Deutsche Börse
Global Funding and Financing Summit

Collateral, the force that binds us...
&
Farewell 2016…. Welcome 2017

26 January 2017
Michael Manna, Head of Fixed Income Financing Trading, EMEA & Asia
Themes

Setting the Scene

Regulation: Catalyst for new Relationships and Reliance on Repo

Collateral: What matters - Cost or Quantum?

The Repo Desk: View from a Commercial Lens

European Repo Market: Depth, Breadth and Rigidity

Farewell 2016…. Welcome 2017
## Setting the Scene......

<table>
<thead>
<tr>
<th>Then</th>
<th>Now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Touch Regulation</td>
<td>Prescriptive Regulation</td>
</tr>
<tr>
<td>Simple System</td>
<td>Complex System</td>
</tr>
<tr>
<td>Based on Trust</td>
<td>Conditional Trust</td>
</tr>
<tr>
<td>No Shortage of Collateral</td>
<td>Debate about a Possible Shortage of Collateral</td>
</tr>
<tr>
<td>Abundance of Liquidity</td>
<td>Questioning Liquidity</td>
</tr>
<tr>
<td>Capital is Ample</td>
<td>Capital is Never Enough</td>
</tr>
</tbody>
</table>

“….the public perception of liquidity changed, from one based on assets (what you could sell) to one centred on Liabilities (ease of borrowing)”\(^{(1)}\)

---

**Something to think about…..**
- Could also be akin to a monetary system moving from a ‘Gold Standard’ to a ‘Fiat Standard’?

**Something to think about…..**
- If so, is the financial landscape gravitating away from one based on a ‘Fiat Currency’ and towards one based on a ‘Gold Standard’, underpinned by collateral?

---

\(^{(1)}\) A speech by Lionel Barber, Financial Times editor, at Hughes Hall, University of Cambridge, May 1, 2014.
Regulation: Catalyst for new Relationships and Reliance on Repo
Regulation: Catalyst for New Relationships

Regulations and Improved Risk Mgmt places a focus on...

Counterparty Risk

There is now an incentive to reduce risk therefore collateralise exposure

Leads to an increased demand for UNECUMBERED high quality collateral

Stimulates connections in the financial system between

Banks & Non-Banks

Relies on a Repo Market with depth and breadth

Leads to a need for more capital (balance sheet) to support demand

Whilst simultaneously availability is contracting

Financial Markets & the Sovereign

Stable Governments with Prudent fiscal policies

Prudent fiscal policy results in a smaller supply of collateral

Regulation has defined High Quality Collateral

Sovereign Collateral is the largest Type

Low Volatility & Highly Rated by agencies

Requires Cash Market Liquidity

Supported by a liquid repo market
Mandatory Swap Clearing: Catalyst for New Connections

Dodd-Frank and EMIR rules have created a requirement for banks and certain non-banks to centrally clear swaps activity. This has led to an increased need for both; initial and variable margin. This presents a real challenge for non-banks given how different this is to past practices.

Assuming the pension fund has the right type of collateral in its portfolio to meet IM requirements, what options are available for meeting VM requirements?

1. Fund no longer uses derivatives
2. Hold a cash buffer – stay underinvested
3. Sell securities to meet VM margin calls
4. Stay fully invested, don’t sell any securities and borrow the funds, A.K.A perform “collateral transformation” / convert securities into Cash

Choosing the 4th option is the catalyst for a new connection……
Mandatory Swap Clearing: Two New Connections – Two Different Reasons

The preferred method for obtaining secure funding is through the repo market, Securities converted to cash, “Collateral Transformation”, in other words physical leverage. The requirement for funding and collateralisation creates two new connections: (1) Bank and non-Banks, (2) CCP and Banks. Two different objectives both linked via the Repo market. In addition, this new demand creates a requirement to commit financial resources, i.e. balance sheet, to support this activity.

Classical Collateral Transformation in Reverse

New demand from CCPs transforms cash to collateral in order to segregate the IM. This collateral is not re-used; it becomes encumbered & thus loses “velocity”
Mandatory Swap Clearing: Participation Grows, Requirements Expand, Connections Increase – the System becomes more Complex

As central cleared swap volumes and/or volatility increase the requirement for transforming; securities into cash, cash into collateral and in some cases ineligible collateral into good collateral will also increase. Naturally, connectivity between banks, non-banks and the CCPs will also increase. All these activities will also place an increased demand on banks balance sheet. The Basel 3 leverage ratio limits how much leverage one bank can facilitate for non-banks forcing them to diversify counterparties → creating more connections.

1. Source: CPMI IOSCO Quantitative Disclosure from LCH and CME.
http://www.lch.com/rules-regulations/regulatory-responses
http://www.cmegroup.com/clearing/cpmi-iosco-reporting.html
Uncleared Derivatives Margin: Existing Connection, Demand for Collateral Increases – Velocity Decreases

In September 2013 the Basel Committee on Banking Supervision (BCBS) and the International Organisation of Securities Commissions (IOSCO) jointly published a final framework establishing consistent global standards for margin requirements for non-centrally-cleared derivatives. The rules require one way VM posting but two way IM collateral posting. An important aspect is the fact that the collateral will be segregated and cannot be re-used. This will have a lasting effect on its availability and price.

Businesses will gain a benefit though reduced capital requirements (RWA) but will be introduced to new costs and the relationship between collateral and balance sheet, which unless they can increase revenue, will have a drag on their RoE.
Monetary policy has created a large amount of excess bank reserves and at the same time non-bank cash reserves have grown. Regulation clearly defines what constitutes regulatory compliant liquidity. Some institutions are comfortable to commit to term deposits but most are looking for a short term option (<1 month) to place their cash. Unfortunately as bank balance sheets shrink and they improve their funding composition to meet new standards, short term deposits become not only unattractive but also costly with regards to returns on leverage balance sheet. This forces cash rich non-banks to seek alternative options.

A US specific flow, Money Market Funds have access to the FED via the RRP Creating a connection between the Central Bank & Non-banks linked by repo. Banks have a natural advantage over non-banks given they have access to central bank deposit facilities, providing a home for excess bank reserves but leaving non-banks scrambling for options.

Recent BoE policy decision seeks to address this issue.
New Connections: *I Have Cash, need Collateral*. …
New Connections: Banks, Central Banks, CCPs & Sovereign Bonds

Regulation and unconventional monetary policy has increased connectivity further between banks, central banks and CCPs. In addition, these two forces have linked both entities to sovereign bonds and their presumed cash market liquidity which requires a repo market. What is also interesting is the expectation that banks use the repo market for the provision of liquidity before turning to the last resort option. Finally, the CCP requires the use of both to manage a member default event.

A proportion of Bank Buffers contain high quality liquid securities which in a period of stress can either be sold or used as collateral for repo operations.

Borrow operations from the central bank effectively drains collateral from the system in order to support cash market activity.

Securities
Cash

A proportion of Bank Buffers contain high quality liquid securities which in a period of stress can either be sold or used as collateral for repo operations.

Specific Bond Borrow “Specials”

Govern Bond Markets

General Collateral

Central Bank

In a default a CCP will require both the repo and cash markets to manage liquidity and close out positions.

The Fire Sale Debate

The prerequisite for liquid bond market is a mature repo market;
- Cost effect funding of inventory
- Ease of short covering
- Support settlement and fails management
- Enforceable legal framework
- Sufficient capital allocation

1. Company report and Barclays Research.
New Connections: Central Banks & Sovereign Bond Repo

Central Bank Government Bond Holdings(1)

<table>
<thead>
<tr>
<th>Year</th>
<th>Germany</th>
<th>Italy</th>
<th>France</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2004 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2004 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2004 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2005 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2005 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2005 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2005 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2006 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2006 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2006 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2006 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2007 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2007 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2007 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2007 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2008 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2008 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2008 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2008 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2009 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2009 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2009 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2009 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2010 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2010 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2010 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2010 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015 Q1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015 Q2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015 Q3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015 Q4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

2. ICMA Repo Survey, June 2016, and ECB.
Connections……”the Tie that Binds”

- ...altered the financial landscape by increasing inter-connectedness and creating a system dependent on high quality collateral.
- It links the relationship between physical and synthetic leverage and promotes the use of leverage in non-banks.
- New connections have extended beyond banks and are now increasing between banks and non-banks and in a few cases non-bank to non-bank (shadow banking?)
- Increased inter-connectivity has lead to increased counterparty risk, mitigated with collateral.

- ...in addition to central banks, defined what constitutes “Good” “Safe” or “High Quality Collateral”
  - By far the largest asset class which fits this description are sovereign bonds.
  - Low volatility and assumed liquidity of the government bonds markets is the foundation.
  - Has the Sovereign - Bank nexus evolved to become the Sovereign – Financial Markets nexus?

- .....created this, it also produced dependency on capital (balance sheet) in order for banks to act as principles distributing collateral and/or facilitating leverage for non-banks.
  - The leverage ratio is the measure which is used to monitor, but also the measure used to calculate returns on capital.
  - The measure is asset class and activity blind.
  - Current calibration results in economics which may disincentive banks from increasing capital for Repo to meet future market demand.
Collateral: What Matters - Cost or Quantum?
Defining “Safe”, “Good”, “High Quality” & Availability

Regulation and Central Banks have defined what are “Safe, High Quality Assets”

Generic HQLA Definition

Cash;
Central bank reserves able to be drawn down in times of stress;
Liquid, marketable securities issued or guaranteed by sovereigns, central banks
and certain international organisations and which qualify for a 0% risk-weight
under the Basel II standardized approach for credit risk; and Certain non-0% risk
weighted assets may also be included where these match an institution’s
jurisdictional currency liquidity needs or operational requirements.

Example Central Bank Eligible Collateral Classifications

<table>
<thead>
<tr>
<th>ECB</th>
<th>Bank of England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I</td>
<td>Level A</td>
</tr>
<tr>
<td>Category II</td>
<td>Level B</td>
</tr>
<tr>
<td>Category III</td>
<td>Level C Securities</td>
</tr>
<tr>
<td>Category IV</td>
<td>Level C Loan Collateral</td>
</tr>
<tr>
<td>Category V</td>
<td>----</td>
</tr>
</tbody>
</table>

1a
Non level 1a assets, these can be included subject to a minimum 15%
supervisory haircut to their market value and are capped at 40%
(post haircut) of the total buffer.

2a
Non level 1a assets, these can be included subject to a minimum 25%
supervisory haircut to their market value and are capped at 40%
(post haircut) of the total buffer.

Encumbrance of High-quality Collateral (US$ trillion)(1)

<table>
<thead>
<tr>
<th>Owner Type</th>
<th>Holdings</th>
<th>Amount Encumbered</th>
<th>Source of Encumbrance</th>
<th>Unencumbered Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governmental institution</td>
<td>8.9</td>
<td>8.9</td>
<td>Inability to engage in securities lending</td>
<td>0.0</td>
</tr>
<tr>
<td>Commercial Bank</td>
<td>5.3</td>
<td>4.5</td>
<td>Liquid asset buffer or initial margin</td>
<td>0.8</td>
</tr>
<tr>
<td>Insurance company or pension fund</td>
<td>5.7</td>
<td>0.0</td>
<td></td>
<td>5.7</td>
</tr>
<tr>
<td>Central banks</td>
<td>4.4</td>
<td>4.2</td>
<td>Mostly lending against other government bonds</td>
<td>0.2</td>
</tr>
<tr>
<td>Non-resident</td>
<td>11.5</td>
<td>11.3</td>
<td>Foreign exchange reserves</td>
<td>0.2</td>
</tr>
<tr>
<td>Other</td>
<td>6.0</td>
<td>3.5</td>
<td>Various</td>
<td>2.6</td>
</tr>
<tr>
<td>Total</td>
<td>41.8</td>
<td>32.3</td>
<td></td>
<td>9.5</td>
</tr>
<tr>
<td>Total post derivatives reform</td>
<td></td>
<td></td>
<td></td>
<td>8.5</td>
</tr>
</tbody>
</table>

Source: BIS, SIFMA, ECB, IMF. Numbers may not add up due to rounding.

2. BoE, http://www.bankofengland.co.uk/markets/Pages/money/eligiblecollateral.aspx
Availability & Mobility of Collateral: How Does it Work?

The availability & mobility of high quality collateral is a function of:

- The amount of physical leverage being used in the financial system
- The capacity to ‘transform’ low quality collateral into Good collateral
- The availability of balance sheet needed to facilitate its movement

The repo market being the primary facilitator of all of the above.
Collateral: Cost vs. Quantum may be the Driver

Much has been written about the quantum of collateral which may be needed to support new rules regarding cleared and uncleared derivatives. The analysis seems to omit how supply and demand translates into actual cost and eventually an economic impact which may have an influence on behaviour.

Cost of collateral measured by the spread between OIS and GC has a direct influence on the cost of carry in a derivatives book.

As the spread widens, carry increases and may lead to spread widening to compensate the extra carry costs.
Cost of Collateral: Supply vs. Demand Dynamics

- Equity dividend and script season creates a higher demand to borrow equities from security lenders (beneficial owners).
- Equity borrows require a pledge collateral. The majority of security lenders stipulate sovereign collateral for the pledge. In Europe this is specifically core-country issuers, which narrows the eligible collateral pool.
- Equity borrows are also subject to a haircut/over collateralization of 5-8%.
- Assume all factors remain equal. These transient events or 'shocks' present an excellent opportunity to measure how demand impacts the cost of collateral.
- Based on the evidence, we can observe:
  - The effect is a 7-8bps widening of German collateral (DEGC) basis (GC/OIS).
  - The market quickly absorbs the additional demand and reverts to normal.
  - Calculating the sensitivity results in a 0.8bp move in basis per €10bln of additional equity borrow demand.

Source: Datalend and Barclays.
Collateral Demand: Have we Considered Everything?

Inject a large cost to any product or service, without the ability to pass on a majority of the cost and two possibilities occur:
1. Triggers a process of product or service evolution
2. Start the path of product and service extinction

Stage 1
Housekeeping
- Adjust KPIs
- Eliminate “lazy trades”
- Develop MIS
- Seek out efficiencies

Stage 2
Education
- Internally: Inform and educate Sales and partners
- Externally: inform clients, explain the reasons and manage expectations
- Give them time to adjust

Stage 3
Resource Allocation Re-pricing
- Assess client overall franchise value
- Concentrate available resources to key clients
- Adjust Pricing strategy

Stage 4
Clients Adapt
- Expand counterparty list
- Direct trades which compliment a bank’s positioning / help net exposure
- Finally, increased execution and/or funding cost may make certain strategies obsolete

Stage 5
Innovation
- High costs supports investment in innovation
- Industry trading behaviour evolves; bespoke products become more standardised
- The more standardised a product becomes the greater the impact any investment in innovation will have
- Standardised OTC products may move to central clearing

17
Collateral Demand: Only Time will Tell……

Product and Service Evolution

Results in:
- Activity levels decrease and/or innovation takes root
- Both outcomes reduce the need for capital to support exposure and improves the return profile
- Less exposure, requires less collateralisation
- The reduced need to collateralise exposure leads to reduced demand for collateral
  - Deflationary pressure on collateral demand
- So how accurate are the forecasts for collateral?

Collateral Forecasting

![Diagram](image-url)
European Repo Market: Depth, Breadth and Rigidity
European Repo Market: Depth and Breadth

**European Repo market Breadth, How has it changed?**

- **Survey data** indicates the European repo market has become smaller since 2010, but roughly the same size over the last 3 years.

- **Reduction from BBB rated institutions** seems intuitive as banks may be under pressure to reduce leverage or have higher funding costs thus makes them less competitive.

- **GSIB designated banks** reduced activity but are still a major player.

- The majority of banks that contribute to repo market activity in Europe are domestic but this number is on a declining trend.

- **New entrance provides breadth** but how much depth in a stressed situation and what about their stability?

**How to measure?**

- **Breadth?** Repo market is less concentrated with the top-3 declining with top-5 and especially top-10 taking up a bigger proportion of the market.

- **Depth?** In the repo market, there is less flexibility to apply some simple assumption to assess balance sheet capacity, given sudden client flows/shocks or increased demand for collateral intermediation.

- **Data Source:** ICMA Repo Survey, June 2016.
Balance Sheet Rigidity: Can we Identity any Evidence?

Brexit – Balance Sheet Indigestion

Simple Assumptions for leveraged UKT Balance sheet Footprint

- Brexit was the catalyst for a sharp upward asset price revaluation, est. at 8-15%
- The move would have resulted in the requirement of more capital to support the same positions, a simple estimation could be £36bln
- Data suggests a £10bln increases results in a ~1.5bp increase in Gilt GC rates

<table>
<thead>
<tr>
<th>Gross B/S Position</th>
<th>Estimated Asset Move (%)</th>
<th>Delta Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK LDI (Leveraged Pension Fund)</td>
<td>£200Bln</td>
<td>15% (30yr)</td>
</tr>
<tr>
<td>Dealer (GEMS)</td>
<td>£30Bln</td>
<td>8% (10yr)</td>
</tr>
<tr>
<td>Leveraged Asset Management</td>
<td>£50Bln</td>
<td>8% (10yr)</td>
</tr>
<tr>
<td>Total</td>
<td>£280Bln</td>
<td>£36.4Bln</td>
</tr>
</tbody>
</table>

Source: Bloomberg and Barclays.
Cost of Balance Sheet: Evidence of Re-pricing?

1. Barclays Research.
2. Data from Bank of England Statistical Interactive Database using codes: RPMB3V6, RPMB3W4, RPMTBVU
The Regulatory Pendulum: Direction of Travel?

Following the events of 2008, there was little doubt that the regulatory pendulum would swing in the direction of a more uncompromising application of regulation in order to promote macro prudential stability. New regulation was written against the backdrop of a caustic political environment, with the then available evidence and with no credible ability to fully assess its impact. Eight years later, we have new facts, we’re starting to observe unintended consequences and regulators are asking questions.

Is there enough evidence to support delaying the regulatory pipeline and/or recalibrate existing rules?

- Finalised European NSFR rules
- Limitation on collateral re-use
- Minimum HC & countercyclical requirements
- The idea of “counterparty” agnostic lending
- MiFiD 2 – Best Execution applies?
Farewell 2016…. Welcome 2017
2016: GC Starts Turning Special?

**Rising Impact from Specials**

- Excess Liq (rhs)
- DEGC
- REFR DE

**PSPP Cumulative Holdings (€mm)**

**Number of Bonds Trading >10bps Through GC**

1. ECB, Bloomberg, and Barclays Data; 2. ECB; 3. Barclays Data
Shrinkage of the repo balance sheet, dealers holding less inventory and central bank purchases (QE) has raised the questions if settlement fails are becoming more common. An increase in settlement fails not only makes balance sheet and liquidity management more difficult but begins to erode confidence in market liquidity.

In Europe there are no public sources of market fails data.

The below charts illustrates ISCD auto-borrow activity, the market’s last safety net to prevent a fail.

Source: Euroclear & Clearstream
2016: What Happened at Year End?

Where’s the smoking gun(s)?

Not one but a number of factors may have contributed to the price action we experienced:

1. Balance sheet constraints & Management
2. Cash hunting for a home
3. Lack of ‘safe assets’
4. X-CCY basis
5. Cash market positioning
6. Levy/Tax policies influencing behaviour

Was FX basis a factor?\(^{(1)}\)

Money Fund £ Weighted Average Rate\(^{(2)}\)

Money Fund € Weighted Average Rate\(^{(2)}\)

---

1. Barclays and Bloomberg Data; 2. Craine Data
2017: What Could we Expect?

- Balance Sheet & Behaviour Continues to Evolve
- Demand for Collateral remains constant with up-side risk in light of uncleared derivative margin requirements
- Supply of short end ‘safe assets’ & Collateral Remains Challenged
- Increased Specials Activity & a Possible Increase in Fails
- Cleared swaps VM demand will influence 2H17 demand for balance sheet
- Make or break time for new business models built on sponsored clearing & bank disintermediation
- NCB become larger participants in the repo market as a result of lending QE holdings
  Could we see RRP in Europe or the UK?
- European Money market Reform & US Earning Repatriation
- Regulation, the Final Stretch, Pause and/or Recalibration?
We are fast approaching 2019 and banks are busy executing their publically stated capital and leverage plans. The leverage solutions take the form of either deleverage and /or increase capital base. Also worth noting currently only 3 jurisdictions in this sample have binding leverage rules (US, UK & Switzerland).

Source: Barclays Research
Note: US Banks based on GAAP.
2017: Balance Sheet & Behaviour

In the past, intra-quarter end leverage increases were standard market practice. Now that leverage is a key focus, reporting is done on an average basis rather than at specific points in time, thus avoiding the opportunity for 'window dressing'. This reduces volatility, but also reduces the repo balance sheet between the traditional reporting periods.

This type of behaviour is not only limited to Repo but any activity which is easy to ‘dial up and down’ and impacts leverage. Examples include cash trading and a bank’s treasury desk taking advantage of arbitrage opportunities.
2017: Balance Sheet & Behaviour

USD On-shore Money Fund Holding (Indexed 2012 =100)

Sterling Off-Shore Money Fund Collateral Borrows (GBP)
French and Canadian Banks(1)

Sterling Off-Shore Money Fund Collateral Borrows (GBP)
US Banks

Sterling Off-Shore Money Fund Collateral Borrows (GBP)
UK Banks

Note: US GSIBs include: BoA, Citi, GS, JPM, MS, and Wells. Source: Crane’s Data, Barclays Research.

Source:
2. Crane Money Market Data.
## 2017: Collateral Question

### EGB Issuance, QE and Demand for Margin

In 2017, depending on the demand for collateral, market positioning and the available balance sheet/use of leverage, GC may become more expensive with specials activity remaining elevated. The two main observable reasons are; the ECB will purchase ~€780bln of securities if the QE programs ends when announced (Dec-17) and Euro governments will issue less securities than they did in 2016.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>160</td>
<td>0.5</td>
<td>142</td>
<td>-26.5</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>France</td>
<td>211</td>
<td>-3.5</td>
<td>121.8</td>
<td>-5.2</td>
<td>89.2</td>
<td>1.7</td>
</tr>
<tr>
<td>Italy</td>
<td>250</td>
<td>18.6</td>
<td>215.6</td>
<td>31.6</td>
<td>34.4</td>
<td>-13</td>
</tr>
<tr>
<td>Spain</td>
<td>123</td>
<td>2.8</td>
<td>87.1</td>
<td>1.5</td>
<td>35.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Other</td>
<td>146.4</td>
<td>12.7</td>
<td>133.7</td>
<td>29.4</td>
<td>12.7</td>
<td>-16.8</td>
</tr>
<tr>
<td><strong>Total Euro</strong></td>
<td><strong>890</strong></td>
<td><strong>31</strong></td>
<td><strong>700</strong></td>
<td><strong>31</strong></td>
<td><strong>190</strong></td>
<td><strong>0.3</strong></td>
</tr>
</tbody>
</table>

*Source: Barclays Research, Global Rates Weekly, 12 January 2017, “Euro area 2017 supply and cash flows”*

*Note: France forecast is gross issuance; net of buybacks the French target is officially €185bln.*
THANK YOU
General Conflict Disclosure & Disclaimer

BARCLAYS
This communication has been prepared by Barclays.

“Barclays” means any entity within the Barclays Group of companies, where “Barclays Group” means Barclays Bank PLC, Barclays PLC and any of their subsidiaries, affiliates, ultimate holding company and any subsidiaries or affiliates of such holding company.

CONFLICTS OF INTEREST
BARCLAYS IS A FULL SERVICE INVESTMENT BANK. In the normal course of offering investment banking products and services to clients, Barclays may act in several capacities (including issuer, market maker and/or liquidity provider, underwriter, distributor, index sponsor, swap counterparty and calculation agent) simultaneously with respect to a product, giving rise to potential conflicts of interest which may impact the performance of a product.

NOT RESEARCH
This document is from a Barclays Trading and/or Distribution desk and is not a product of the Barclays Research department. Any views expressed may differ from those of Barclays Research.

BARCLAYS POSITIONS
Barclays may at any time acquire, hold or dispose of long or short positions (including hedging and trading positions) and trade or otherwise effect transactions for their own account or the account of their customers in the products referred to herein which may impact the performance of a product.

FOR INFORMATION ONLY
THIS COMMUNICATION IS PROVIDED FOR INFORMATION PURPOSES ONLY AND IT IS SUBJECT TO CHANGE. IT IS INDICATIVE ONLY AND IS NOT BINDING.

NO OFFER
Barclays is not offering to sell or seeking offers to buy any product or enter into any transaction. Any offer or entry into any transaction requires Barclays’ subsequent formal agreement which will be subject to internal approvals and execution of binding transaction documents.

NO LIABILITY
Neither Barclays nor any of its directors, officers, employees, representatives or agents, accepts any liability whatsoever for any direct, indirect or consequential losses (in contract, tort or otherwise) arising from the use of this communication or its contents or reliance on the information contained herein, except to the extent this would be prohibited by law or regulation.

NO ADVICE
Barclays is acting solely as principal and not as fiduciary. Barclays does not provide, and has not provided, any investment advice or personal recommendation to you in relation to the transaction and/or any related securities described herein and is not responsible for providing or arranging for the provision of any general financial, strategic or specialist advice, including legal, regulatory, accounting, model auditing or taxation advice or services or any other services in relation to the transaction and/or any related securities described herein. Accordingly Barclays is under no obligation to, and shall not, determine the suitability for you of the transaction described herein. You must determine, on your own behalf or through independent professional advice, the merits, terms, conditions and risks of the transaction described herein.

THIRD PARTY INFORMATION
Barclays is not responsible for information stated to be obtained or derived from third party sources or statistical services.

PAST & SIMULATED PAST PERFORMANCE
Any past or simulated past performance including back-testing, modelling or scenario analysis contained herein is no indication as to future performance.

No representation is made as to the accuracy of the assumptions made within, or completeness of, any modelling, scenario analysis or back-testing.
OPINIONS SUBJECT TO CHANGE
All opinions and estimates are given as of the date hereof and are subject to change. The value of any investment may also fluctuate as a result of market changes. Barclays is not obliged to inform the recipients of this communication of any change to such opinions or estimates.

NOT FOR RETAIL
This document is being directed at persons who are professionals and is not intended for retail customer use.

IMPORTANT DISCLOSURES
For important regional disclosures you must read, visit the link relevant to your region. Please contact your Barclays representative if you are unable to access.

EMEA https://www.home.barclays/disclosures/important-emea-disclosures.html
APAC https://www.home.barclays/disclosures/important-apac-disclosures.html
U.S. https://www.home.barclays/disclosures/important-us-disclosures.html

CONFIDENTIAL
This communication is confidential and is for the benefit and internal use of the recipient for the purpose of considering the securities/transaction described herein, and no part of it may be reproduced, distributed or transmitted without the prior written permission of Barclays.

ABOUT BARCLAYS
Barclays offers premier investment banking products and services to its clients through Barclays Bank PLC. Barclays Bank PLC is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority and is a member of the London Stock Exchange. Barclays Bank PLC is registered in England No. 1026167 with its registered office at 1 Churchill Place, London E14 5HP.

COPYRIGHT
© Copyright Barclays Bank PLC, 2017 (all rights reserved).