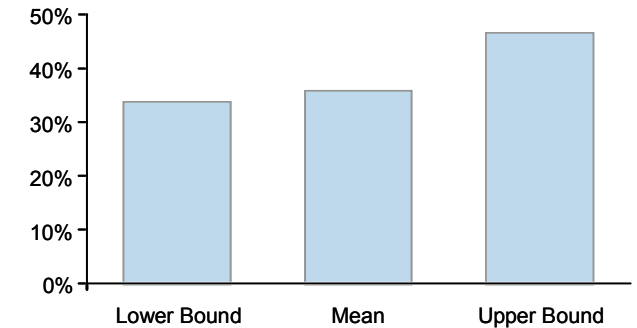
Interest Impact for Case Study



Case Studies

- Depending on the degree of offsetting balances, interest savings can reach 30%

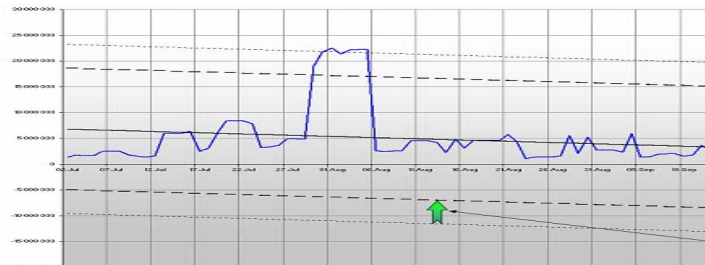
Range of Typical Interest Impacts



Liquidity: Stabilisation of Cash Volatility

- Volatile cash positions reduce liquidity
- Pooling stabilises volatile cash via portfolio diversification
- Stabilisation maximised when pooling is globalised

Balance

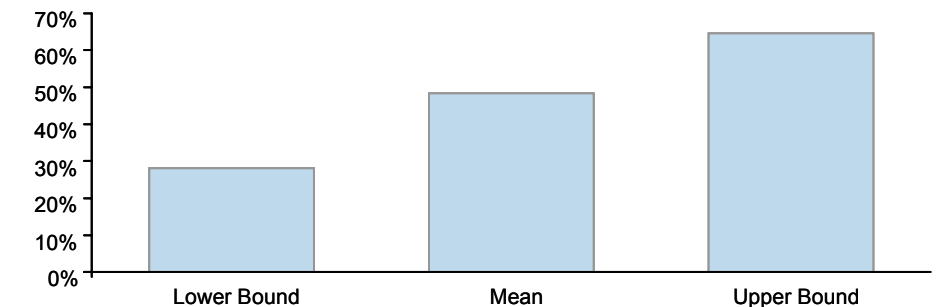


Source: Citi analysis.

Case Studies

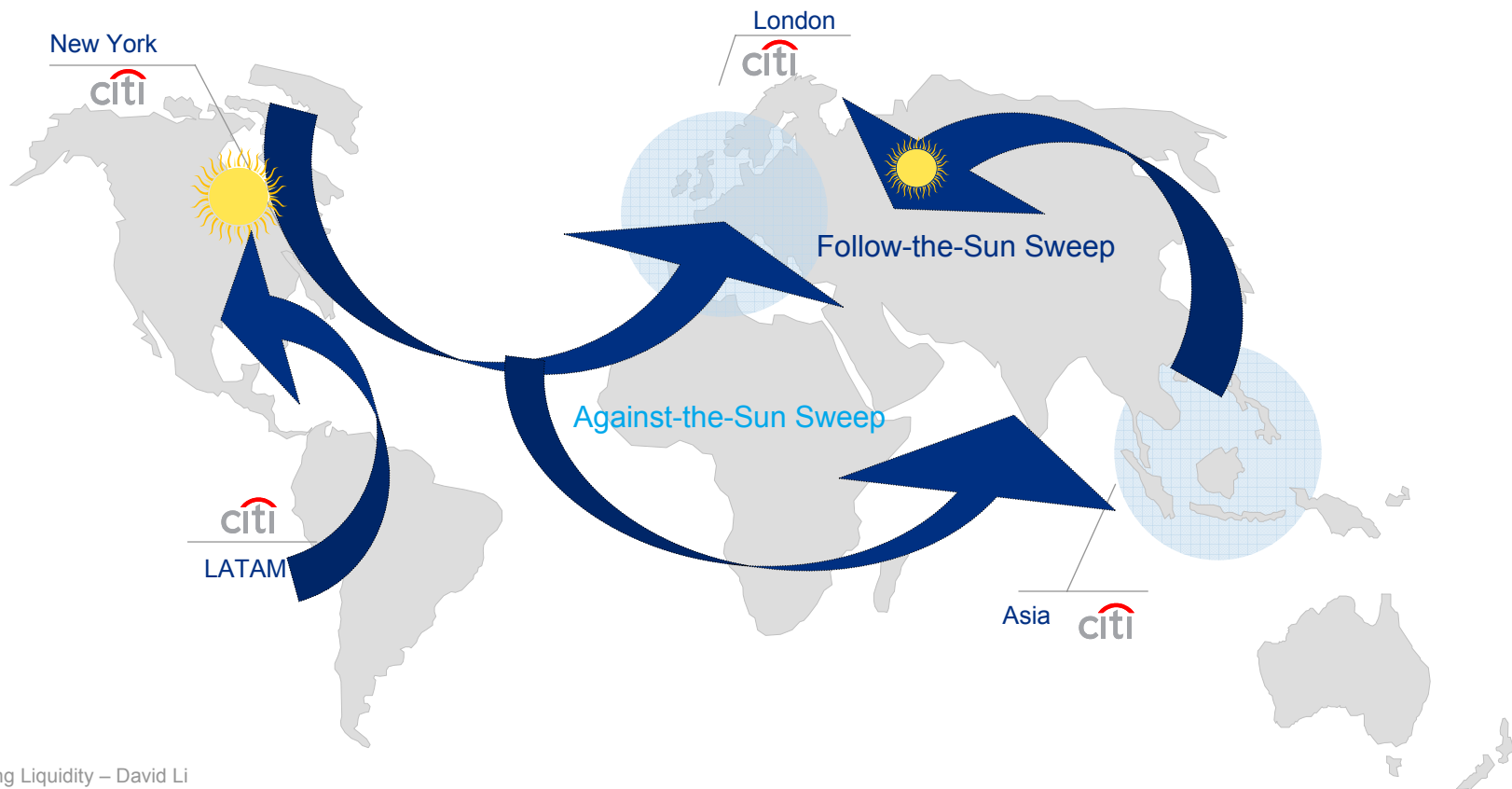
- Depending on the degree of offsetting volatility, stabilisation of volatile cash can reach 30%

Typical Range of Volatile Cash Reduction



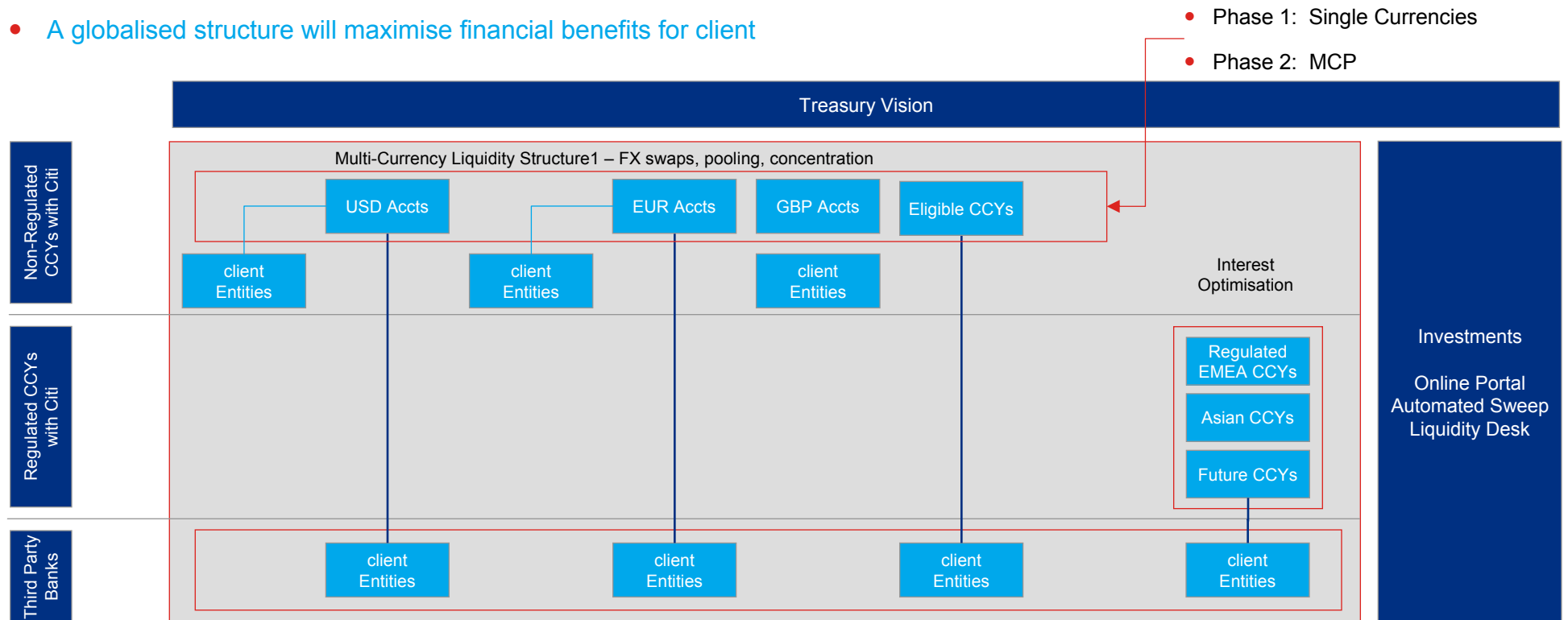
Citi's Global Liquidity Solutions – Mobility of Cash

- Mobility of Cash is the fundamental foundation for effective liquidity management, **our flagship solution is Follow / Against the Sun**
- **Follow / Against the Sun:** Available in 26 markets, offers businesses full access to liquidity throughout the day, while allowing group treasury visibility and control over group position **for same day value**
- **Domestic / Multi Bank:** Offered via Citi automated platforms in all Citi markets where permitted
- **Trapped Liquidity:** Citi offers automated domestic solutions & cross-border interest optimisation where permitted
- **Structuring Experience:** Citi globally has over 6,000 live liquidity structures (Domestic and Cross-Border Border)



Summarised Global Treasury Solution – Example

- Citi's End-to-End Treasury approach leverages our [globalised platforms and network](#) to achieve client's goals
 - Mobilising cash balances across Citi and multi-bank locations with Follow / Against the Sun at 26 Citi branches
 - Global liquidity structure across all client locations: Integrates MCP and trapped liquidity via interest optimisation
 - TreasuryVision: Data aggregation, visibility and analytics across multi-bank and asset classes
 - Short term investments: Single online channel for 17 currencies across 21 markets, with regional and local desks covering all 100+ markets
 - Supported by track record and global implementation and service model
- A globalised structure will maximise financial benefits for client



Q&A

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In January 2007, Citi released a Climate Change Position Statement, the first US financial institution to do so. As a sustainability leader in the financial sector, Citi has taken concrete steps to address this important issue of climate change by: (a) targeting \$50 billion over 10 years to address global climate change: includes significant increases in investment and financing of alternative energy, clean technology, and other carbon-emission reduction activities; (b) committing to reduce GHG emissions of all Citi owned and leased properties around the world by 10% by 2011; (c) purchasing more than 52,000 MWh of green (carbon neutral) power for our operations in 2006; (d) creating Sustainable Development Investments (SDI) that makes private equity investments in renewable energy and clean technologies; (e) providing lending and investing services to clients for renewable energy development and projects; (f) producing equity research related to climate issues that helps to inform investors on risks and opportunities associated with the issue; and (g) engaging with a broad range of stakeholders on the issue of climate change to help advance understanding and solutions.

Citi works with its clients in greenhouse gas intensive industries to evaluate emerging risks from climate change and, where appropriate, to mitigate those risks.

efficiency, renewable energy & mitigation

