

Capital Markets | Point of View

Collateral Management

Unlocking the Potential in Collateral

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Executive Summary

The global collateral management market is worth in excess of €10 trillion. There are, however, numerous inefficiencies reflecting operational difficulties and market constraints which undermine the banking sector's ability to optimise the value and use of collateral.

We estimate that internal fragmentation (i.e. inefficiencies specific to individual banking institutions) of the global collateral management market costs more than €4 billion annually.

External costs and potential savings are more difficult to estimate given that they are dependent upon future regulation, but our survey suggested that cost savings could well be considerable.

The highest potential cost savings can be achieved through:

- Reducing the number of collateral pools/silos
- Implementing comprehensive IT solutions to develop a single application, providing a complete overview of collateral across all asset classes, business divisions and legal entities
- Adopting optimisation algorithms (covering liquidity, capital and regulatory implications)
- Improving internal transfer pricing mechanisms

A reduction in the number of custodian and settlement agents would reduce the number of liquidity pools, but there is a desire to maintain a range of providers to maintain flexibility over liquidity availability and avoid high concentration and systemic risk.

An effective collateral management framework requires:

- The ability to aggregate collateral data by asset classes, locations encumbrance, currency and legal entity
- Detailed underlying data sufficient to meet business, counterparty and service provider needs
- Timely systems with effective connectivity and interoperability with service providers to move collateral efficiently

Regulatory developments and market infrastructure developments continue to drive demand for optimisation of collateral, balance sheet quality, capital and liquidity adequacy and improved risk/return performance metrics for credit institutions. The recent requirements for clearing OTC derivatives via clearing houses will increase the amount of collateral used and put additional pressure on its management.

The role of effective collateral management in monetising assets has never been more important. Collateral management is crucial for optimising the use of and return on both capital and liquidity and requires the proactive management of all assets.

The Market Today

Collateral is one of the building blocks on which the financial markets are constructed. It is at the core of secured financing and is a key enabler for a multitude of services and products including traditional securities financing, facilitating trading and innovative solutions which allow for risk mitigation. Collateral management can be the catalyst for new business models that can generate significant incremental revenues.

Collateral is used for different purposes:

- OTC derivatives margining
- Secured funding with market counterparties and central banks
- Trading with central counterparties (CCPs)
- Settlement

The methodology used to prepare this Point of View on collateral management was twofold:

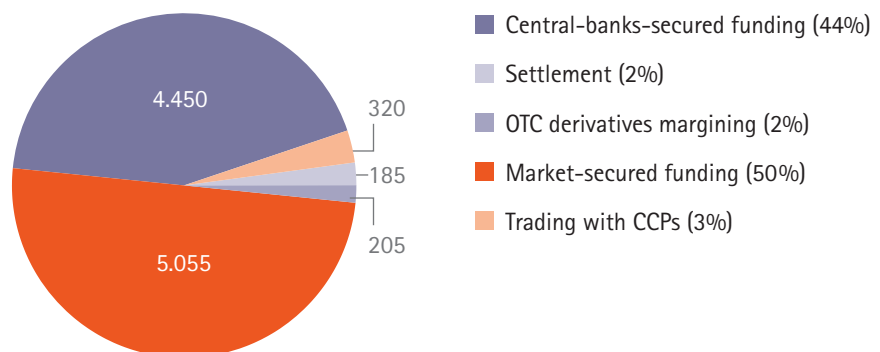
- Research existing public information on collateral from official and well-known sources
- Conduct one-to-one interviews with 16 global banking institutions representing a rich variety of collateral management models

The total value of securities being used as collateral in the financial system worldwide is estimated to be approximately €10.215 trillion (excluding cash). The total amount including cash is believed to be well in excess of €12 trillion.

To place this in context, the 2010 estimated gross domestic product of the USA was approximately €10 trillion. The total size of the collateral market is thus impressive and representative of the importance of collateral, however collateral remains a small fraction of the total assets of the global banking system, which are estimated to be worth €70 trillion. This suggests there is further potential for growth in monetising unused assets through improved collateral management.

There are numerous and significant inefficiencies in the collateral management market, both internal (bank-specific, related to the business operating model and organisational structure employed) and external (the multiplicity of external services providers that institutions use). Because of these inefficiencies, collateral management has historically been difficult to optimise. Before the financial crisis, these inefficiencies were considered as important but not key.

Figure 1: Market sizing in trillion Euro





The market had traditionally been flooded with liquidity. Financial institutions viewed collateral management as a reactive function positioned at the end of the trading cycle, performed within a back office function restricted to the processing of collateral movements and negotiation of related legal agreements.

The recent financial crisis, with its origins in a severe liquidity crunch, dramatically changed the perception and importance of collateral management. As a result of the crisis, the objectives of regulators and market participants have become remarkably aligned. Whilst regulators are looking to enhance prudential supervision by addressing more rigorous capital and liquidity adequacy standards, credit institutions are looking to improve the quality of their asset base both to reduce credit and counterparty risk and to improve their liquidity profile.

¹ Quantitative Impact Study of Basel Committee on Banking Supervision (December 2010).

In Europe alone, it was estimated that banks had an aggregate shortfall of stable funding of €2.89 trillion¹ in order to comply fully with the additional liquidity requirements of Basel III.

Credit institutions are presented with a number of alternatives, including collateralisation which is becoming crucial in maximising the potential benefits that can be generated from all internal resources available to a credit institution. There are multiple benefits that accrue from collateralisation both for collateral takers and providers:

Collateral takers:

- Reduction of capital utilisation by reducing credit and counterparty risk exposures

Collateral providers:

- Increase in secured financing opportunities (and lower cost of funding)
- Generation of additional revenues from the reutilisation of assets.

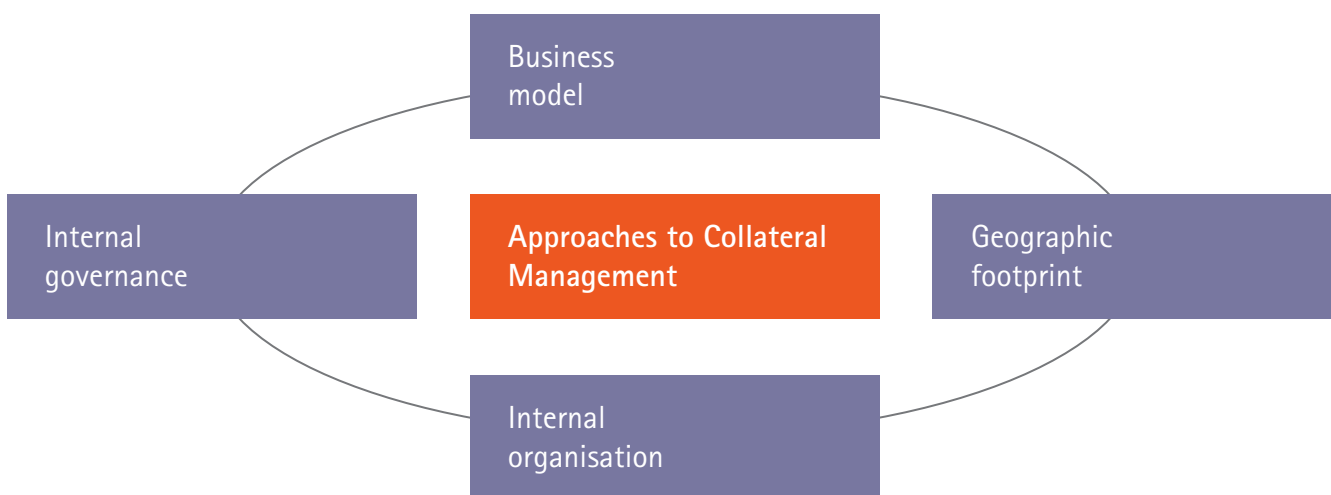
As a result, collateral management is increasingly regarded as a core function, fully integrated in the management of financial institutions and closely linked to treasury, trading, risk management, operations, finance and capital management.

Accenture and Clearstream have conducted a survey to ascertain how market practitioners view collateral management. We interviewed 16 institutions representing €14 trillion in assets. Their views form the basis of this report's findings and their opinions were clear: in an era of reduced revenues within banking generally, reducing costs was clearly crucial. To that end, reducing internal and external fragmentation related to collateral management has therefore become a critical concern: 38% of our survey's interviewees have managed to reduce internal inefficiency costs during the past three years, while 25% have reduced external inefficiency costs.

Multiple Approaches to Collateral Management

The 16 global institutions interviewed in our survey represented a rich variety of approaches to collateral management which were influenced by their overall business model, their geographical dispersion and their internal governance and legal structure.

Figure 2: Approaches to collateral management



The criteria for assessing the effectiveness of the collateral management models are summarised as follows:

- The ability to identify at any point in time what assets exist (across all businesses, legal entities, currencies, products/asset classes, locations)
- The ability to determine if assets are available or encumbered and the degree to which substitution is available/possible
- The ability to use all assets irrespective of "internal" ownership
- The ability to price assets reflecting liquidity, capital impact, strategic value to the organisation and regulatory implications
- The ability to mobilise these assets quickly, at low cost and securely
- The ability to manage these assets on a forward-looking basis

While there is no perfect correlation between the level of collateral management sophistication and specific operating efficiency, it is clear that the complexity of an organisation's

businesses and the operating model employed have a significant bearing on the way collateral management is addressed.

In total, the 16 institutions interviewed held assets of approximately €14 trillion, representing close to 20% of the total assets of the global banking system². The sample captured combinations of the following businesses and operating models.

Business model

Investment banks and broker dealers see collateral management as a core function. They do not benefit from a stable deposit funding base and therefore it is imperative that they monetise their assets through secured financing and – in the case of prime brokerage services – the assets of the clients they in turn are financing. Hence, the visibility of positions held across all asset classes and the degree to which they are

encumbered has been recognised as a basic requirement that has been fulfilled since the 1990s. However, the creation of a single view as opposed to fragmented views on a single collateral management platform in which sophisticated optimisation processes are supported by centralised management has required extensive and prolonged investment in systems development and infrastructure build. In at least one case the process has taken in excess of ten years.

Retail and wholesale banks have traditionally had ample liquidity as a result of the large and relatively secure deposit base accessible through their branch networks. The traditional role of maturity transformation is more clearly identified in this business model, where the bank lends long and borrows short. This combination promoted a culture of pricing liquidity based on the marginal cost of short-term funding without regard

² Data sourced from Global Finance Magazine and individual annual reports.

to potential stress conditions and the need to introduce longer-dated financing to meet the liquidity demands of long-dated assets and maintain a liquidity buffer of high-quality assets. In those institutions where liquidity had not been a constraining factor prior to the financial crisis, collateral management has been largely an operational support function performed in the back office.

Subsequent to the financial crisis of 2007/8, retail and wholesale banks were forced to recognise the need to introduce longer-term liabilities to finance long term loans, price the full cost of liquidity and, given their narrower set of traded products, develop alternative forms of asset finance such as covered bonds. For these institutions, the developments of collateral management systems have lagged behind the improvements achieved by investment banks. Although the benefits of sophisticated collateral management systems have been less evident for retail and wholesale banks, there is acceptance of the benefits to be gained. Hence, since the financial crisis all institutions interviewed have initiated investment programmes to upgrade their collateral management technology platforms.

Geographic footprint

Geographic footprint does not appear to be correlated with the level of collateral management sophistication employed by various institutions. The greater the geographic spread of an institution, the more likely it is to experience fragmentation resulting in multiple collateral pools. Yet the global investment banks have recognised the complexity of the environment in which they operate and have developed a single global view of collateral across asset classes and jurisdictions. This contrasts with institutions that operate predominantly in their domestic markets; typically, despite the relative simplicity of their business model, they have not developed equally sophisticated collateral management tools (one of these institutions with a relatively

simple business model did not even have a single application providing a clear view of its collateral across all business lines).

Internal organisation

Institutions are organised by business unit (e.g. investment, corporate and retail banking), within these by division (e.g. equities or fixed income/cash instruments or derivatives) and within these by department (e.g. repos, treasury, derivatives, securities lending, etc.). These silos or departments have traditionally resulted in separate collateral pools being monitored and managed independently, reflecting the historical abundance of liquidity leading to each business unit focusing purely on its own P&L.

It is important to note that effective collateral management can still be achieved with separation of collateral pools by sector or business. What is critical is that information on all assets should be visible, internal transfer pricing is effective and decisions can be made embracing all collateral pools using an effective communication system.

Our sample showed a wide divergence between those banks managing collateral autonomously and those using a centralised approach. In autonomously run banks, several institutions do not share data with other parts of the bank.

The need to manage assets and liquidity in a dynamic way seems to be the determining factor for the choice of internal model. Those institutions that trade assets (i.e. broker dealers) tend to centralise their collateral management activities. Those who behave more like "asset gatherers" tend to allow a more fragmented collateral management function.

It is evident that the financial crisis and regulatory pressure on capital and liquidity is slowly aligning collateral management around a more centralised approach.

Internal governance

Another dimension where we witnessed a variety of views (and models) was on the critical aspect of accountability for collateral management and the alignment of corporate objectives. Significant changes have occurred since the financial crisis. Previously, front-office-secured financing teams were focused on pursuing profits. Subsequent to the crisis there has been a trend to "empower" the treasury function. This has varied from treasury ultimately deciding on the assets to be deployed as collateral to a less hands-on approach, whereby treasury has "first rights" on the assets or where it is simply responsible for liquidity risk management policy and the setting of collateral management parameters, limits and controls under which margining and secured funding activities are executed. In each of the above approaches there is a consensus that liquidity risk and collateral management objectives need to be aligned.

Whilst internal fragmentation issues can constrain the effectiveness of collateral management, they can be overcome if an institution recognises the need to eliminate internal barriers and to enhance the value of their balance sheet by rationalising processes and optimising the value of collateral.

Inefficiencies

Addressing internal and external inefficiencies effectively can unlock substantial value either by reducing costs (actual or opportunity costs) or by enabling new businesses. Some inefficiencies are easier to tackle because they are specific and internal to each institution. Others relate to the structure of markets (e.g. local depositary requirements, clearing processes and access to central banks), sources of liquidity, regulatory or legal constraints and the market infrastructure (CCPs, CSDs, ICSDs, etc.) used.

Internal inefficiencies

While both external and internal fragmentation were mentioned by interviewees as potential causes of inefficiencies/costs, the majority believe that the major value creation opportunities lie in addressing internal fragmentation through:

- Streamlining the internal processes and governance
- Enhancing the visibility of all existing assets
- Enabling group-wide decisions on use of collateral

This would significantly facilitate the optimisation of collateral's liquidity value (at a time when unsecured funding has all but disappeared for anything but the best credits) through the replacement of unsecured by secured funding.

The key internal inefficiencies identified by the interviewees were as follows:

- Incomplete overview of all collateral
- Inability to manage collateral centrally
- Inability to maximise liquidity, lower the cost of and lengthen the tenor of funding
- Suboptimal internal governance leading to misalignment of objectives
- Inadequate internal transfer pricing mechanisms
- Lack of optimisation engines or inability to deploy them effectively
- Inability to perform inventory projections
- Excessive staff costs as a result of process complexity

External inefficiencies

The majority of respondents look at external fragmentation as a consequence of where counterparties take delivery of collateral, which in turn creates a pool of local liquidity to which institutions wish to retain access. While each institution

would prefer its own custodians to be accepted by their counterparties to hold collateral, counterparties have their own preferences (for risk, relationship or connectivity considerations) and require the use of other providers.

Hence, institutions have adapted to this reality by selecting some clearing providers on the basis of asset class (and reusing those assets within the same provider). However, many respondents confirmed the desirability for reducing some of the external fragmentation, namely the need for securities to be repatriated in order to be eligible for accessing central bank liquidity (which they expect to be addressed by CCBM2). Unfortunately CCBM2 will only address this issue in the European arena and not globally.



Figure 3: Ranked inefficiencies

	Internal inefficiencies	External inefficiencies
High importance	<ul style="list-style-type: none"> • Incomplete overview of all collateral • Inability to manage collateral centrally • Inability to maximise liquidity, lower the cost of and lengthen the tenor of funding 	<ul style="list-style-type: none"> • Costs associated with moving collateral between different pools
Medium importance	<ul style="list-style-type: none"> • Suboptimal internal governance leading to misalignment of objectives • Inadequate internal transfer pricing mechanism • Lack of optimisation engines or inability to deploy them effectively 	<ul style="list-style-type: none"> • Excessive IT costs of interfaces • Over-collateralisation
Low importance	<ul style="list-style-type: none"> • Inability to perform inventory projection • Excessive staff costs as a result of process complexity 	<ul style="list-style-type: none"> • Excessive legal costs

All the institutions interviewed recognise the importance of improving collateral management, especially when liquidity is scarce as currently is the case, but it is clear that (at least for some) optimal collateral usage can be decoupled from custody (i.e. not requiring all assets to be held with a single custodian).

The key external inefficiencies identified by the interviewees were as follows:

- Costs associated with moving collateral between different pools
- Excessive IT costs emanating from the development and maintenance of multiple interfaces with external providers and internal pools

- Maintaining excessive levels of collateralisation (over-collateralisation)
- Excessive legal costs as a result of putting in place contracts with multiple providers

Valuing the Inefficiencies

All interviewees acknowledged the large financial impact of suboptimal collateral management as a result of the inefficiencies mentioned above and the scope for substantial cost reductions both of direct costs (handling collateral) and opportunity costs (suboptimisation of collateral values).

There was a consensus that the greatest potential for creating value amongst all the inefficiencies identified above is in addressing the inability to maximise liquidity, lower the cost of finance and lengthen the tenor of funding. The multiple collateral buffers and their excessive levels (over-collateralisation) with settlement agents were also considered to be a significant concern. The other inefficiencies, although generally recognised by all institutions, were not deemed to be material in comparison with the two mentioned above.

It is estimated that an amount in excess of €4 billion can be generated by improving collateral management practices and reducing fragmentation.

This value is derived from the following:

- Inability to maximise liquidity, lower the cost of and lengthen the tenor of funding: the potential value from maximising/optimising collateral in order to substitute unsecured for secured funding for the global banking market is estimated at €3.8 billion

- Maintaining excessive levels of collateralisation with multiple settlement agents: this cost is estimated to be approximately €400 million

The benefits achievable from addressing the two inefficiencies quantified above are so compelling that the other inefficiencies identified were not considered significant by the respondents, either in isolation or in aggregate.

Figure 4: Valuing costs (example in excess of €4 billion)



Market Changes and Collateral Management Strategies

These are times of massive change in terms of both the regulatory environment and market dynamics. In consequence, financial institutions have to adapt their collateral management strategies.

Regulatory

Regulatory change is ever present but further significant changes are looming (e.g. Basel III, Dodd-Frank Act in the US) that will continue to reinforce the increasing importance attached to effective collateral management.

The primary objective of the new regulations is to de-risk the financial system. The traditional business of lending becomes significantly less attractive and less profitable.

The regulatory focus on improved Tier 1 capital requirements adds a significant premium to the value of equity, already the most expensive source of capital. This means that banks are exploring means of reducing the consumption of capital through the mitigation of credit and counterparty risk exposures by collateralisation.

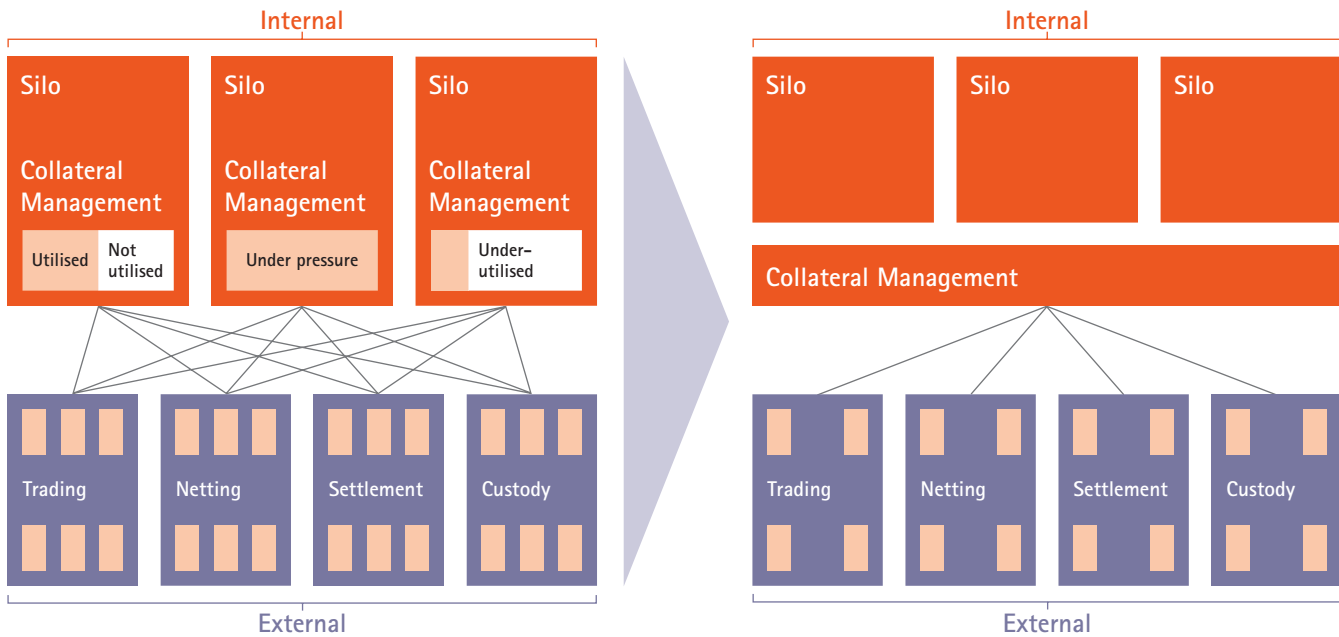
Many of the new regulatory changes that will affect credit institutions take effect between now and 2019 and include the following:

- Increased regulatory capital adequacy requirements (higher capital levels, stricter definition of capital, better balance sheet quality, broader scope of risks to be covered)
- Introduction of a capital conservation buffer
- Requirement to hold a countercyclical capital buffer
- Additional capital and liquidity requirements as well as enhanced supervision for systemically important financial institutions
- Introduction of an absolute leverage ratio (non-risk-adjusted) to respond to failures of modelled risk metrics and "model risk"
- Introduction of a liquidity coverage ratio (LCR) to ensure institutions can "survive" a 30-day liquidity stress

- Introduction of a net stable funding ratio (NSFR) to ensure institutions adopt more stable funding strategies and reduce asset and liability mismatch
- CCPs to carry a 2% risk weighting, encouraging the clearing of OTC derivatives through central clearing with implications for increased margining
- In addition there will be increased demands on transparency (more and more risk data to be provided to both supervisors and investors) and granularity of reporting

Besides these regulatory changes, other market players are also becoming increasingly demanding in terms of risk management standards. The European Central Bank, for example, has recently introduced graduated valuation haircuts for lower rated assets and stricter credit rating requirements as well as loan-by-loan information for asset backed securities.

Figure 5: Reducing internal and external fragmentation



The intention of these changes is to increase the resilience of the global financial system. However, they have significant implications for the discipline of collateral management; among others:

- Credit lending (particularly to financial institutions) will become less attractive
- Compared to the past, all asset classes (particularly in the trading book) will be intrinsically re-rated, reflecting a better representation of their true risk-adjusted cost including the implications of stress events on values
- Liquidity becomes critical (quoting a well-known bank CEO – “Capital is like food, you can live a couple of days without it; liquidity is like the air we breathe, you cannot survive more than a couple of minutes without it”)

The “conglomerate” model common to universal banks (with some businesses, such as private banking, cross-funding others, such as financial trading units) has also come under significant scrutiny from market participants, public authorities and regulators. The days of financing high-yield debt instruments at the marginal cost of short-term funding are numbered. Credit institutions without sophisticated transfer pricing mechanisms recognise the need to invest if they have not already commenced developing new capabilities or enhancing existing

capabilities. Collateral management systems capable of identifying and distinguishing asset classes for the purposes of pricing collateral (both encumbered by secured financing trades and unencumbered) are an integral requirement for an effective transfer pricing mechanism.

Utilising central counterparties for mutualising counterparty risk

Last but not least the appetite for utilising CCPs for mutualising counterparty risk has been significantly promoted by the G20 and will increase the scale and scope of activities subject to margining. Important market changes and dislocations have been witnessed recently. Several macroeconomic dynamics have been reflected in a progressive move away from traditional lending and from asset-heavy models, at least in the OECD world.

The increasing risk aversion of investors following the financial crisis has led to the adoption of deleveraging strategies (not just amongst credit institutions) which, together with new regulatory constraints on the intermediation business, has raised the profile of investors (corporations, insurance

companies, asset managers, pension funds, sovereign wealth funds, etc.) that in turn are becoming increasingly interested in managing collateral effectively.

Some credit institutions have already undertaken a strategic review of their business operating models. The originate-to-distribute model (predominant since the early 1990s) has been challenged as promoting reckless risk behaviour. However, assets can still be churned (although with limited risk transfer) by utilising them effectively to collateralise trades.

The success of such a strategy is dependent upon an effective collateral management capability.

The impacts of regulatory and market trends

The outcome of the trends outlined above will be a lower return on equity and will make access to equity for all but the highest credits more difficult.

The prospects for accessing the unsecured debt markets are similarly bleak, especially for lesser quality credits. Unsecured inter-bank lending all but disappeared during the financial crisis and other products

providing liquidity to the market pre-crisis disappeared completely with some (e.g. securitisations) only now experiencing a modest revival. However, it is questionable if markets will ever return to previous levels of liquidity, and in any case any recovery will take time. In light of these realities, banks and investors are being forced to seek more secured financing for longer periods and, in looking at the total cost of any transaction, there is a clear need to optimise collateral management.

Collateral management strategies in response to trends

Further internal fragmentation considerations

The above trends and their expected impact will increase the necessity to address the issue of internal fragmentation and improve collateral management efficiency. For some players it will even evolve to the point where collateral management becomes a true profit centre. Institutions' responses in that matter are summarised below:

- Collateral management is more than an administrative / back office function (effectively moving collateral): it is a key function enabling proper balance sheet management, with close links to trading, treasury, risk and liquidity management, capital optimisation and portfolio management.
- Group-wide collateral management systems should be implemented across business lines and asset classes (and ideally group legal entities), with cross-product netting.
- Collateral management should be applied to a broad range of asset classes (equities, fixed income, loans, commodities, cash, etc.) – in summary, all monetisable assets.
- Collateral management is a function that can be undertaken in-house or outsourced. The market for outsourced services is changing to meet client requirements for specific rather than generic offerings. Distinctions are being drawn between the administrative/operational service

focused on the physical delivery/ transfer of collateral and related corporate actions and the more specialist service of optimising the use of collateral or a combination of both. However, with the exception of collateral management services performed by triparty agents, collateral optimisation tends to be retained in-house.

- Internal transfer pricing mechanisms that capture the relative value of collateral should be implemented or enhanced.
- Robust credit and counterparty exposure calculation engines (e.g. potential future exposures) are considered integral to collateral valuation and optimisation.
- There is evidence of an increasingly cautious approach to re-hypothecation.
- There has been an increasing convergence of internal objectives: overcoming the traditional conflicting objectives of treasury managing liquidity and the front-office-secured funding desks' pursuit of profits are facilitated with the introduction of risk/return metrics alongside the traditional P&L measurement for the front office. The resolution of this conflict still requires changes in governance, but overall responsibility for the two functions increasingly resides ultimately with treasury (i.e. the front-office-secured funding desk has a dotted-line responsibility).

Further external fragmentation considerations

A significant part of external fragmentation is not actionable today because it is not under the direct control of banking institutions. These issues range from the inefficiencies created by the central banks' repatriation rule to the over-collateralisation with settlement agents and the high costs (certainly when compared to the US), delays and fail rates of moving securities. The market expects CCBM2 and T2S to address some (but not all) of these issues for Europe as opposed to globally.

Areas in which the banking institutions are or could be focusing their attention include:

- Focusing on reducing (or eliminating) over-collateralisation by intraday movements of collateral (by requiring real-time data and actively managing collateral intraday)
- Implementing internal procedures to manage external providers consistently (different cut-off times, etc.)
- Reducing the number of providers (i.e. custodians and settlement agents) but not using a single provider (for reasons related to concentration of risk, competitiveness, product specialisation, access to liquidity pools and relationship reciprocity) and lobby with their service providers for increased interoperability between them
- Lobbying infrastructure providers to improve interoperability between them and lobbying regulators to achieve more flexible credit criteria with regard to eligible collateral classes. Within that context one interviewee mentioned: "We would welcome more initiatives to be able to deliver securities instead of cash"

It is also interesting to note that banks are using more CCPs not just because of regulatory requirements but also because of perceived lower risk, especially during stress events. However, intuitively this exacerbates the concerns expressed on external fragmentation given that the number of collateral locations will increase with the multiplicity of new CCPs.

Conclusions

Collateral management is no longer simply a back office operational function; it is an integral element of liquidity risk management. As banks struggle to raise their returns on equity and cope with a significantly reduced appetite for unsecured credit lending, there is an increasing requirement to mobilise collateral for secured financing purposes. Similarly, the desire to maximise the value of collateral and utilise it most effectively in mitigating credit and counterparty risk exposures is crucial in any programme of capital adequacy management.

Improving the effectiveness of collateral management requires fragmentation to be addressed. This report concludes that the greatest scope for improvement lies in credit institutions addressing their internal fragmentation. The experiences of the banks interviewed for this report highlight the following initiatives as being essential to the creation of an effective collateral management framework:

- Implementation of group-wide collateral management systems
- Managing collateral across business lines and asset classes (and ideally across group legal entities), with cross-product netting
- Implementation of, or enhancement to, internal transfer pricing mechanisms that capture the relative value of collateral
- Development of robust credit and counterparty exposure calculation engines (e.g. potential future exposures) – this is considered integral to collateral valuation and optimisation

- Overcoming the traditional conflicting objectives of treasury managing liquidity and the front-office-secured funding desks seeking to maximise profits by creating overall centralised responsibility for liquidity and collateral management

External fragmentation is viewed primarily as a consequence of the wide range of business activities. It is a function of where counterparties take delivery of collateral which in turn creates local liquidity pools to which institutions are reluctant to lose access. Although institutions have adapted to this environment, many respondents in our survey spoke of the desirability of reducing some external fragmentation, namely the need for securities to be repatriated in order to be eligible for accessing central bank liquidity (which they expect to be addressed by CCBM2). The need to address this inefficiency is heightened by the possibility that external fragmentation may in fact increase with the increased use of CCPs,

a trend being encouraged by regulators. For the securities industry there is clearly an interest in offsetting the impact of increased fragmentation by supporting the seamless and instantaneous mobilisation and monetisation of all eligible securities. Our estimate of an annual "loss of value" in excess of €4 billion and the substantial potential for growth in collateral use (€10 trillion versus total banking assets of €70 trillion) should be motivation enough for all players to address both the internal and external inefficiencies from which the market suffers at present.

Methodology

The methodology used to prepare this Point of View on collateral management was twofold:

- Desk research with existing public information on collateral management using official data and well-known sources. This helped estimate the size of the global collateral management market at in excess of €10 trillion (and €12 trillion including cash).
- A series of one-to-one interviews with 16 global banking institutions representing a wide range of collateral management business models.

The methodology used to value inefficiencies included:

- Several institutions confirmed that with proper and sophisticated CM processes the utilisation of collateral (in support of secured funding) could increase by 10% to 15% of the present collateral pool. The result of that optimisation would be the substitution of expensive and increasingly scarce unsecured funding by cheaper and more reliable secured financing.

The potential value from maximising/optimising collateral in order to substitute unsecured for secured funding for the global banking market is therefore estimated at €3.8 billion. This value was calculated by multiplying 12.5% of the total collateral market (estimated at €10 trillion) by an average cost difference between short-term unsecured and short-term secured funding (estimated at 30 basis points).

- The second-largest value creation opportunity which could be quantified by interviewees was to reduce present levels of collateralisation with settlement agents. There is significant over-collateralisation, the cost of which is estimated to be €400 million (the opportunity cost of not being able to monetise immobilised but unencumbered assets). This value was calculated by multiplying the estimated value of over-collateralisation with large settlement agents by an average cost difference between unsecured and secured funding (estimated at 30 basis points).

About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with more than 223,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US\$21.6 billion for the fiscal year ended Aug. 31, 2010. Its home page is www.accenture.com.

About Clearstream

Clearstream is the leading service provider in liquidity and collateral management services in Europe with more than 20 years of experience. Our monthly average collateral management outstanding reached €565 billion in July 2011.

As an international central securities depository (ICSD) headquartered in Luxembourg, Clearstream provides the post-trade infrastructure for the Eurobond market and services for all major asset classes with access to more than 50 domestic markets worldwide. Clearstream's customers comprise approximately 2,500 financial institutions in more than 110 countries. Its services include the issuance, settlement and custody of securities, as well as investment fund services and global securities financing.

With more than €11 trillion in assets under custody, Clearstream is one of the world's largest settlement and custody firms for domestic and international securities.

Clearstream also functions as a central securities depository (CSD) based in Frankfurt delivering the post-trade infrastructure for the German securities industry with access to a growing number of markets in Europe.

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