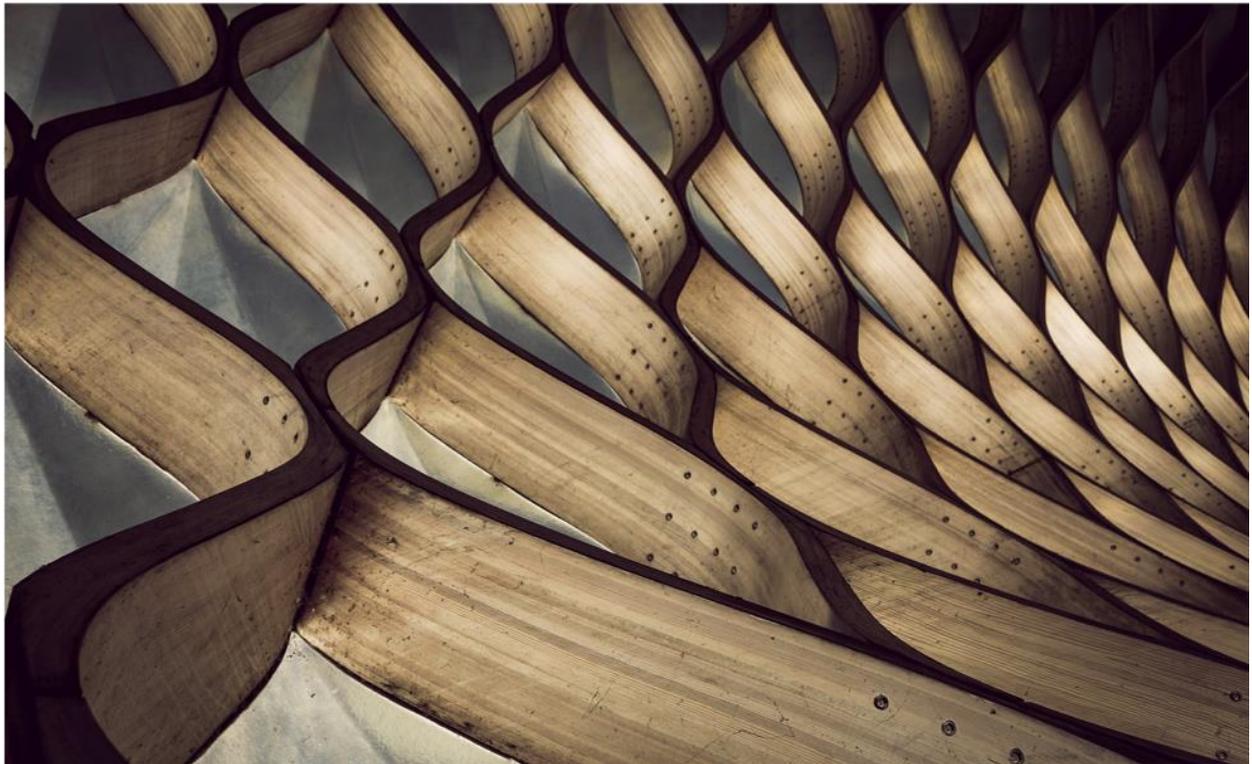


# Making the Most of XVA

## *Practitioner Perspectives*

May 2018



### **The Evolution of XVA Desk Management**

Key findings from practitioners at 37 global financial institutions.



## **About Fintegral**

We are a specialist risk consultancy based in London, Zurich, Frankfurt and New York. We partner with some of the world's largest banks and insurance companies to develop and implement solutions in risk and capital management. Our focus is on credit risk, model risk management, stress testing and risk governance. Our employees hold advanced degrees in quantitative disciplines, often combined with extensive experience as industry practitioners. The firm has been a sponsor of IACPM for several years and combines strong CPM expertise with a number of in-house developed CPM solutions including CP models and calibration tools.

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## **About the IACPM**

The IACPM is an industry association established to further the practice of credit exposure management by providing an active forum for its member institutions to exchange ideas on topics of common interest. The Association represents its members before regulatory and administrative bodies in the US and internationally, holds bi-annual conferences and regional meetings, conducts research on the credit portfolio management field, and works with other organizations on issues of mutual interest relating to the measurement and management of portfolio risk.

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# Contents

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- Executive Summary ..... 1
- Setting the Scene ..... 2
  - Background..... 2
  - Survey Demographics..... 4
- Current XVA Practice..... 5
  - General Observations ..... 5
  - Counterparty Risk ..... 9
  - Funding..... 12
  - Capital ..... 14
- The Wider Implications of XVA..... 19
  - Risk Management ..... 19
  - Model Validation ..... 21
  - Finance ..... 22
  - Derivatives Business..... 24
- Conclusion..... 25

# Figures

---

Figure 1: The most common valuation adjustments .....	3
Figure 2: Survey demographics.....	4
Figure 3: Reporting line and organisational structure .....	5
Figure 4: Implementation of XVA .....	6
Figure 5: Regional breakdown of XVA implementation.....	7
Figure 6: P&L target types.....	8
Figure 7: Fair-value CVA for collateralised counterparties .....	9
Figure 8: Choice of credit hedging instrument.....	11
Figure 9: Break-down of choice of credit hedging instrument.....	11
Figure 10: FVA management practices.....	12
Figure 11: Spread curve for funding cost and benefit.....	13
Figure 12: Capital cost allocation.....	14
Figure 13: Sophistication of capital regime .....	15
Figure 14: Planned IMM approval activity .....	16
Figure 15: Carrying out capital optimisation or KVA hedging.....	18
Figure 16: Risk management activity within XVA function .....	19
Figure 17: Initial and annual cost of the XVA system.....	20
Figure 18: Totem usage in the XVA context.....	23

# Executive Summary

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The International Association of Credit Portfolio Managers (IACPM) is an excellent medium for industrywide surveys. The IACPM provides a credible platform that boasts true industry participation. The XVA survey was commissioned as a result of IACPM member requests, with 37 global and regional financial institutions participating in the survey.

The survey aims at understanding current practice within a still diverse implementation landscape of XVA. The focus lies less on the technical and methodological aspects but more on the practical issues typically encountered within the task of managing XVA. The survey touches upon the mandate of the XVA function, organisational and infrastructure, business and control implications as well as the impact of the regulatory environment.

This White Paper presents the most interesting survey findings. A general observation is that CVA and FVA are well established and recognised in similar fashion at most organisations. The more exotic valuation adjustments such as MVA<sup>1</sup> and KVA<sup>2</sup> have not yet reached a mature state. They currently pose the biggest challenges for the participating firms. Issues around capital in particular are still fraught with uncertainty and possibly the part of XVA management activity that requires a comparatively large amount of attention despite KVA not yet being considered a fully operational valuation adjustment.

In addition, the White Paper looks at the wider implications of XVA that impact other areas such as 2<sup>nd</sup> line Risk Management, Finance, Model Validation or the client-facing business lines. Here we find that technology is an important topic, in particular the overlap between XVA and 2<sup>nd</sup> line risk systems. The impact of Brexit is felt in the Model Validation functions and while business lines are now mostly more accepting towards CVA and FVA charges, they are nervous about the sheer number of valuation adjustments that threaten to severely impact the profitability and viability of the various derivatives businesses.

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<sup>1</sup> Deals with the cost/benefit of exchanging initial margin.

<sup>2</sup> Prices in forward looking cost of capital.

# Setting the Scene

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## Background

Valuation Adjustments for derivatives transactions were introduced in the late 1990s. Focus on valuation adjustments for derivatives trading increased significantly over the last decade. While they originated from the attempt to manage and price counterparty risk of derivatives along the same principles as the classic market risks such as rates or foreign exchange risk, the need for valuation adjustments accelerated after the financial crisis of 2008. Valuation adjustments are driven by economic, accounting and regulatory considerations. They are now an integral part of financial institutions derivatives business. Considerations such as the possibility of a default of the counterparty or the implication for a bank's funding strategy, should be factored into the price and possibly into the accounting valuation. Regulators recognised the significance of the accounting impact and introduced a CVA capital charge into their Basel III standards<sup>3</sup>.

Figure 1 lists the most commonly used valuation adjustments often summarised under the acronym XVA. They all constitute a correction amount applicable to the risk-free price of a derivative due to the risk or cost they intend to model.

The International Association of Credit Portfolio Managers (IACPM) and Fintegral jointly conducted a benchmarking survey which focussed on evolving industry practices for XVA Management. This topic received significant interest at past IACPM Counterparty Roundtable discussions and hasn't been explored in the same depth by any other industry study so far.

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<sup>3</sup> Minimum Capital Requirements for CVA Risk, p. 109 ff in Basel Committee on Banking Supervision: Basel III - Finalising Post-Crisis Reforms, December 2017.

Acronym	Meaning
CVA	<i>Credit Valuation Adjustment</i> : risk-neutral expected loss due to counterparty (default) risk a client poses to the bank. This typically constitutes a cost to the bank.
DVA	<i>Debit Valuation Adjustment</i> : risk-neutral expected loss due to the default risk the bank itself poses to the client. This typically constitutes a benefit to the bank.
FVA	<i>Funding Valuation Adjustment</i> : funding cost arising from the absence of daily margining applied to the mark-to-market (MtM) of derivatives transactions. This can also be split in a cost (FCA) and a benefit (FBA).
MVA	<i>Margin Valuation Adjustment</i> : special type of funding cost arising from having to post initial margin. This can be the result of paying/receiving bilateral initial margin or of executing a trade with an end-user but hedging it with a cleared transaction that leads to the bank having to post initial margin to a Central Counterparty (CCP) such as the London Clearing House (LCH).
CollVA	<i>Collateral Valuation Adjustment</i> : special type of funding cost arising from having different remuneration rates for collateral posted between two parties of derivatives contracts (e.g. pay EONIA versus receive EONIA – 5 bps). This is also called differential discounting. It can also include the cost for the optionality of what type of collateral to post or for the impact of ratings based collateral thresholds.
KVA	<i>Capital Valuation Adjustment</i> : capital cost of the Value-at-Risk (VaR) on CVA capital introduced by Basel III. This only applies to derivatives done with in-scope counterparties. End users such as corporates that only use derivatives for their treasury purposes are currently exempt.
RVA	<i>Rating Valuation Adjustment</i> : potential cost to a bank arising from the right owned by a client to close early their derivatives with the bank given a downgrade of the bank below a pre-defined ratings trigger <sup>4</sup> .

Figure 1: The most common valuation adjustments

<sup>4</sup> This is currently not a widely considered valuation adjustment and was thus not discussed in detail in the survey.

## Survey Demographics

The survey was conducted at the end of 2017 with 37 IACPM member firms globally participating, making it one of the largest XVA surveys carried out to date. There was good representation around the globe and a suitable balance between large and small institutions.

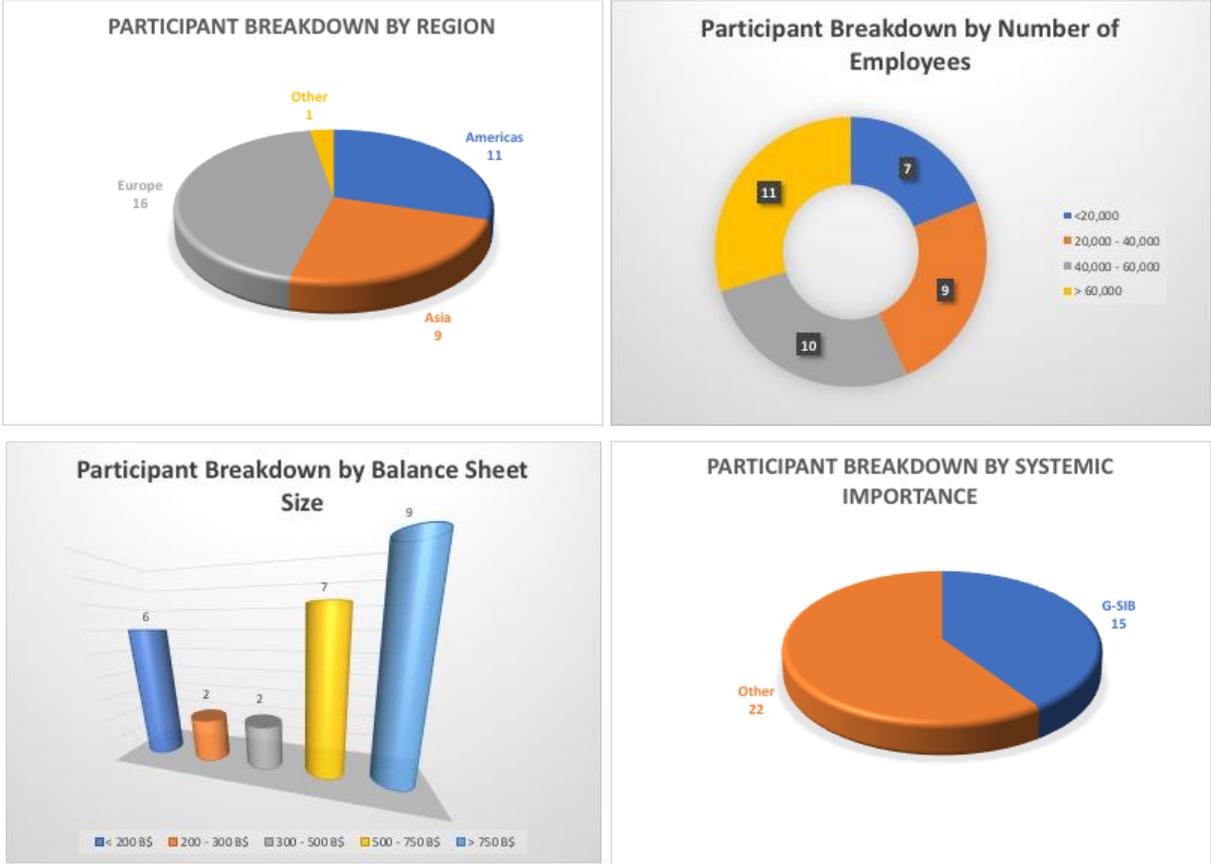


Figure 2: Survey demographics

# Current XVA Practice

## General Observations

In the vast majority the XVA function reports into Financial Markets since it is usually considered a front office activity. For 25 out of 37 participants this is the case. Other reporting lines can be Risk Management, Treasury, Finance or directly to the CEO. It should be noted that some participants have multiple reporting lines such that in addition to reporting into Financial Markets they also report into group functions such as Risk Management, Finance and/or Treasury. Reporting to Risk Management appears to be exclusive to banks from the Americas and where a decision on the reporting line has been made, Asian banks all report into Financial Markets.

The typical organizational setup combines all asset classes in a centralized XVA function as opposed to separate XVA desks per asset class. The latter setup is usually driven by a desire to keep the P&L impact of XVA within the asset class business unit. Interestingly, one participant chose both options with the explanation that the CVA part of the XVA function is decentralized but the remainder of the other XVA functions is managed in a centralized manner.

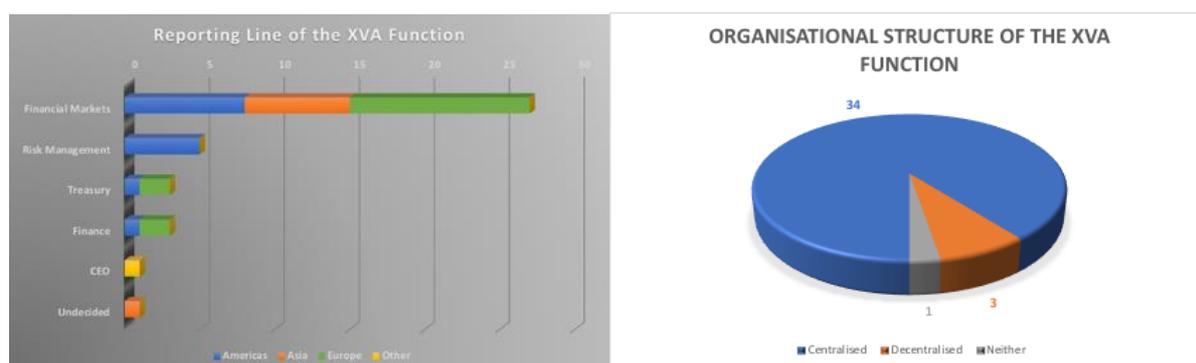


Figure 3: Reporting line and organisational structure

When it comes to the implementation of the XVA management, the following observations can be made:

- CVA is still the dominant valuation adjustment. However, the implementation of internal P&L transfer for FVA is now on par with CVA despite the former being introduced later.
- DVA is mainly an accounting concept and does not achieve the same recognition in internal P&L transfer or the VA price shown to clients. It is however still of higher significance than an observer might expect given the discussion around the overlap between DVA and funding benefit that has led some banks to drop DVA as a valuation adjustment.
- The newer VA's such as KVA, MVA and CollVA exhibit a different strength of implementation between the four management topics. They do form a significant part of the XVA function mandate and they have significant impact on the client pricing but are rarely viewed as a P&L item or requiring a fair value adjustment for accounting purposes.

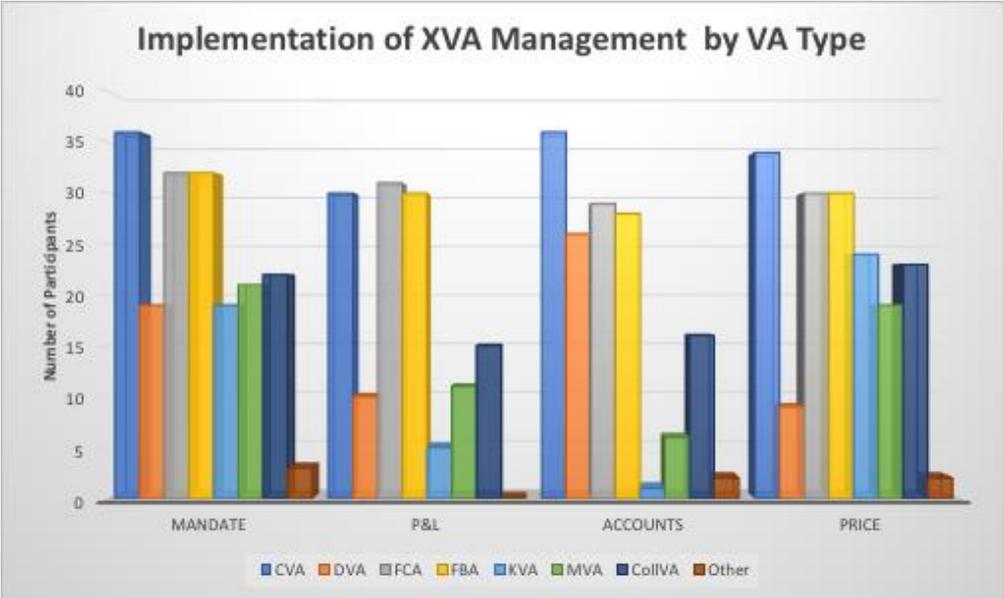


Figure 4: Implementation of XVA<sup>5</sup>

Other valuation adjustments mentioned are RVA, special forms of FVA or MVA and charges related to the liquidity coverage ratio (LCR)<sup>6</sup>.

<sup>5</sup> The survey considered four important topics that an XVA function concerns itself with. For each VA we looked at whether the function looks at it (mandate), receives P&L transfer (P&L), there is a fair-value reserve (accounting) and they are priced into client transactions (price).

<sup>6</sup> This is a concept that impacts all banks. The XVA function is often involved in the management but only one participant chose to mention it as an additional valuation adjustment type.

An interesting perspective for the XVA implementation is the regional split. Figure 5 shows the percentage of participants from the relevant regions that have implemented a specific VA in one of the four XVA management topics. Observations worth noting are:

- European banks are the most decisive on XVA implementation. All European participants set up internal P&L transfer, accounting and pricing for CVA and FVA.
- European participants all have DVA in their accounts despite it not being reflected in the other XVA use cases to the same extent. This is somewhat surprising since American banks were the first to embrace the DVA concept. Asian participants are the least convinced of DVA and do not appear to be applying it either for P&L transfer or pricing.
- It was already mentioned that KVA, MVA and CollVA are mostly considered in the pricing context. Interestingly, Asian participants seem to put more emphasis on these than American participants even though Asian banks are usually considered to be newer adopters in the context of XVA.



Figure 5: Regional breakdown of XVA implementation<sup>7</sup>

<sup>7</sup> See footnote 5

The mandate of the XVA desk is considered to be the protection of the derivatives P&L of the institution. While most commonly the reporting line of the XVA function lies within Financial Markets and its considered to be a 1<sup>st</sup> line activity (Figure 3), this does not necessarily imply that XVA functions have to be run as a profit center. Only four participants of the XVA survey indicated that they have a significant positive P&L target (Figure 6). None of them are G-SIB's and none of them are located in Asia. Protecting the derivatives P&L is an activity that comes at a price and the task of a successful XVA manager is to keep this to a minimum. Therefore, participants either said that they have zero or even a negative P&L expectation. Twelve participants do not even have a P&L that they actively manage. However, many of these are Asian banks where the regulatory requirements are still catching up to Europe or the Americas. This is in particular true for the practice regarding fair value reserves.

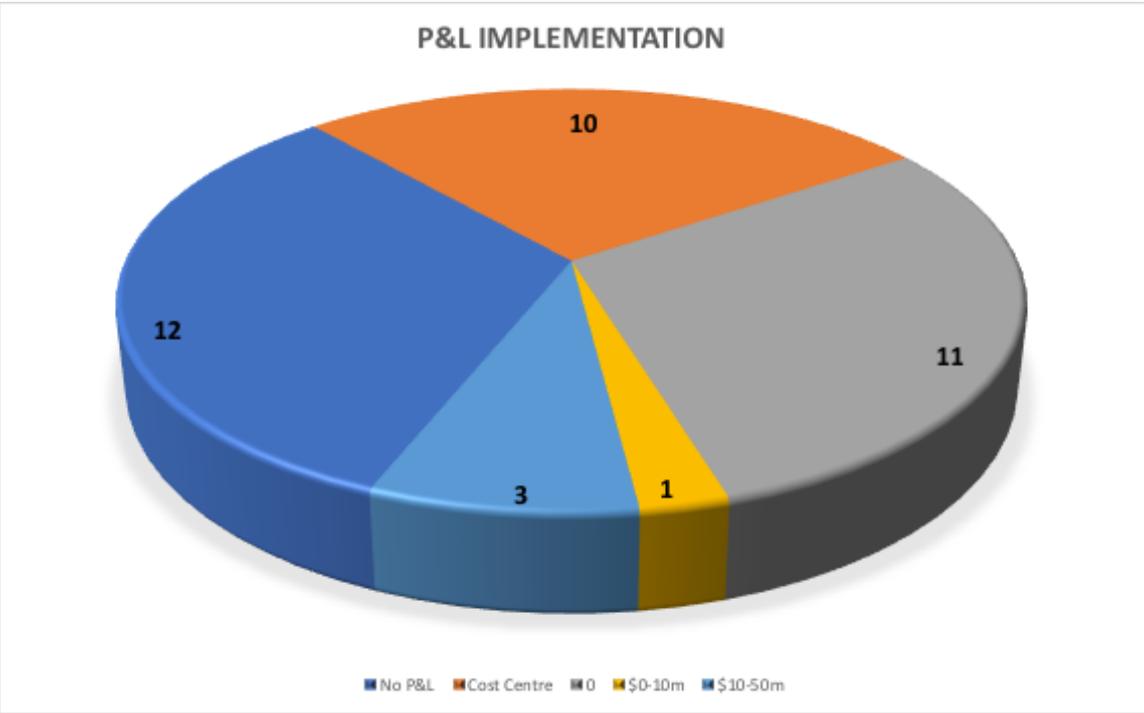


Figure 6: P&L target types<sup>8</sup>

<sup>8</sup> By cost centre we want to indicate that banks acknowledge that managing risk and executing hedges comes at a cost and it should not be expected that the XVA function generates a profit. The aim is to outperform the scenario of doing nothing.

## Counterparty Risk

Counterparty risk was the driving consideration for the development of XVA. The management of CVA is now pretty much business as usual for most banks and receives much less senior management focus than in previous years. Many aspects of CVA management have reached a high degree of maturity but even the CVA world is still undergoing change. The two biggest impacts are the push to more collateralized trading and central clearing as well as the drop in liquidity, observed for the primary hedging instrument for the counterparty risk, which are the credit default swaps (CDS). The survey attempted to look at both aspects.

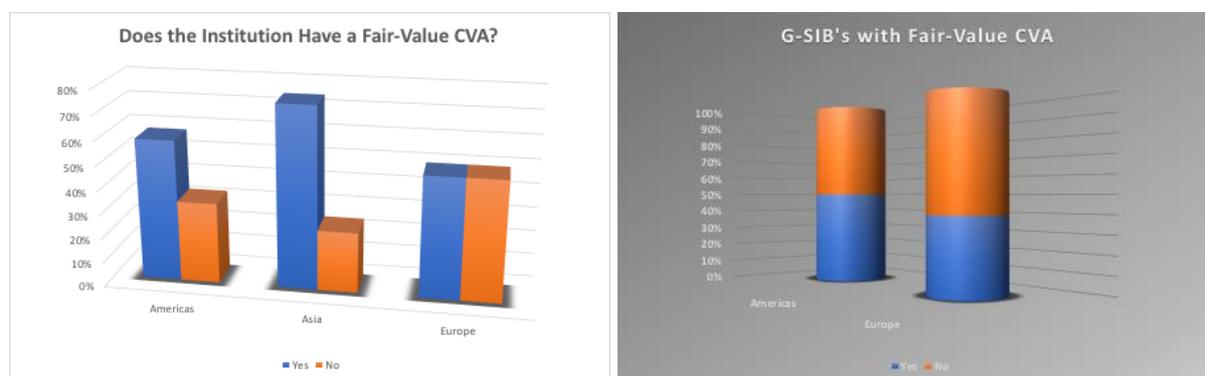


Figure 7: Fair-value CVA for collateralised counterparties

### *The Treatment of Collateralised Counterparties*

The inclusion or exclusion of fully collateralized counterparties into the fair-value reserve is a continuing topic of debate in the industry. The survey asked participants to disclose their practice in that regard. Responses show there remains a range of practice with no clear trend. 14 out of 37 participants stated that they do not have a fair-value reserve for those counterparties. This constitutes 50% of the European participants, 33% of the Americans and only 25% of Asian participants. This is by no means a function of the size or systemic importance of those banks since 8 of the 14 participants without fair-value reserve for collateralized counterparties are in fact G-SIB's<sup>9</sup>. Again, this is an overwhelming feature amongst the European participants. Six out of ten European G-SIB's do not have a fair-value reserve. A similar observation can be made in the Americas,

<sup>9</sup> Globally-systemically important banks

where two of the four G-SIB participants do not have a fair-value reserve for collateralized counterparties. Asian banks are excluded from the G-SIB element of Figure 7 since there are not enough relevant Asian G-SIB's and the status of their XVA management is still largely under development.

Interestingly however, there is only one European G-SIB that applies this principle of not having a fair-value CVA for collateralized counterparties to all of its XVA operations. All other G-SIB's are still responsible for credit losses on those counterparties and some are even involved in certain aspects of the collateral management process.

### *Counterparty Risk Hedging Activity*

The idea of the XVA function originates from the desire to convert the counterparty credit risk inherent in derivatives transactions into a market risk which could be managed using similar methods to the trading risk management carried out by the front office of a bank. In the first instance this means hedging the credit risk with credit default swaps (CDS). The extent to which this happens is influenced by a combination of bank-specific factors as well as the availability of appropriate CDS transactions in the market. Amongst others the following should be noted:

- *The typical client base of an institution:* the likelihood of being able to source a matching hedge is biggest if the bank trades with mostly global corporations and institutions. As the activity moves towards smaller clients and away from developed countries, the availability of single name CDS diminishes.
- *The acceptance of proxy hedges:* even if no direct match can be found for a CCR exposure, a CVA trader may consider using a CDS on a name that is related to the CCR exposure, a CDS index that has some link to the CCR exposure or even a combination of both single name CDS and/or indices.
- *The market risk limits for the XVA function:* market risk limits determine how much hedging is required. Low limits imply a requirement for a lot of hedging activity. Given the complexity and illiquidity of counterparty risk, this in turn usually implies a great degree of usage of proxy hedges.
- *The mandate of the XVA function to be either a profit centre or a utility function/cost centre:* as discussed earlier in Figure 6, most XVA functions have a P&L but not usually a significant profit target. This impacts the trading activity of the XVA function and thus the use of CDS.

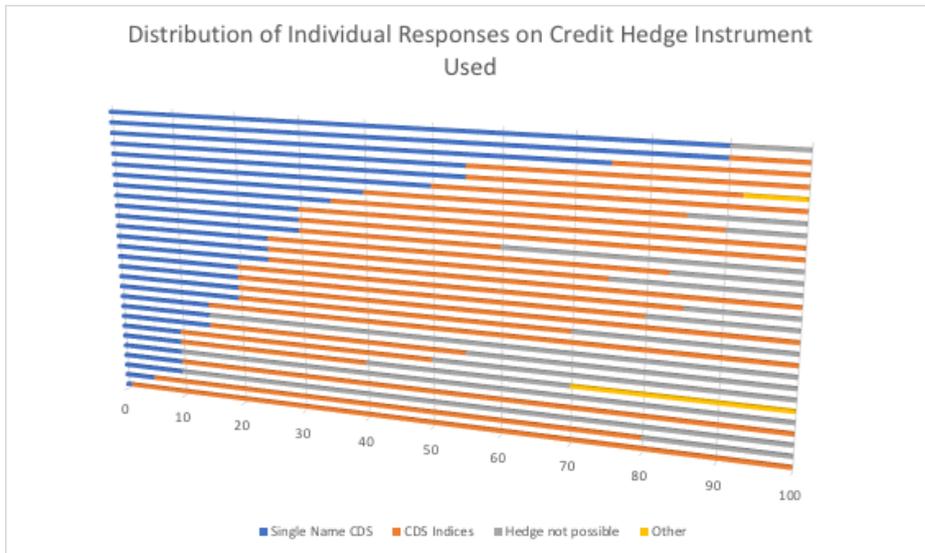


Figure 8: Choice of credit hedging instrument by participant

Figure 8 confirms that these factors lead to wide spread with regards to the use of counterparty risk hedging instruments. For example, using single name CDS varies from 0% to 90% and also the assumption of whether a hedge is possible or not ranges from ‘always possible’ to 90% unhedgeable.

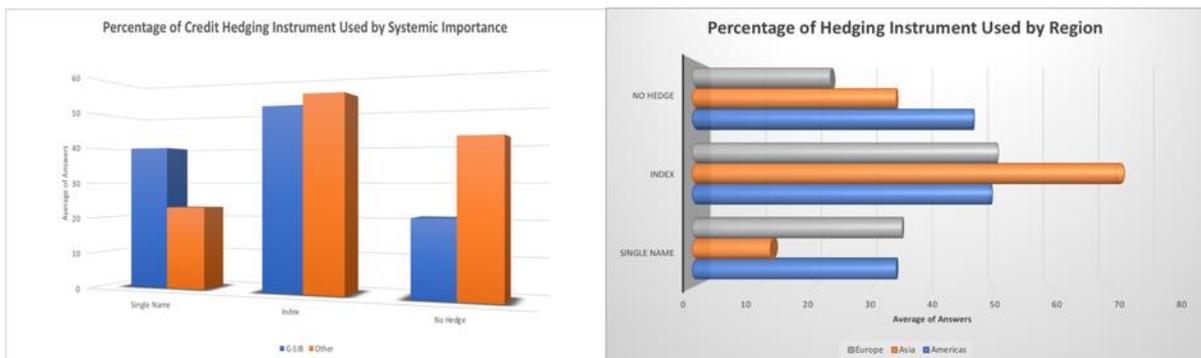


Figure 9: Break-down of choice of credit hedging instrument

Figure 9 aggregates the choices made by the participating institutions. Across all participants, CDS indices seem to be the hedging instrument used the most. On average about 50% of the CVA is hedged with indices. This is true regardless of whether the institution is considered a G-SIB or not. The regional view however, does reveal a difference. Index hedging is much stronger in Asia, where on average about 70% of the CVA is hedged with indices. The difference in sophistication does have an influence on the choice of hedging instrument – in particular with regards

to single name CDS and the decision to leave parts of the book unhedged. Where in Europe both large and small banks use on average 30-40% single name CDS, around 50% CDS indices and leave about 20-25% unhedged<sup>10</sup>, there is a more noticeable difference between G-SIB and others in the Americas. Again, CDS indices fluctuate around 50% but G-SIB's appear to be a much stronger user of single name CDS than others (43% for G-SIB's and 29% for others) and the reverse is true for the portion that is left unhedged (only 17% for G-SIB's and 52% for others).

**Funding**

Liquidity management in the form of FVA has not been around as long as the counterparty risk element of XVA. The Financial Crisis made banking institutions aware that liquidity comes at a price and constitutes a cost for the derivatives business. Next to CVA, FVA emerges as one of the most consistently recognized valuation adjustment. Looking at the four pillars, XVA function mandate, P&L transfer, accounting impact and pricing, both funding cost and benefit are important to most participants of the survey (Figure 4).

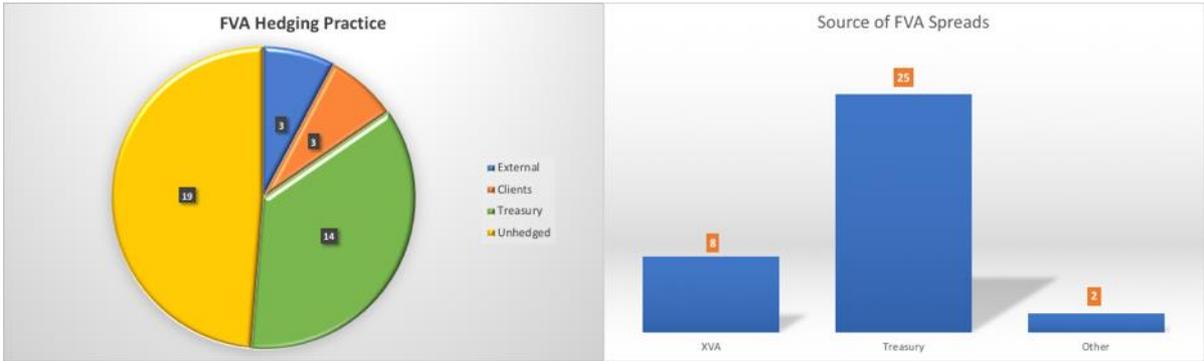


Figure 10: FVA management practices

This does not mean that all questions have been answered in regard to FVA. In particular the hedging activity is certainly viewed with some suspicion. Participants in the survey questioned whether the FVA is really properly hedgeable. The notion of exit price appears to be less clear in the context of FVA than for CVA. A reason for these thoughts is due to the fact that in the majority the terms for the FVA management are set by the bank's Treasury departments. Figure 10

<sup>10</sup> Note that these numbers should not be expected to add up to 100% since they are averages of percentages the participants assigned to these CDS hedging categories.

shows that this leads to 19 banks not hedging the FVA within the XVA function and even if they do, in the majority those hedges are internal with the Treasury, who sets the spreads used to determine the FVA. Consequently, 8 of the 14 participants that hedge with the Treasury are not aware how and if the risk is fully externalized.

Noteworthy regional differences on this topic are small in that Asian banks either do not hedge or if only with the Treasury function, and the spreads are only set by the Treasury.

Therefore, the most important aspect of the FVA management done by the XVA function lies in the pricing of the FVA. Interesting in this context is the treatment of funding cost and benefit. The vast majority of participants indicated that they make no distinction as to what FVA spread they apply to either (Figure 11). Upon closer inspection and after discussion with some participants, it seems however that this is mostly true for the accounting aspect of the FVA. For the pricing this can get relaxed such that banks are not always prepared to pay the same price for a net funding benefit as the one they would charge for a net funding cost. It tends to be lower since there are perceived problems around being able to monetise this benefit.

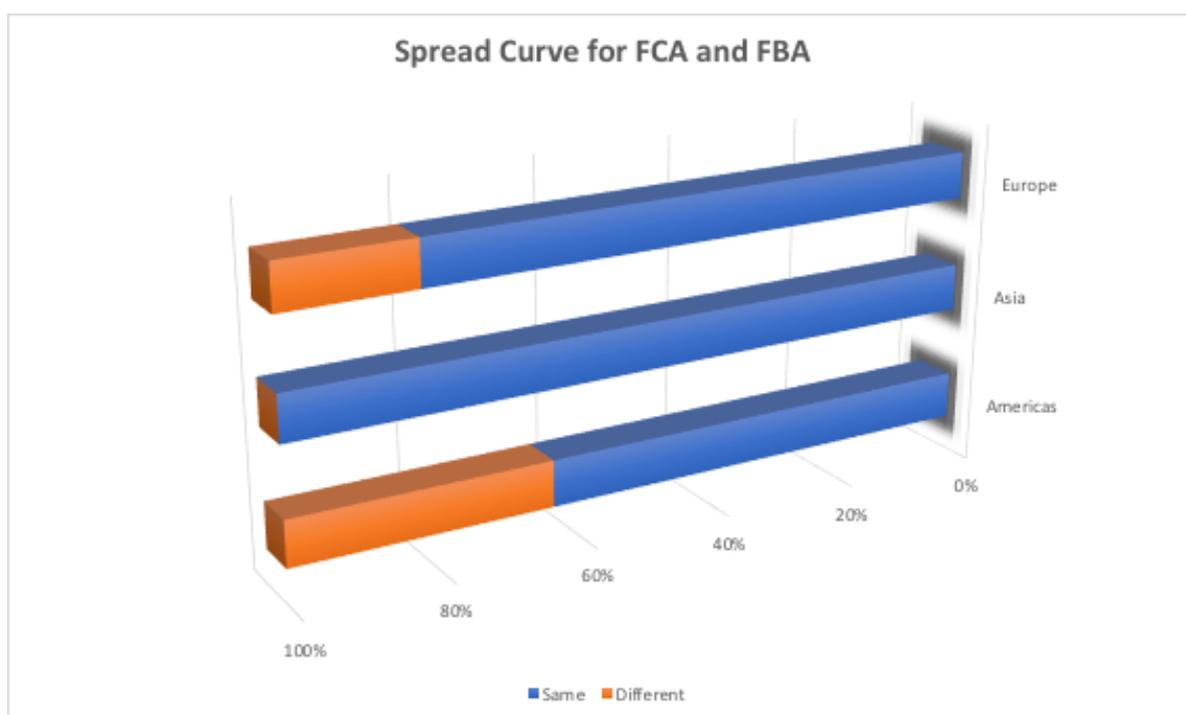
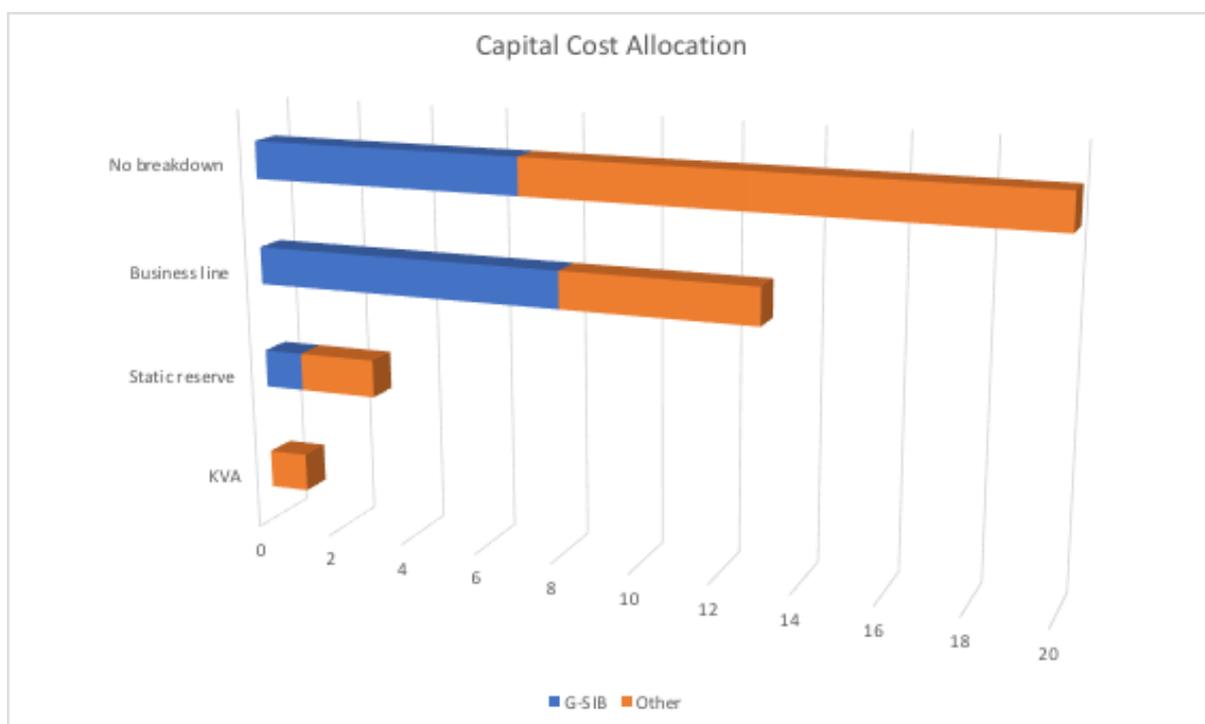


Figure 11: Spread curve for funding cost and benefit

## Capital

The importance of capital constraints increased dramatically after 2008. A host of new capital rules were introduced, and existing ones were adapted to be more risk sensitive, often resulting in higher capital requirements. This has kept the industry engaged significantly, requiring participation in quantitative impact studies (QIS) and lobbying activity to ensure that regulators find the right balance between ensuring sufficient capital cushions and allowing enough profitability for the derivatives business to stay viable. In addition, this also increased the complexity of managing derivatives.



*Figure 12: Capital cost allocation*

An interesting aspect of the way in which an institution deals with capital, is how far the capital cost is broken down towards individual transactions (Figure 12). Figure 4 showed that even though many participants price KVA it does not reach the accounts. This is reflected in Figure 12, where a clear majority do not breakdown capital cost but rather take them “top of the house”. More than half of the participating G-SIB’s break the capital cost down to business line<sup>11</sup>. There was

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<sup>11</sup> It should be noted that the expression “top of the house” that was used in the survey, could have been interpreted as a breakdown to business line as well. Certainly, for the larger and more sophisticated participants this would be a natural expectation.

only one survey participant indicating that they take capital cost at trade level. This is the same participant that said that it shows KVA in their accounts.

*The Impact of the Regulatory Environment*

Capital management is a real cost for the banks. It is a cost that is the result of regulatory rules such as those put together by the Basel Committee. The latest major update occurred in December 2017, which saw the finalization of the CCR, CVA and market risk capital rules with an intended implementation by 2022<sup>12</sup>.

One of the big changes that occurred in the run-up to the final version, was the elimination of the internal model approach (IMA) for CVA capital, leaving banks only the choice between a standard approach (SA-CVA) and a more penalizing basic approach (BA-CVA). This decision was somewhat disappointing for the XVA community since a lot of investment had flown into getting approval to use internal models for the calculation of the CCR Capital and it was hoped to recoup that by being able to achieve lower CVA capital cost by using an IMA approach there as well.

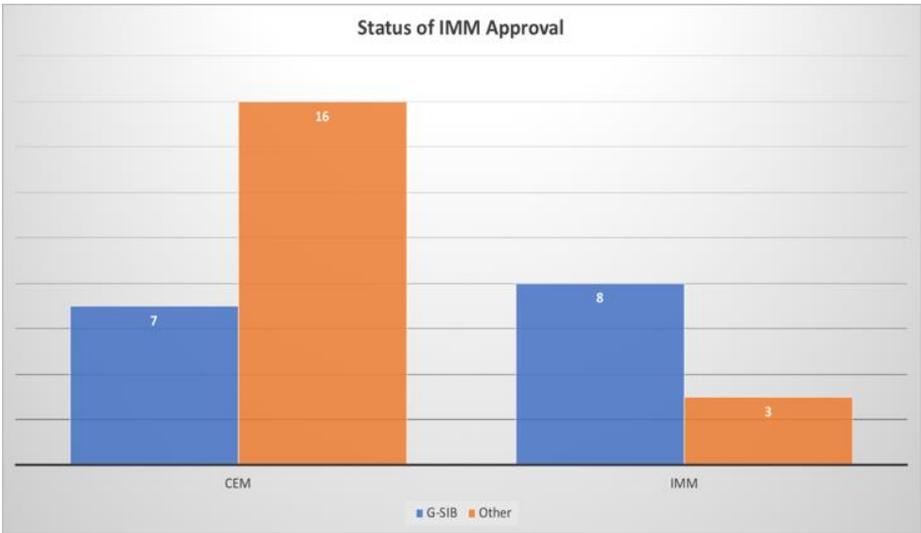


Figure 13: Sophistication of capital regime<sup>13</sup>

The survey revealed that this may be less of an issue than some people may think. A considerable number of banks are still not applying an IMA approach to their CCR capital (Figure 13). More than twice the number of participants are not on the internal model method (IMM). The survey confirms that it is predominately large and systemically important banks that make the investment to be able to obtain

<sup>12</sup> See Basel Committee of Banking Supervision: Basel III – Finalising Post-Crisis Reforms, December 2017

<sup>13</sup> CEM = Current Exposure Method, which calculate capital not based on internal models

IMM approval. This is an investment that so far none of the Asian participants have made.

The likely regulatory disruption caused by Brexit will even require banks needing to secure additional IMM approval from either another European regulator or the Prudential Regulatory Authority (PRA) of the UK, despite already having obtained IMM approval from their home regulator. Therefore, a possible IMM application drive will keep the capital cost situation and its management fluid for the XVA function. Figure 14 shows which regulators participants expect to be approaching for further or first time IMM approval. As expected, the ECB features high on this list. The fact that OSFI has been mentioned the second most, indicates that Canadian banks appear to have some catching up to do with regards to dealing with capital.

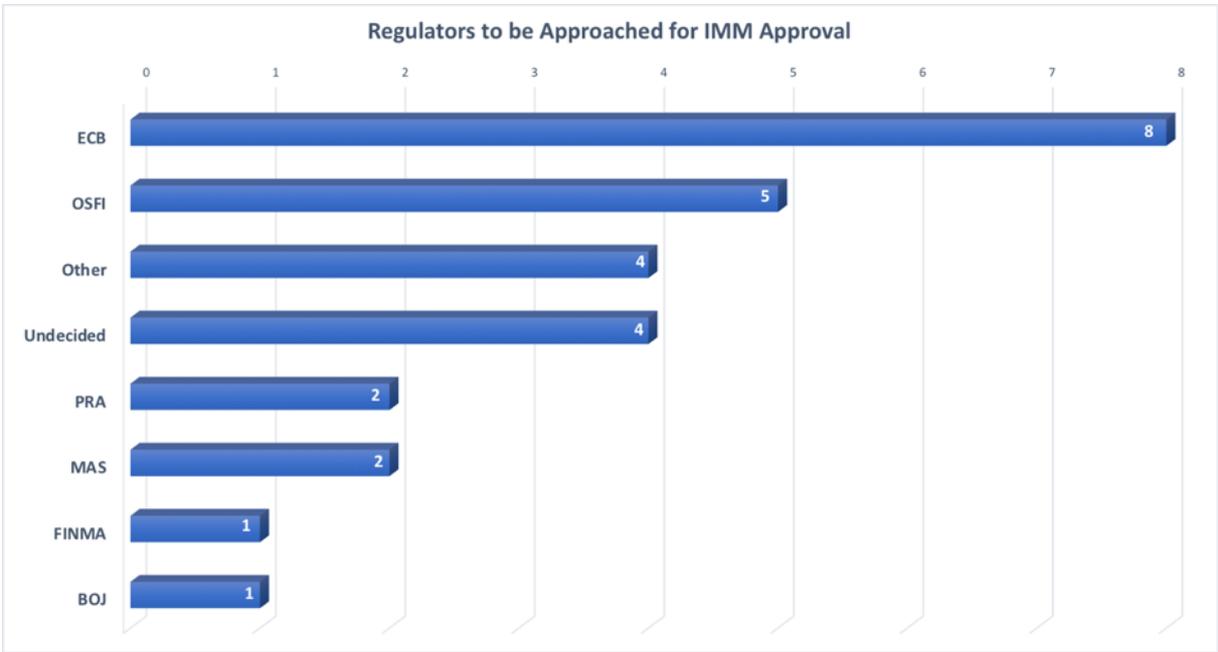


Figure 14: Planned IMM approval activity

### *The Capital Management Involvement of the XVA Function*

So, what does that mean for the XVA function? How is it involved with the capital management of their institution? The typical options on the table are:

- Capital optimization
- Capital hedges

**Capital optimization** focuses on the capital efficiency of the derivatives portfolio. This could mean

- involvement into structuring of new or existing trades to avoid capital concentration,
- bespoke capital optimization trades such as securitization of parts of the derivatives portfolio,
- backloading of legacy trades into clearing houses,
- trade compression or
- targeted novation of trades that consume large amounts of capital.

**Capital hedges** need to be distinguished between hedges

- designed to reduce CCR capital, which requires them to be CDS hedges executed externally and referencing the precise counterparty of the derivatives transactions;
- single name and index CDS hedges as well as exposure hedges that are used for CVA management reduce CVA capital, however not in the same way as they reduce the CVA deltas because the Basel Committee introduced conservatism that would require overhedging;
- KVA hedges, which would normally be the same types of transactions as above, with the difference that they do not only hedge the spot capital cost but also take into account the forward-looking expectation of future capital cost.

Computing KVA can be complicated depending on whether a bank reports capital under IMM or a standard approach, with the former introducing significant complexity due to the much more complex calculation. Hence, KVA hedging is not

yet very common. As can be seen in Figure 15, KVA hedging is only carried out by four of the participants. Two of them report capital under IMM, despite the complexity of calculating KVA under IMM. This leaves capital optimization as the weapon of choice for the management of capital, a statement supported by 28 participants whose XVA function is involved in capital optimization

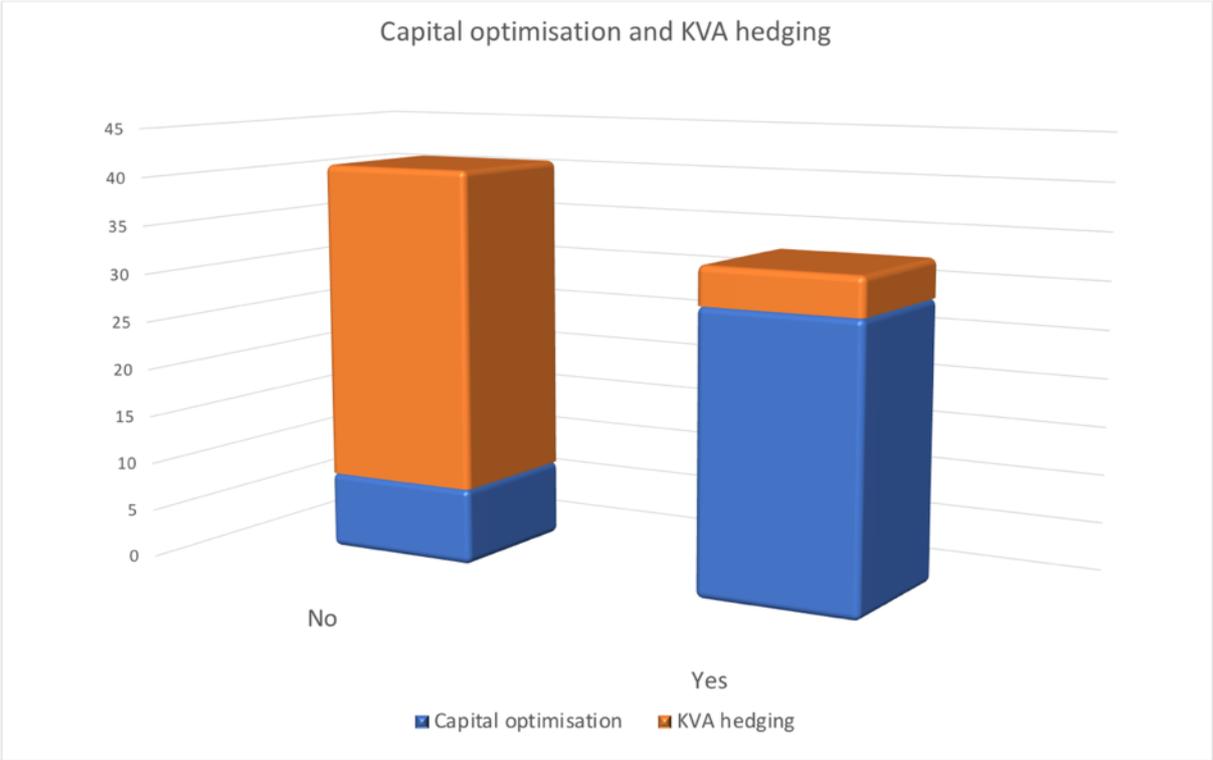


Figure 15: Carrying out capital optimisation or KVA hedging<sup>14</sup>

<sup>14</sup> Participants were asked if the XVA function hedges KVA or if they participate in capital optimization.

# The Wider Implications of XVA

XVA touches upon many areas in a bank, not just the front office. The remainder of the document explores the implications that XVA has for other departments and therefore the derivatives business as a whole.

## Risk Management

The boundary between the XVA function and the 2<sup>nd</sup> line Risk Management function is less obvious than for other front office activities. Figure 3 had shown that four participants even have a reporting line into Risk. The calculation of the valuation adjustments usually requires a calculation of a counterparty credit exposure<sup>15</sup> which also forms the basis of the potential future exposure calculation (PFE) employed by Risk to determine the credit limit utilization of derivatives portfolios. Ideally, the models used for both need to be aligned.

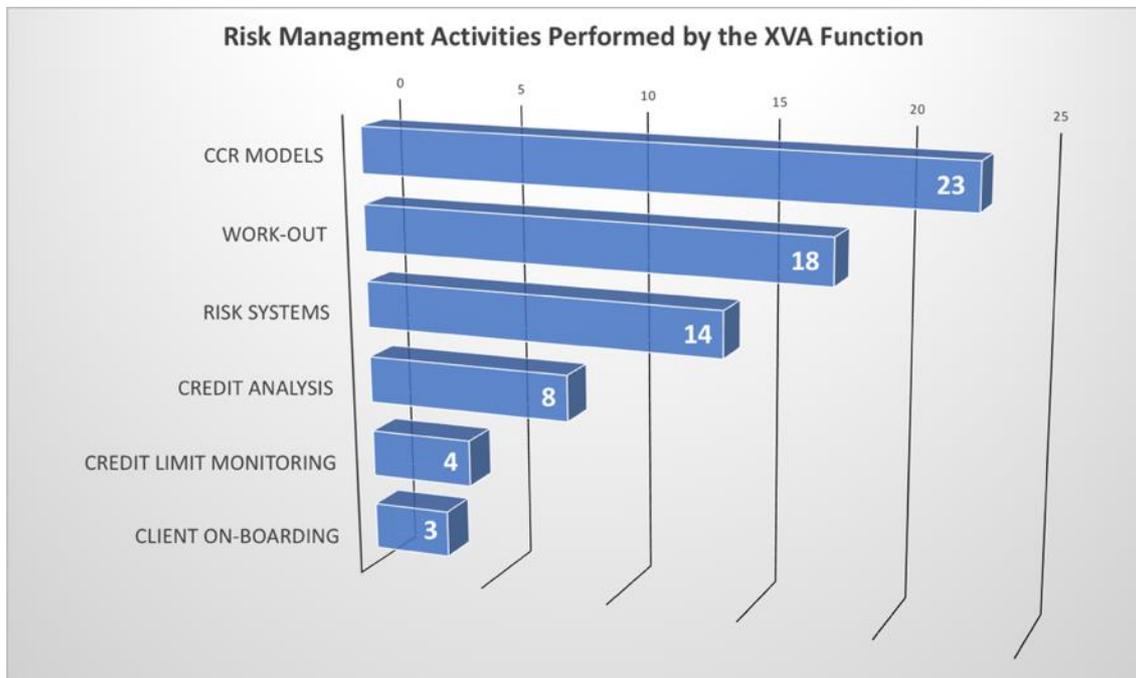


Figure 16: Risk management activity within XVA function

The usual mandate of the XVA function consists of protecting the P&L banks make on their derivatives portfolio. Due to the hybrid and complex nature of the risk, which not only combines market and credit risk but is also impacted by legal issues such as netting or collateral agreement terms, many of the steps of the

<sup>15</sup> Unless it uses a more simplified exposure calculation like for example in standard or basic approaches for capital calculations.

management activities taken by an XVA function, might also be steps that are taken in the Risk function. The survey tried to investigate a potential overlap between XVA and Risk by asking in which risk management activities the XVA function participates. Figure 16 shows the number of participants that consider each of the activities shown in the graph an XVA function task, either partially or fully. The only regional bias in the answers indicates that in Europe G-SIB's are more likely to assume these types of activities than their smaller peers. There is no clear trend along those lines in the other regions and even from a global perspective, being considered a G-SIB does not mean a bank puts more emphasis on classic Risk activities.

The survey shows that CCR models and systems are the areas of major overlap. The responsibility for those has been a topic of discussion since XVA inception. While initially banks developed separate systems and models for XVA and CCR there is now a trend to align these as far as possible. A number of banks state that it is one of the main goals both of the Risk Analytics and the Risk IT function to merge models and systems where possible. This is hardly surprising given the cost of developing and maintaining a complex risk infrastructure like XVA management system. Figure 17 shows the distribution of initial and annual cost of the XVA management system amongst the participants.<sup>16</sup>

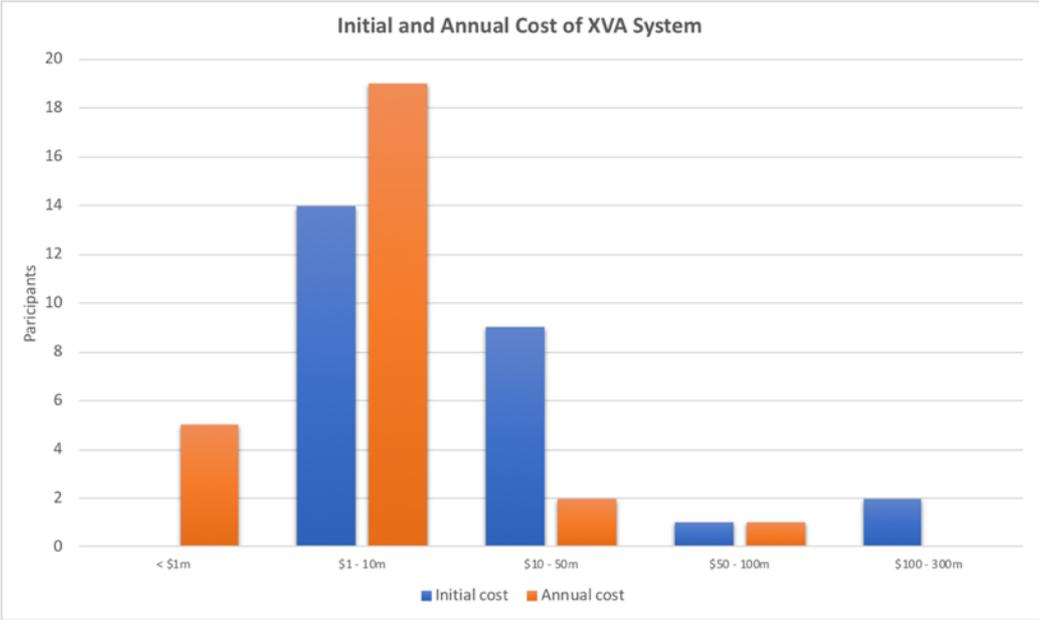


Figure 17: Initial and annual cost of the XVA system

<sup>16</sup> This was supposed to include the cost of hardware as well as internal and external resources to build and maintain it.

The big challenge lies in the different use cases of CCR and XVA. The latter works with expectations in a risk-neutral world, while the former tends to operate under “real-world” assumptions using historical volatilities to calibrate the Monte Carlo simulation. Maintaining this important difference poses challenges for systems and models. Therefore, some banks decided to adopt the assumption of risk-neutrality across both CCR and XVA. According to one of the participants, the downside of a more volatile credit limit utilization that may increase the number of passive limit excesses<sup>17</sup> is compensated by a more accurate, trading standard calculation that reduces the need for disagreements between the Risk function and the Front Office.

Another topic high on the list of Risk activities carried out by the XVA function are work-out situations after a client default. This is in so far not surprising given that these situations often require product and market knowledge that may be more readily available in the XVA function than in Risk Management.

Members of Risk Management departments interviewed in the context of the survey expressed the concern that the XVA function can get lost in technical matters and decisions are dominated by managing regulatory rules that impact their P&L rather than “real” business constraints. It is therefore reassuring to observe that many XVA functions take an active role in a pragmatic process such as work-out.

The split of risk management activities also depends on resources available to carry out these tasks. Some Risk departments see their role as supporting the XVA function with a holistic view on different kind of risk aspects, in particular carrying out stress testing and trying to achieve a balance between the competing actions of P&L, capital and regulatory management.

### **Model Validation**

In many cases at first, XVA was considered a front office activity that provides guidance on pricing of derivatives executed with clients of the bank. Often it was not necessarily part of the reported P&L of the organization. Therefore, XVA

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<sup>17</sup> Exposure exceeds the credit limit due to a movement of market variables such as volatility used for the Monte Carlo simulation rather than new trade activity.

models may not have attracted a lot of attention in the Model Validation department.

This changed considerably with the increased regulatory scrutiny. Now, XVA models follow the same strict validation process as any other Front Office pricing and valuation model. The resource requirements on the Model Validation side are considerable due to the complexity of the models. In particular the testing process can be cumbersome since running XVA valuation models usually requires a Monte Carlo simulation that may take a long time to execute.

Common tools of model validators are challenger models that are used to benchmark the actual trading model. Challenger models for XVA are not readily available and building a new challenger model requires striking a balance between accuracy and the desire to include portfolio effects, and the need for enough simplicity to allow the challenger model to run fast and results to be explained easily. Often, model validators will attempt to use proxy trades to model the behavior of test portfolios with a reduced set of transactions.

Figure 14 highlighted the drive for regulatory approval that is still strong amongst banks. This certainly impacts the Model Validation department since they need to demonstrate to the regulator that the XVA models have been independently checked and validated. Having obtained model approval from one regulator does not guarantee that another regulator will approve these models again on the basis of the first approval, in particular if the first approval had been given some years in the past.

## **Finance**

Finance's involvement with XVA is usually twofold. Like for any other front office function, they perform the independent valuation (IPV) of the XVA P&L. The hybrid nature of the XVA function P&L was mentioned before in this document. For the IPV this means that the task is more complex than dealing with the P&L of other desks. The pricing models can be as challenging as structured credit derivatives and many of the pricing assumptions and variables can be highly illiquid, making it difficult to verify the XVA desk's parameters.

One mechanism used in this context is the consensus market price service Totem by IHS Markit. The survey asked if the participants are using it for IPV in the context

of XVA. Figure 18 shows how many participants use Totem for the different valuation adjustments. It should be noted the MVA is still in a trial phase at present. A good number of banks make a use of the service but there are considerable concerns and while it is seen useful for IPV, banks are much more reluctant to use it for other purposes such as pricing. The main concerns are

- questions on the reliability of the submissions;
- worries that using Totem would give rise to non-modellable risk factors under FRTB;
- Totem is considered self-fulfilling
- Does not track the actual volatility of funding markets.

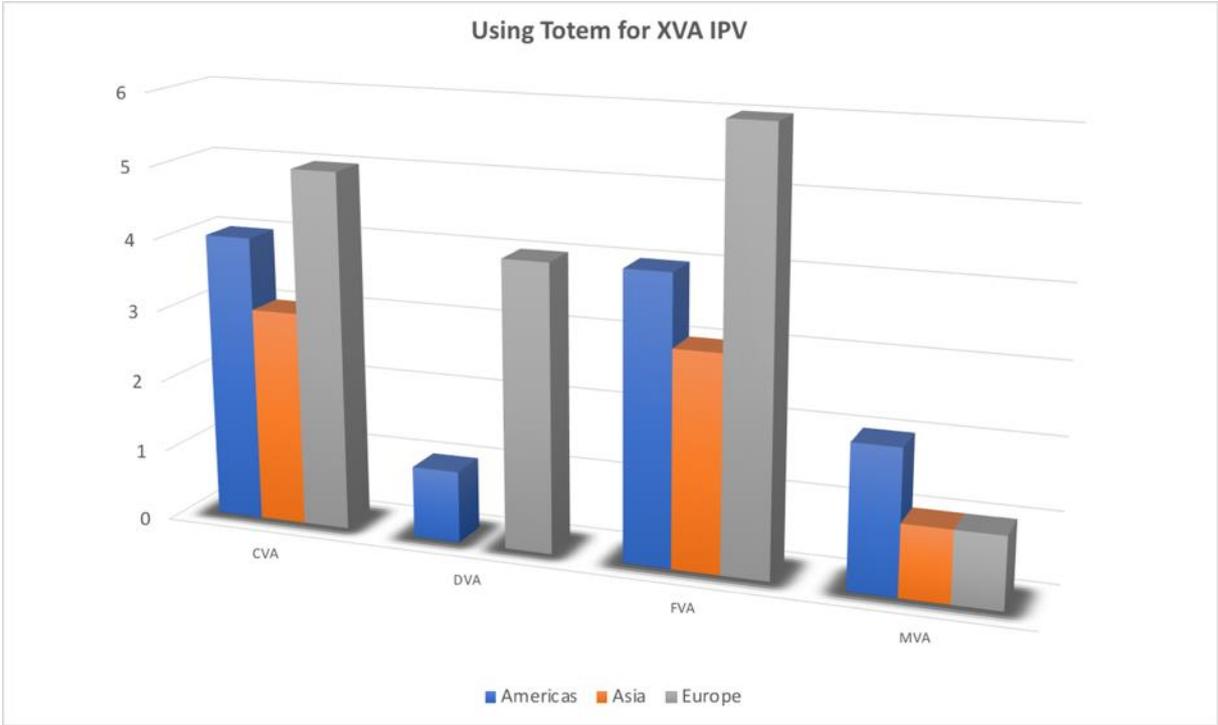


Figure 18: Totem usage in the XVA context

The other major involvement of the Finance function in the context of XVA is the responsibility for the official accounting XVA's. Usually Finance owns the official process for calculating and reporting the XVA reserve. As a consequence, Finance is mostly concerned with the correct interpretation of the accounting and regulatory rules. At some institutions they liaise with the regulators on any question around the accounting XVA. For this reason, a good understanding of the XVA concepts is essential and it is important that the focus should not only be on

the accounting rules but there should also be an awareness of the business implications and the quantitative elements of the calculation. It is common for Finance to rely on the Risk function for support, in particular for the latter.

### **Derivatives Business**

XVA is a very political topic for banks. This is particularly true when it comes to the relationship between the XVA function and the other business functions, mostly Sales and Trading. The bone of contention is the impact of pricing the valuation adjustments into client facing transactions, and how to deal with the P&L impact of both the valuation adjustments and potential credit losses.

Dealing with the P&L impact of the valuation adjustments and the credit losses usually comes at a cost to the function that is assuming this responsibility. The natural assumption would be that the function bearing the risk should also receive the part of the income that is priced into the client facing trade for this risk<sup>18</sup>. While this is usually the case, it is by no means guaranteed. Given the political nature of the topic there is often push-back from Trading to avoid having to give up P&L due to XVA charges. In particular, since they can constitute a significant portion, if not the majority of the mark-up of a derivative. There are still organisations that consider XVA a service to help determine the correct price of a transaction without transferring P&L responsibility. In rarer cases they can even be seen as a pure cost centre that covers credit losses and fluctuations of the accounting XVA without showing XVA charge income against it.

But even the pricing service element may be considered problematic, mainly by sales-oriented parts of a bank. XVA charges are often accused of being a cause for a drop in market-share. While CVA and FVA are less controversial nowadays and client facing staff are mostly accepting the need for their existence, the newer, more exotic and harder to understand valuation adjustments are still considered controversial. Figure 5 had shown that there is a significant difference between pricing shown to client and actual XVA charge transfer to the XVA function for MVA, KVA and CollVA.

When asked to comment on the discipline with which P&L transfer is enforced, participants of the survey disclosed that generally CVA and FVA are paid to the XVA function. It is however at the discretion of the business heads whether they pass

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<sup>18</sup> Typically called the XVA charge

the charge onto the client or wear it. There can be differences whether in that case the charge is still attributed to an individual trader's P&L or borne by a management account.

Best practice business management requires keeping these exceptions to a minimum. Better risk awareness is a benefit of XVA that is mentioned often. A disciplined process for pricing and charging it ensures that all client facing staff bear the risks of the derivatives business into account. Allowing XVA functions to award sales credit for risk reducing transactions is a helpful tool to incentivize the sales force to pursue risk reducing transactions. This practice is implemented at 22 participating banks. Four institutions choose to deduct credit losses from sales credits.

## Conclusion

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Implementing a best practice XVA function is a challenging endeavor. XVA constitutes an attempt to identify and isolate many important costs of doing derivatives business. It is one of the most complex topics in the finance world as it spans across all functions of the financial markets business. In addition, it impacts business units and their 1<sup>st</sup> line of defense functions but also the 2<sup>nd</sup> and 3<sup>rd</sup> lines of defense of a banking organization. Some aspects have reached a good degree of maturity such as the management of CVA and FVA but even for those a significant degree of diversity can still be observed in the practices at the 37 participating institutions. The survey showed that the more exotic valuation adjustments such as MVA and KVA are still far off a consensus approach. This is partly due to regulators as well as accountants not yet having picked up these valuation adjustments as focus areas, and partly due to participants' desire to be early adopters of these concepts. Regulatory pressure appears to be easing somewhat with regards to new developments, but political risk is still a contributing noteworthy uncertainty. In particular Brexit has the potential to result in a substantial cost burden due to the need for adjusting models and validation to an additional regulatory environment



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