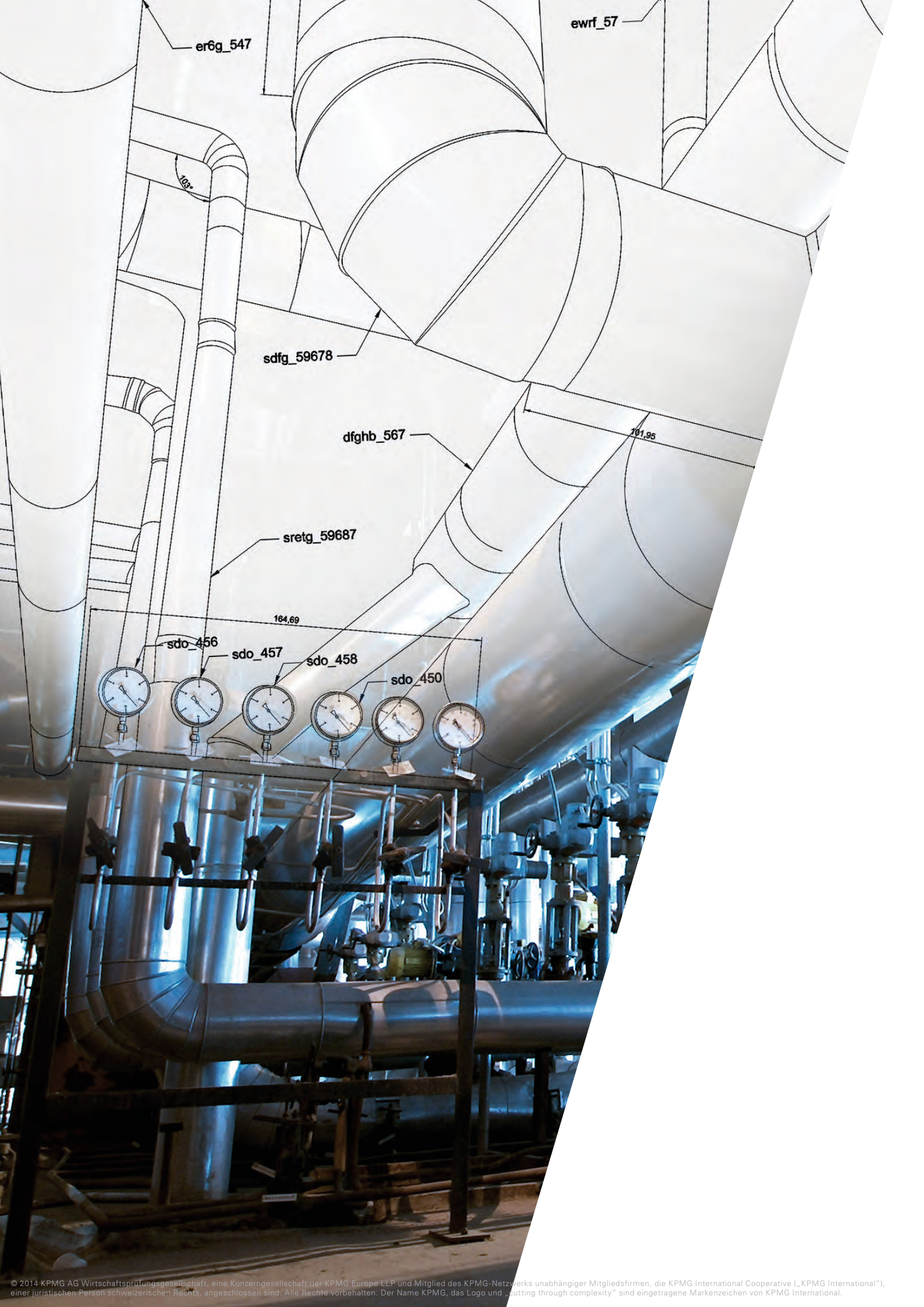


# Whitepaper

FINANCIAL SERVICES

## **Collateralised Banking – A collateral management approach for post-crisis banking**





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## 1

# Introduction

As a result of the financial market crisis, the use of collateral in financial transactions increased drastically in many countries. In Europe, the market value of assets that banks have pledged to their collateral pool at Eurosystem national banks has more than doubled within five years, reaching an all-time high of almost two and a half trillion Euro in 2012 and 2013<sup>1</sup>, strongly driven by ECB's supplementary long-term refinancing operations starting in 2011. According to the ISDA Margin Survey, the estimated worldwide amount of collateral outstanding in non-cleared derivatives transactions, rose from 1.5 trillion Euro in 2007 to 2.7 trillion Euro by the end of 2012<sup>2</sup>.

Furthermore, the demand for collateral as well as the required quality is unlikely to decrease to a pre-crisis level. Even more so, the Committee on the Global Financial System (CGFS), estimates possible additional collateral demand of another four trillion USD<sup>3</sup> within the next years, driven both by the current tidal wave of new regulatory requirements as well as new market standards in the money market sector.

New regulatory requirements which will cause an increase in the use of collateral in financial transactions are, for example, the European Market Infrastructure Regulation (EMIR), the US Dodd-Frank Act, new Basel III capital and liquidity requirements (CRD IV / CRR). The new liquidity requirements introduced with Basel III, the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) in particular, will cause financial institutions to increase their demand for secured funding, since unsecured funding – especially between banks – is penalised with relatively higher run-off factors compared to secured funding, and banks fill up their liquidity reserves to meet the new requirement.

In the same way that Basel III does for the banking industry, Solvency II additionally will raise the demand for secured investments for insurers, since capital requirements for covered bonds are lowered, while capital requirements for unsecured assets are increased.

The change in market infrastructure caused by EMIR and the Dodd-Frank Act can be seen in the move towards centrally cleared collateralised derivatives instead of bilateral, possibly uncollateralised clearing due to harsher capital requirements for non-centrally cleared derivative transactions. Additionally, new CSA agreements as well as new types of collateral are introduced.

As a result of these regulatory changes, paired with a general post-crisis market inclination to favour secured over unsecured transactions, the demand for collateral i.e. the demand for eligible and unencumbered<sup>4</sup> assets increases – turning a resource banks are used to having plenty of, into a scarce resource.

Moreover, there is a trend within the market to substitute cash collateral with securities, as cash is not only a more expensive form of collateral but also leads to a longer balance sheet with a negative impact on other regulatory benchmark indicators like the leverage ratio, as well as to a reinvestment risk on the side of institutional

1 Source: ECB collateral data, November 2013

2 Source: ISDA Margin Survey 2013, June 2013

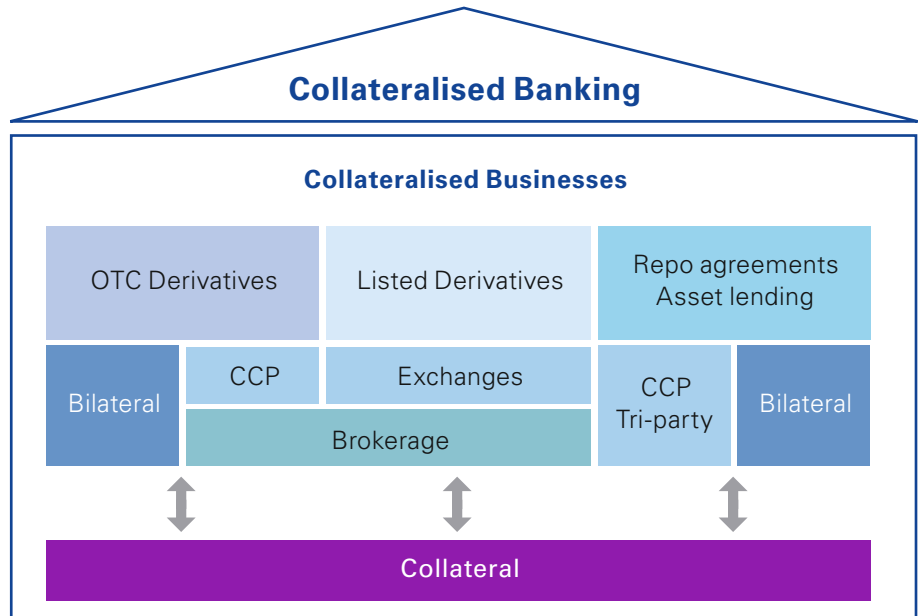
3 Source: Asset encumbrance, financial reform and the demand for collateral assets, CGFS Papers No 49, May 2013

4 Definition by the Basel Committee on Banking Supervision: "Unencumbered" means not pledged (either explicitly or implicitly) to secure, collateralise or credit-enhance any transaction.

clients like CCPs, leading to additional counterparty risk within their portfolio.

At KPMG, we believe that this transformational process will change the market for quality collateral fundamentally. This new challenge to collateral management has begun to receive institutional-wide attention. For further reference, we therefore introduce the term "Collateralised Banking" for the totality of aspects and processes relating to collateral as well as to collateralised business, such as (OTC) derivative trading, brokerage, repo agreements or asset lending.

In this paper, we describe the [key challenges of Collateralised Banking](#) (chapter 2), and introduce [five core theses](#) (chapter 3), which we believe are vital to successful collateralised banking. Since the traditional operating model of banks lacks the ability to cover all of the requirements for the modern collateralised banking, we present our thoughts on a [target operating model](#) (chapter 4), with a [bank-wide centralised collateral pool](#) (chapter 5) as the central element. For practical purposes, we then state our ideas for a hands-on [collateral](#)



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[optimisation approach](#) (chapter 6), including a more targeted usage of unencumbered overlay positions and some general thoughts on the impact on [internal funds transfer pricing](#) (chapter 6).

We believe that transforming the approach on how to deal with collateralised banking, will become a concern

for all major national and international financial institutions within the coming years. This paper is intended to be a starting point for discussion and extension of our ideas, as well as the exploration of possible alternative approaches.



# Current operational challenges

In the introduction, we mentioned how new regulatory requirements and new market standards already have, and further will, increase the importance and complexity of collateral management and reporting processes. To meet the new requirements, financial institutions have already invested a great deal of effort in implementing the required reporting tools and processes. The necessary processes for the execution of portfolio reconciliation, along with the processing and reporting of disputes, are therefore now implemented and mostly integrated into the operational processes all over the industry.

Meanwhile, the focus has changed from a regulatory perspective to an economic view on collateral: An increasing demand for collateral meets a shortage of supply, and labour intensive collateral management and reporting processes tie up a lot of resources. The industry therefore recognises collateral as a key success factor for cost reduction as well as for the optimisation of regulatory capital and liquidity.

Two prerequisites are key to collateral optimisation:

- Enterprise-wide transparency on the individual collateral schedules, on the inventory of collateral and assets that might be eligible as collateral as well as transparency on the respective collateral demand.
- Prioritisation of the single items of the inventory according to their unique value to the institution from a collateral perspective, and consideration of this ranking to identify the cheapest collateral to pledge within every individual collateral decision in an automated way.

Major banks have now set up projects to meet these prerequisites. Common implementation challenges faced by these institutions are, for example, setting up the right IT infrastructure and software solutions, or governance topics such as aligning trade inventories or relocating responsibilities between several departments such as collateral management and the trading desks. Banks which invest in a good infrastructural IT-architecture and

streamline their internal collateral management processes will gain a comparative advantage due to a greater efficiency and cost reduction of collateral management and reporting processes.

However, an easy to adopt blueprint solution for collateral management does not exist, as the collateral strategy is unique for each financial institution and depends on various parameters, such as business model, organisational structure and position in the market. For this reason, the key to success is to develop and apply institution-specific parameters for the collateral prioritisation and optimisation process.

A natural way of dealing with collateral optimisation is to extend the existing funds transfer pricing scheme to include the cost and benefit of collateral in enterprise-wide funds transfer pricing curves. This enables banks quickly to consider collateral in pricing and business management, using an already established IT architecture.

# 3

## The future of Collateralised Banking

At KPMG, we believe that the increasing share of collateralised banking in the daily business of financial institutions as a result of the growing counterparty credit risk aversion, coupled with a further growing complexity of collateral management processes, will require institutions to improve operational excellence of collateralised banking.

Out of the vast array of topics we encounter when talking to our clients and listening to the debate in the market, we extracted **five core theses** which must be considered for efficient collateralised banking and to meet the operational challenges.

1. A **centralised collateral pool** conveys an understanding of the decentralised collateral positions enabling a “single point of truth” approach and thus, an effective management of the scarce resource collateral.
2. Going forward, successful banks will be characterised by considering collateral management as a **strategic, bank-wide integrated task**, which can best be managed centrally. Therefore, the collateral pool should be managed by a **strategic steering unit**, e.g. within group treasury, supported by several centres of excellence to meet the various operational challenges of collateralised banking.
3. A sufficient operational toolkit for the **margining and dispute management** processes is a necessary basic in order to both meet increasing regulatory requirements, and to reduce the operating cost of collateralised banking.
4. The **valuation and pricing** of collateral requires the definition of classic business parameters, as well as qualitative elements. If integrated into the bank’s funds transfer pricing system, the allocation of collateral to and from the centralised collateral pool should be based upon the internal transfer price of the collateral.
5. Leveraging the unencumbered overlay position of the collateral **pool complements the ongoing optimisation of collateral costs**, and might even lead to additional income via the rehypothecation of these unused positions, the replacement of more expensive, unsecured funding as well as new business opportunities due to increased and cheaper funding potential.



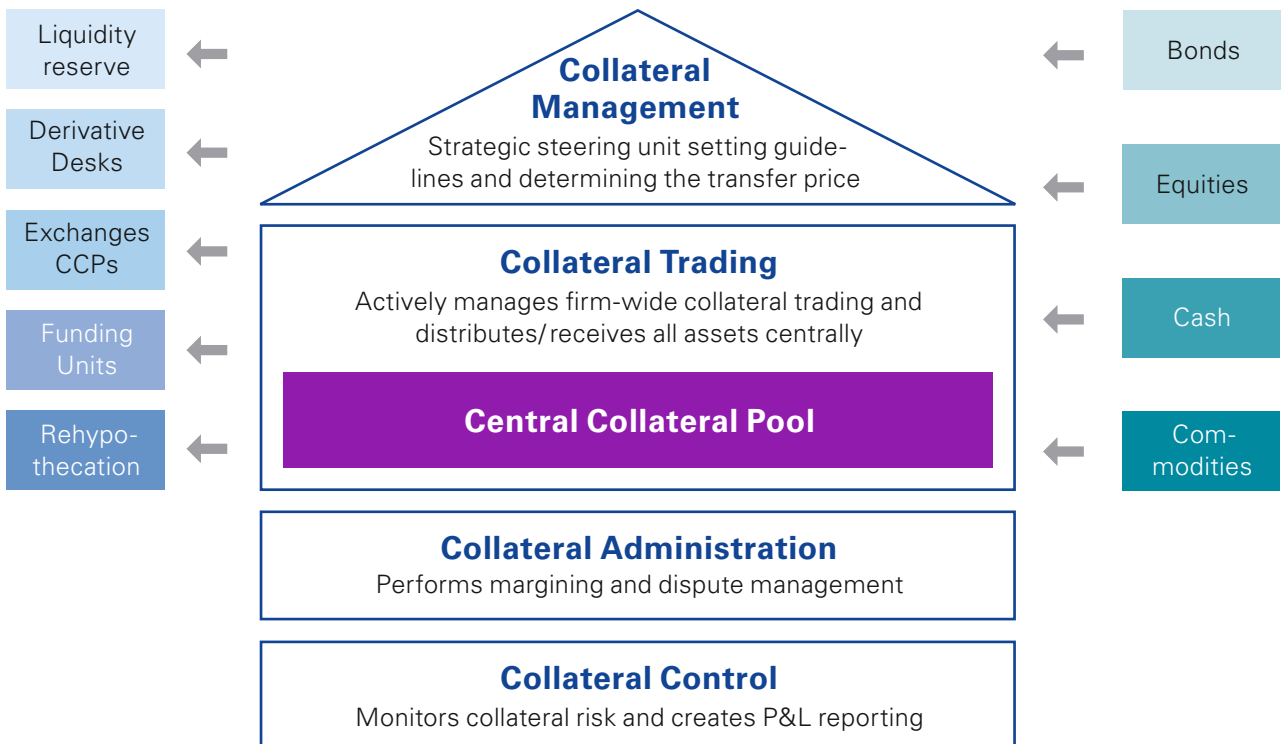
# 4 Operating model for Collateralised Banking

“Going forward, successful banks will be characterised by considering collateral management as a strategic, bank-wide integrated task, which can best be managed centrally – supported by several centres of excellence to meet the various operational challenges of collateralised banking.

In our view, the following organisational and governance structure will support an efficient management of collateral: Several centres of excellence flank a strategic steering unit to meet the operational challenges, such as trading of collateral, the supervision and contraction of

collateral agreements, or the monitoring and allocation of risk as well as P&L resulting from collateral. Processes as well as the IT landscape will then follow the organisational change, which will go along with a derived clear distribution of operational roles and responsibilities.

”



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## 4.1 Collateral core business units

### Collateral Management

The central strategic steering unit Collateral Management manages the collateral pool. We at KPMG suggest that this unit should be located within the Treasury department, as Treasury often already manages tasks closely related to collateral, such as asset & liability management, central liquidity pooling, funding planning, and internal funds transfer pricing. The installation of a group-wide Collateral Management function will be challenging for the human and technical resources, in particular as a necessary standardisation of data is lacking in many institutions.

Collateral Management sets the strategic framework and the collateral policies for all units involved in the collateral management process, as it

- carries out the group-wide planning and optimisation of the collateral pledge and receive process, thus, indicating the bank-wide supply and demand of collateral,
- sets the guidelines and supports the respective sales or market units in negotiating and contracting new margin agreements with bilateral and central counterparties,
- defines preferred clearing methods (bilateral, tri-party) and central counterparties,

- sets the group-wide technical standards for collateral eligibility and allocation of assets to the centralised collateral pool, as well as the regulatory liquidity reserve,
- specifies the principles for collateral pricing, determines the internal transfer price for collateral and continues to review existing margin agreements concerning possible optimisation potential,
- widens the contractual scope for posting or demanding collateral, and
- deals with new complexity within the netting and margin agreements with central counterparties (e.g. cross-asset netting).

In legal and tax related questions, Collateral Management is supported by the respective departments.

### Collateral Trading

The core task of Collateral Trading as part of the front office will continue to consist of the acquisition, management and optimisation of liquidity and collateral. The tasks of Collateral Trading include

- managing collateral trading from a firm-wide perspective on a day-to-day basis,
- maintaining the centralised collateral pool with respect to assets and received collateral,

- freeing-up collateralised capital if needed, and
- picking the cheapest and most suitable asset from the pool to meet the collateral obligation of every business.

The division of tasks between Collateral Management and Collateral Trading will be similar to common liquidity management setups, where a central “Asset Liability Committee” sets the principle guidelines and liquidity prices for the trading units. Hence, Collateral Trading is the operative unit that accesses the internal and external markets, and operatively handles and supervises all collateral trades under the mandate and set of principles laid out by Collateral Management.

The value of the respective collateral delivered to, or taken from, the pool will be considered in the calculation of the desk’s P&L. As respective front office units are usually already installed within larger institutions, the current business model of Collateral Trading departments will be strongly affected by the introduction of a centralised collateral pool and the concomitant strategic guidelines set out in Collateral Management.

## 4.2 Supporting business units



A sufficient operational tool-kit for the margining and dispute management processes is a necessary basic, in order to both meet increasing regulatory requirements and to reduce the operating cost of collateralised banking.



### Collateral Admin

The operational margining and dispute management takes place in Collateral Admin, a back office or middle office function supporting the collateral core business units Collateral Trading and Collateral Management. The mandate of Collateral Admin involves

- calculating daily margin calls and communicating with counterparties,
- fulfilling (intraday) margin calls of central counterparties and exchanges,
- settling as well as operationally allocating collateral positions,
- processing disputes and reporting disputes exceeding the given thresholds as required by the prudential supervision, and
- executing the portfolio reconciliation.

The enhancements for regulatory compliance placed great demands on the human and technical resources within Collateral Admin and are mostly implemented and integrated into the operational processes by now. Institutions approved or installed various IT-systems and mostly employed new staff. Other regulations forcing banks into CCP clearing will apply gradually, starting in 2014, which again leads to an adjustment of operational structures and additional IT investments.

We expect cost optimisation measures as well as additional standardisation and formalisation efforts in the future, leading to increased outsourcing activities, especially at small institutions or bundling of Collateral Admin activities in off-shore service centres at multinationals.

### Collateral Control

The traditional role of financial control and, respectively, risk control will be extended with collateral related topics in the future. An explicit desk control function for collateralised banking will be established to enhance the risk view on collateral and to get transparency on the economic risk arising from disputes, e.g. the credit or liquidity risk stemming from non-settled collateral calls.

Tasks of Collateral Control are to

- limit, monitor and report collateral risk, including concentration, correlation and operational risk,
- forecast collateral flows to provide a front office independent view on future collateral exposure,
- partner with Collateral Admin to explain PV differences with bilateral counterparties within the dispute management process,
- validate the internal collateral value, and consider the collateral value in internal funds pricing and funding valuation adjustments,
- integrate the collateral component into the existing P&L, reporting both on single desk as well as on segment level, and
- support the Finance division concerning accounting issues, including the setting of accounting standards.

# 5

## The centralised collateral pool



A centralised collateral pool conveys an understanding of the decentralised collateral positions, enabling a “single point of truth” approach and thus, an efficient management of the scarce resource collateral.



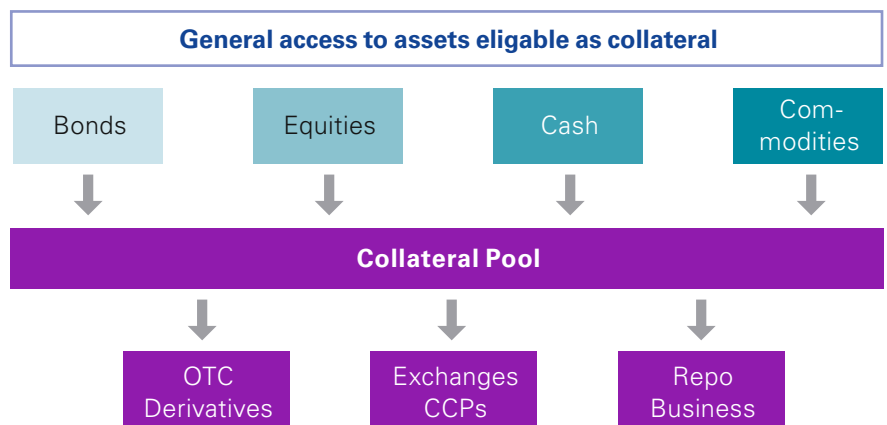
Currently, financial institutions mostly have various collateral silos which are used for different purposes such as securities lending, repurchase agreements, secured funding with the central banks or bilateral/unilateral clearing, often leading to little or no cross-unit usage of collateral. In order to efficiently reduce collateral costs, as well as to reuse collateral received by a different unit within the financial institution, central pooling of all eligible assets is preliminary.

This pooling of information enables banks to establish an enterprise-wide, largely automated planning and optimisation of the collateral pledge and receive process along with the management of the entire stock. The following aspects outline the character of the central pool:

- The collateral pool is held in addition to the central liquidity pool and not only meets the operative collateral needs in the front office, but also the regulatory liquidity reserve. Besides that, the centralised collateral pool holds valuable information for counterparty risk management purposes, e.g. for modelling future net credit exposures, or for operative liquidity management, e.g. for forecasting future collateral cash flows.

- A central tracking process additionally facilitates informational transparency, an institutional or group-wide uniform definition of collateral eligibility, the immediate traceability of the collateral use and availability of a specific asset in the central collateral pool (“single point of truth”). On the basis of this transparency, received collateral available for rehypothecation can also be effectively reused to achieve a further cost reduction. Furthermore, expensive cash collateral could be replaced by cheaper, non-cash collateral.
- The centralised collateral pool communicates bilaterally with the position keeping systems and sub-ledgers (e.g. Front Office, Treasury and collateral systems), to facilitate the effective allocation of the assets as well as the pledged and received collateral according to the collateral requirements. Highly sophisticated automated processes are necessary here for the allocation of the assets being steered and supervised by Collateral Management.
- The centralised collateral pool enables the bank to not only largely automate its collateral decisions and processes, but also facilitates the establishment of an internal “transfer price” for collateral, which enables Collateral Management to steer the enterprise-wide use of collateral.

The core challenge in setting up the centralised collateral pool is the expansion of the data infrastructure and the introduction of a uniform and standardised data set. For the implementation of the central collateral pool as well as the transfer pricing system, a virtual or physical technical implementation can be carried out. A physical implementation would involve the change of existing portfolio structure and governance to consider all collateral eligible assets. Due to the already rather complex IT landscape, and in order to avoid breaking up any existing interfaces, the introduction of a virtual collateral system seems to be the more convenient solution.



# 6

## KPMG's collateral optimisation approach



Leveraging the unencumbered overlay position of the collateral pool complements the ongoing optimisation of collateral costs and might even lead to additional income.

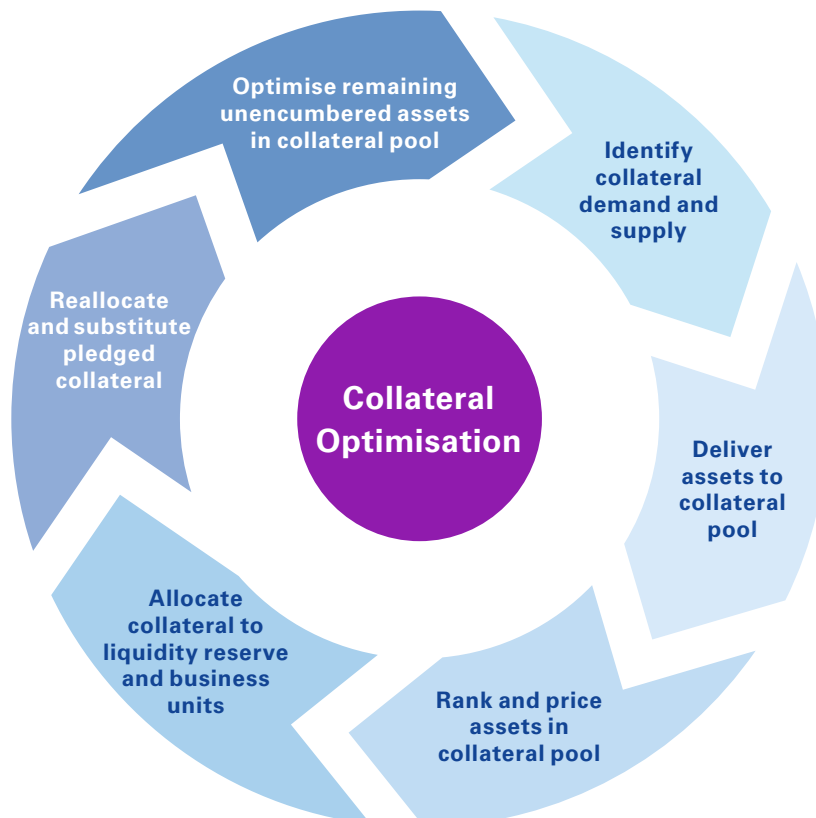


In the past, most of the financial institutions viewed collateral management more as a pure back office discipline, rather than a strategic steering function. This view on collateral management has changed in recent years in many firms, driven by the following facts:

- Increased funding costs require an efficient management of funds and collateral.
- The squeeze of high quality collateral is leading to a necessary cost reduction exercise. Often, a high

quality paper is used even if a lower quality might suffice, whereby cash is in most cases the most expensive form of collateral. The institutions' challenge is to identify the cheapest collateral to pledge.

- The altered business model due to regulatory requirements within the introduction of clearing obligation, is leading to an additional collateral demand for high quality collateral to post initial margin.



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## 6.1 What is collateral optimisation?

At KPMG, we find that the collateral optimisation approach aims to minimise costs within the collateral management function itself and to increase margin efficiency, by setting rules on how a financial institution allocates its eligible assets across all counterparties and traded products in the optimal way, leading to decreased collateral costs.

In order to reduce the costs of collateral, a firm must determine the cheapest collateral to pledge for each counterparty’s margin portfolio individually. Naturally, this includes new business, but also a proposal of collateral movements within the (daily) re-margining with the counterparty. This re-margining process under collateral optimisation should include a full dynamic re-allocation and substitution of already posted collateral and the consideration of received collateral that can be utilised for rehy-

potheccation. Thereby, it is not only the funding costs of an asset that need to be considered as collateral costs within the optimisation, but the opportunity costs of the asset are also relevant.

In principle, a collateral optimisation strategy has different dimensions that are all interconnected and can be applied to the whole trade life-cycle, beginning even before deal capture:

	Before transaction	At transaction	After transaction
Operating Model	<ul style="list-style-type: none"> <li>• Mobilisation of all available eligible assets in one central collateral pool</li> <li>• Strategic guidelines for collateral optimisation (transfer price, optimisation parameters)</li> </ul>	<ul style="list-style-type: none"> <li>• Fast and cost efficient, largely automated collateral pledge and receive process</li> <li>• Central collateral pool allows posting of most advantageous collateral</li> </ul>	<ul style="list-style-type: none"> <li>• Mobilisation of all received assets in the central collateral pool for further usage</li> </ul>
Operations	<ul style="list-style-type: none"> <li>• Maintenance, supervision of optimisation algorithm and implementation of strategic guidelines into selection routines</li> <li>• Classification and evaluation of collateral eligibility</li> </ul>	<ul style="list-style-type: none"> <li>• Collateral selection automated through optimisation algorithm</li> <li>• Initial collateral posting</li> <li>• Risk view on collateral</li> </ul>	<ul style="list-style-type: none"> <li>• Dynamic reallocation and substitution of collateral over all margin contracts</li> <li>• Margining and dispute management largely automated</li> <li>• Rehypothecation</li> </ul>
Legal	<ul style="list-style-type: none"> <li>• Bilateral negotiations with counterparties: Optimisation of margin agreements, collateral and rehypothecation rights, collateral schedules</li> </ul>		
Methodology	<ul style="list-style-type: none"> <li>• Simulation of collateral demand within the pre-deal check</li> <li>• Pre calculation of transaction (for funds transfer pricing)</li> </ul>	<ul style="list-style-type: none"> <li>• Collateral optimisation: Determination of the cheapest to pledge collateral</li> <li>• Incorporate risk-adjusted valuation into margin call calculation</li> </ul>	<ul style="list-style-type: none"> <li>• Collateral optimisation: Proposal of collateral movements</li> <li>• Potential future counterparty exposure to forecast future margin demands</li> </ul>

In several discussions with our clients, we at KPMG observed that some institutions started to offer collateral transformation products, e.g. „collateral swaps“, allowing clients such as other institutions and corporations to enhance the quality of their collateral pool. The idea behind the transformation service is to swap a lower quality, hard to pledge or even non-eligible collateral into high quality collateral such as government bonds or cash. In return, of course, the service provider usually applies haircuts to level the differences in the quality of the swapped assets and receives a fee for the transformation. Hence, collateral transformation can be seen as a preliminary form of collateral optimisation, as by swapping bad for good collateral, the hardest to pledge collateral is removed from the bank’s collateral pool. Furthermore, by entering into collateral swaps, unencumbered high quality assets can be used to generate additional income.

## 6.2 Collateral optimisation algorithm

How can the margin efficiency be increased and the cost of collateral minimised? By setting rules on how a financial institution should use its assets in the optimal way and by having an algorithm in place that supports the optimal allocation of all assets in an automated way. An effective way to start is the determination of the cheapest collateral to pledge for each individual margin contract. Furthermore, such an algorithm can be used to propose so-called collateral movements, whereby already posted collateral is (dynamically, e.g. daily) reallocated and substituted from one margin contract/counterparty to another, resulting in the lowest overall cost of the whole portfolio as the optimum collateral pledged across all counterparties.

In an advanced state, the algorithm can be extended by potential future exposure calculations to forecast (pre-trade) counterparty exposure scenarios, and therefore future margin demands through the lifetime of a trade that can be already incorporated today.

Common input parameters for an optimisation algorithm should be:

- **Collateral demand**

Knowledge of the current collateral demand is essential for the optimisation. The demand incorporates on the one hand, margin calculations performed by the firm’s own collateral management unit and on the other hand, the margin calls from bilateral counterparties, central clearing counterparties and exchanges.

- **Collateral allocation**

The current allocation of the collateral defines if/which collateral is already posted to a counterparty and when the collateral becomes available again or when/if collateral can be substituted.

- **Assets eligible as collateral**

All assets that could be eligible as collateral must be considered in order to determine the cheapest to pledge. That could be cash, bonds, equities or commodities.

- **Collateral eligibility**

Collateral eligibility defines which type of collateral and rating is eligible for each individual margin agreement, as well as if substitution rights are negotiated.

- **Funding costs**

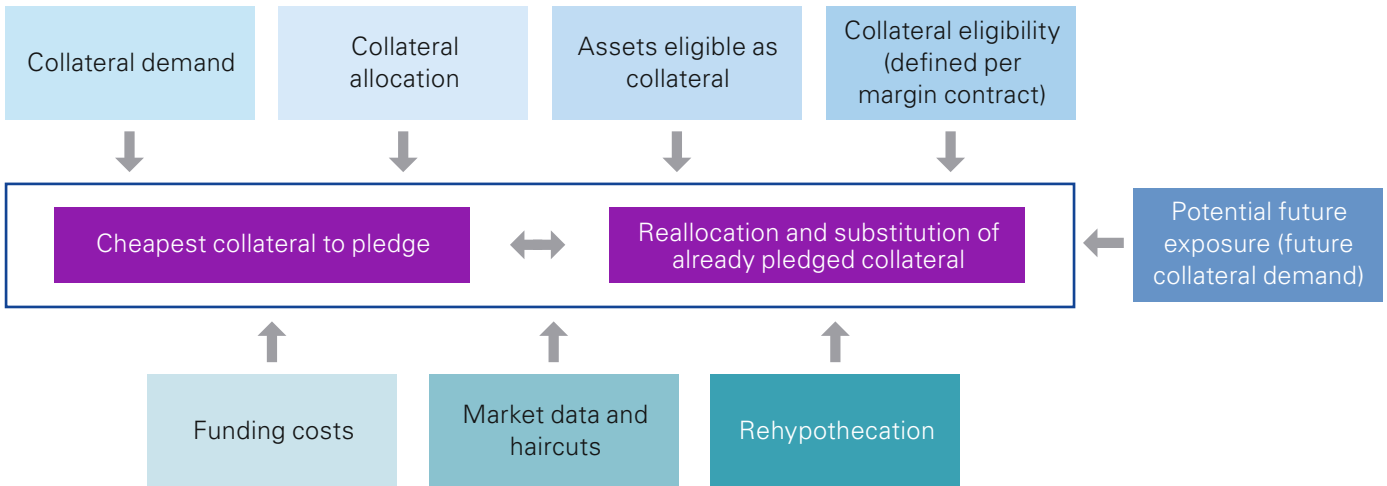
Funding costs need to be considered to set an internal transfer price for each collateral position.

- **Market data and haircuts**

In order to determine the market value of the collateral, market data such as bond prices and ratings needs to be incorporated as well as asset specific haircuts agreed with the counterparty, that decrease the clearing value of the collateral position.

- **Rehypothecation**

In the event that the institution wishes to perform rehypothecation and reuse collateral pledged by its clients as collateral for its own collateral demands, the algorithm must know about the collateral received and about the rehypothecation rights agreed with the counterparties as well as the regulatory requirements.



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**• Potential future exposure**

By incorporating potential future counterparty exposure into the optimisation process, the financial institution can forecast potential exposure scenarios and calculate the collateral demand through the lifetime of a trade or the whole portfolio. By simulating the collateral demand of a new trade within the pre-deal check process, trading has a much more detailed view on the counterparty exposure of the trade and the collateral costs for the institution. For the central collateral function and for treasury, the estimated future collateral demand can be used for a firm-wide funding planning.

One of the remaining challenges for institutions will be to incorporate their counterparties’ portfolio limits concerning collateral concentration within the optimisation approach in an automated way, as respective information is not available or very restricted.

**6.3 How to implement a collateral optimisation solution**

Implementing a strategic collateral optimisation solution includes several implementation steps tackling governance, business processes, IT systems, data availability and data mining, as well as the parameterisation of the optimisation algorithm itself.

Our optimisation approach highlights seven points that a financial institution should consider:

**1. Centralising the collateral function**

In order to reach full transparency about the collateral management processes, the implementation of an enterprise-wide collateral management should be considered. This centralised steering function also supports the implementation of current regulations, such as the Capital Requirements Regulation (CRR) that requires senior management to allocate sufficient resources to the collateral management unit.

**2. Building a central collateral pool**

Building a central collateral pool involves, in particular, investments into a collateral management system centralising all trade, collateral, counterparty and legal data and into a strong IT infrastructure. A virtual collateral system that bilaterally communicates with the different subledgers is also a possibility for consideration.

### 3. Dedicated collateral trading desk

Most of the major banks have already installed dedicated front-office functions that are focusing on credit value adjustments (CVA). Similar to a dedicated CVA desk that concentrates solely on managing counterparty credit risk, a dedicated collateral trading desk focuses on managing liquidity and collateral. The setup of such a dedicated front office function requires major effort, as systems and processes within the whole bank are affected. The success strongly depends on the proper introduction of a centralised collateral pool beforehand.

### 4. Full data availability and (virtual) stock taking of all collateral positions

Our experience in many institutions has been that information about margin agreements, collateral eligibility schedules, settlement information and information about disputes are either not available in the system at all, or are only manually maintained and can therefore not be processed technically on time. This issue is closely linked to the set-up of a central collateral pool, whereby collateral positions from the various collateral systems or pools over the whole institution are transferred into a centralised repository.

### 5. Prioritisation of assets by the institution preferences

When all eligible assets are mobilised and listed, a bank should start to prioritise its assets, which is basically a simple way of optimising collateral. By ranking all assets after a schedule that is firm, specific and depends basically on the firm’s business model and optimisation strategy (e.g. ratings, maturities and economic costs), rules can be defined for which collateral should be posted. Those assets that are lower ranked will be delivered first, and higher ranked assets will be kept for future collateral demands.

### 6. Defining a price tag for every collateral position

Each collateral eligible asset must receive a price tag that is directly associated with the funding and opportunity costs of the position.

### 7. Mobilisation of assets

In addition to the collateral positions that are already in use as collateral, a bank should look particularly at assets that are not yet flagged as eligible and mobilise these kinds of assets. This involves securities as well as other asset classes such as equities and commodities that are still uncommon as collateral for many banks, but can be pledged e.g. as initial margin for centrally cleared or exchanged traded derivatives.

## 6.4 Integration of the collateral value within the Funds Transfer Pricing



The valuation and pricing of collateral requires the definition of classic business parameters as well as qualitative elements. If integrated into the bank’s funds transfer pricing system, the allocation of collateral to and from the centralised collateral pool should be based upon the internal transfer price of the collateral.



Ultimately, having considered the collateral optimisation rules and processes, the rule “the price is always the best steering factor” should also be applied to collateral management.

The fundamental challenge in the pricing of collateral is the adequate consideration of the earnings and costs of the collateral in the pricing of all relevant products, particularly in line with the maturity profile. Finally, collateral prices should then be incorporated into the general steering function of funds transfer pricing systems.



Funds transfer pricing systems allocate the respective liquidity costs, benefits and risks in line with their point of origin. The experiences of the financial market’s crisis moved funds transfer pricing systems up on the banks’ agenda, since both economic reasoning as well as regulatory supervision demand that.

Naturally, the difference in funding cost between secured and unsecured funding should be considered in funds transfer pricing. But just differing between secured and unsecured funding falls too short for the adequate pricing of the cost or benefit of collateral. For example, if a front office buys low quality collateral while selling high quality collateral, owning a risk free spread, the mere differentiation between secured and unsecured funding would not adequately cover the cost of this deal, which is represented by the lower liquidity potential and higher cost, if the bank were to fund itself using the low quality collateral instead of the sold high quality collateral. The same, of course, applies to the funding units of the bank. The internal price for buying high quality collateral from the central collateral pool should be higher than for lower quality collateral, since the funding potential, and thus the need for additional unsecured funding, is higher and the interest paid on funding with high quality collateralisation is lower.

In order to avoid internal arbitrage, the banks need to implement an adequate cost allocation or incentive system for the management of both the collateral supply and demand. In addition to the classic parameters used in transfer pricing such as maturity or currency, as pointed out above, the quality of the collateral should also be taken into account.

The cost or benefit of each individual collateral should, therefore, be calculated as the difference between the internal funds transfer price for unsecured funding and the cost of maturity matched secured funding using that specific collateral. The funding value of collateral, expressed by its different haircuts, affects the price since the haircut needs to be funded at the cost of unsecured funding.

In addition to the quality of the posted collateral, its expected availability or encumbrance in a particular transaction should be considered. Received collateral should be priced based upon the expected availability of the collateral, leading to different prices for two similar transactions of which one, for example, grants the counterparty comprehensive call or substitution rights and the other does not. Posted collateral on the other hand should be treated with its expected encumbrance as well, but modelling parameters and assumptions would depend on the banks’ own economic collateral strategy. This together results in an asymmetric pricing of collateral based on whether it is received or pledged.

Other, partly qualitative factors, which will make the correct pricing of collateral an even more complex task, should be considered:

- enterprise-wide expected evolution of collateral supply and demand,
- open-ended maturities,
- settlement costs,
- earned or forgone profits due to collateral optimisation.

The determination of a collateral transfer price is directly associated with the valuation of collateralised derivatives, as the opportunity cost for pledging collateral to fulfil margin agreements is the forgone funding advantage of the collateral compared to unsecured funding.

The inclusion of the collateral into the funds transfer pricing can be done on a gross or net basis. For additional transparency of the internal risk transfer and the accrued costs, we favour the approach using the gross as basis.



# 7 Outlook

In post-crisis banking, the demand for high quality collateral has significantly increased and market participants estimate that the volume will continue to grow, driven by new regulatory requirements as well as new market standards. In particular in today's OTC derivative markets, cash is the main source for collateral, but cash will no longer suffice as the demand for collateral will be too high. Going forward, we at KPMG believe that institutions will view collateral from a different angle and no longer treat collateral management as a pure operational function, but more as one of the economic key success factors for cost efficient banking.

For the future of collateralised banking, we consider the following aspects to be essential for the industry:

- Collateral management will become a strategic, bank-wide integrated task, which will be managed by a central steering function.
- A centralised collateral pool supports the enterprise-wide transparency on the inventory of assets that might be eligible as collateral, and an efficient management of the scarce resource collateral.
- Operational processes such as margining and dispute management will remain a necessary basic in order to both meet increasing regulatory requirements and to reduce the operating cost.
- Collateral optimisation will become essential, and appropriate techniques will become widely used to allocate the firm's assets in the optimal way and to reduce risk and capital charges.
- Collateral will be included into the funds transfer pricing for the adequate consideration of the earnings and costs of the collateral.



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