

THE IMPACT OF DERIVATIVE COLLATERAL POLICIES OF EUROPEAN SOVEREIGNS AND RESULTING BASEL III CAPITAL ISSUES

Summary

The majority of sovereigns do not post collateral to support their use of over-the-counter (“OTC”) derivatives¹. As a result, dealers regularly have credit exposure arising out of these contracts which is often hedged with the sovereign Credit Default Swaps (“CDS”), and interest rate and foreign exchange swaps and options. This process has been of particular concern in Europe because of the possible ban on the use of sovereign CDS. To assist in highlighting this and other concerns arising out of the practice not to collateralize OTC derivatives, two associations² (“the Surveying Associations” or “SAs”) conducted a survey of dealers earlier this year, regarding their OTC derivatives exposure to European Sovereigns (“ES”).

The survey and our analysis reveal the following:

- Derivatives exposure of dealers to ES may total as much as \$70 billion;
- If dealers were to hedge their ES derivative exposure through single-name ES CDS, it could require as much as 50% of the entire ES open interest;
- One-way collateral relating to ES derivatives may drain as much as \$70 billion from the financial system;
- The EU’s new Short Selling Regulation provides a good basis for the use of ES CDS for hedging the counterparty exposure arising from derivative contracts; and
- Proposed Basel III rules do not recognize interest rate or foreign exchange products as hedges of ES derivatives exposure for capital charges.

The paper will be organized as follows:

- Current Collateral Practices
- Current Exposure Management Practices
- Liquidity Effects of One-Way Credit Support Annex (“CSA”) Dealer Survey
- European Sovereign CDS Market Size
- EU Short Selling Regulation
- Basel Capital Requirements
- Conclusion

¹ In Europe the exceptions are Portugal and the Republic of Ireland

² The Association of Financial Markets in Europe (“AFME”) and The International Swaps and Derivatives Association (“ISDA”) are the SAs and the SAs along with the International Capital Markets Association (“ICMA”) are referred to as the Associations in this paper.

Current Collateral Practices

Collateral arrangements between participants in the OTC derivatives market are generally governed by the CSA to ISDA's Master Agreement. Typically, each CSA is negotiated separately between dealer and client. For a large majority of frequent users, the CSAs are two-way, ie each entity is required to post collateral to the other to match the net exposure the other entity has to it through the mutual portfolio of OTC derivatives. In one-way CSAs, only one party to the contracts is required to post collateral to the other as exposures arise. The other party, however, has no obligation to post collateral if its positions have a net negative value.

A majority of ES have one-way CSAs in place. They have historically used their superior credit and bargaining power to obtain these favorable contracts from dealers. As a result, any exposures that ES might have to dealers are always collateralized. Exposures the dealers have to ES, however, are unsecured.

Current Exposure Management Practices

Most dealers actively hedge uncollateralized OTC derivatives exposure through the CDS, interest rate swaps and foreign exchange markets. Typically, dealers focus on Expected Potential Exposure ("EPE") to manage risk. For a single interest rate swap, EPE is a series of calculations along a forward yield curve valuing the remaining tenor of the swap. If a calculation produces a positive result, that amount is multiplied by the probability of default of the counterparty and discounted back to the present. If the result is negative, the amount is set at zero as one cannot benefit from a default of a counterparty. The sum of the positive discounted amounts is EPE. The EPE on a single swap is equivalent to the cost of buying swaptions that would replace the swap upon default at any point along the yield curve. So, at the onset, the size of the EPE needs to be hedged by the use of interest rate products, and the probability of default needs to be hedged by the use of CDS. As exposures increase, CDS become a very valuable tool for hedging risk. For example, in its 2010 annual report, a major international bank revealed it had purchased nearly \$7 billion of sovereign CDS to offset its credit exposures to sovereigns around the world.

Dealers generally assign the EPE hedging task to their CVA desks where CVA stands for Credit Valuation Adjustment. CVAs adjust mark to market derivatives receivables on dealers' balance sheets to reflect the credit strength of each counterparty. An OTC derivatives contract creates a receivable on the books of a dealer when the payments to be made by a counterparty under the contract are above market. These above market cashflows are discounted at rates equal to the sum of the London Interbank Offered Rates ("LIBOR") and the credit spreads associated with each counterparty for each point in time. The credit spread can be derived from the CDS credit curve for each counterparty.

If an OTC derivative receivable grows in value, the growth in value will be booked as trading income. The growth in value, however, increases the credit exposure and EPE to the counterparty. If the credit spreads for the counterparty remain constant, the increase in value of the receivable will be accompanied by an increase in CVA. CVAs are booked as contra assets and increases in CVAs are run through the income statement as expenses or negative trading income.

As noted above, EPE is hedged through interest rate, foreign exchange and CDS products. In markets where the probabilities of default are rapidly rising, very large interest rate and foreign exchange rate positions can be created very quickly. Desks regularly assess which of the interest rate, foreign exchange or CDS markets is the most efficient and liquid. If a CVA desk were to buy CDS in amounts equal to EPE to the counterparty, it would consider itself hedged. It is interesting to note that a deterioration of a counterparty's credit will have no income statement effect if EPE is hedged but interest rate or foreign exchange movements will change the size of the derivative receivable and thereby have an impact on CVA.

Liquidity Effects of One-Way CSA

Sovereign entities have been participants in the OTC derivatives markets for decades. When ES first developed trading relationships, much of their derivative activity was tied to capital market business which was prestigious, profitable and consistent with dealers' aspirations in the bond market. ES were also premier counterparties. At first, before collateral was a normal provision in the market place, ES accepted only the best credits as counterparties. As more and more OTC derivatives business became subject to collateralization, ES decided they needed collateral protection as well. Most, however, have not been willing to post collateral.

In addition to creating credit exposure, the use of one-way CSAs has also created significant liquidity issues for the dealer community. This arises because dealer hedges of OTC derivatives with ES are themselves routinely subject to collateral arrangements. For example, suppose a dealer executes a cross-currency swap with a ES without an initial exchange of principal. The dealer needs to put in place both an FX hedge as well as an interest rate hedge. The FX hedge is transacted in the interbank market through a short-date forward contract. This exposure is subject to collateral. The interest rate hedge is executed through futures or government bonds. Either such hedge requires collateral. These temporary hedges are eventually offset through other OTC contracts, which will also require collateral. If the dealer has exposure to ES, its hedges will create opposite exposure and will need to be collateralized by the dealer. A reasonably good proxy for the amount of collateral that the dealer has to post is the amount of exposure –EPE - it has to its ES counterparties.

If no collateral relationships existed between dealers and ESs, dealers would receive a liquidity benefit to the extent the ESs have credit exposure to the dealers. The one-way CSA eliminates the possibility of this benefit for the dealers.

Dealer Survey

This past spring, the SAs worked with the so-called G-14 (14 of the largest derivatives dealers in the world) to make an estimate of CDS hedging needs and losses of liquidity. Ideally, dealers would have provided the amount of CDS required to hedge CVA risk as well as the mark to market exposure for each ES. The mark to market would be a more precise estimate of the liquidity drain caused by each ES. Not surprisingly, despite assurances of anonymity, dealers were only willing to provide the amount of CDS they would have to purchase to hedge their CVA risk to the group of ES as a whole. This information was collected for the three quarters ended, September 2010, December 2010 and March 2011. The SAs did not get 100% participation but received responses from 12 firms for March 2011 and from 10 or 11 for the other two dates. To complete the analysis, it was assumed the missing dealers had EPE equal to the average of those that responded. This created the following EPE for the G-14:

| G-14 EPE to ES | |
|-----------------------|----------------|
| September 30, 2010 | \$61.4 billion |
| December 31, 2010 | \$55.6 billion |
| March 31, 2011 | \$56.4 billion |

These figures are by no means complete. There are, after all, 37 dealer members of LCH, each of which has \$1 trillion or more of notional amounts of interest rate contracts outstanding. Presumably, many of these dealers have significant exposure to ES. The SAs used a simple shortcut to make an estimate of this additional exposure. TriOptima, which runs the interest rate derivatives trade repository, estimates that the G-14 represent about 80% of the market for interest rate swaps. Using this simple 80/20 rule to gross up the exposures of the G-14 presented above, one arrives at the following:

| Estimated Global Dealer EPE to ES | |
|--|----------------|
| September 30, 2010 | \$76.8 billion |
| December 31, 2010 | \$69.5 billion |
| March 31, 2011 | \$70.5 billion |

European Sovereign CDS Market Size

With the help of DTCC, the SAs were able to determine the net notional exposures in the ES CDS marketplace for each quarter end. This is presented in the Appendix for each of the names covered in the survey. The totals are summarized below along with the exposures of the global dealers.

| | ES CDS Market | Global Dealer EPE to ES | as a % of ES CDS Market |
|--------------------|----------------------|--------------------------------|--------------------------------|
| September 30, 2010 | \$137.8 Bn | \$76.8 Bn | 55.7% |
| December 31, 2010 | \$141.3 Bn | \$69.5 Bn | 49.2% |
| March 31, 2011 | \$145.5 Bn | \$70.5 Bn | 48.5% |

As can be seen, the estimated exposures of dealers to sovereigns through OTC derivatives are quite significant relative to the size of the CDS market for the names involved. The figures also show that the estimated exposures and the open positions in the CDS market are reasonably constant – close to \$70 billion and \$140 billion, respectively. What is not known is how much of the exposure is actually hedged. It is, however, reasonable to assume that, during this period, the amount of hedging has increased due to turmoil in the market for sovereign risk and the impact of CVA on dealers’ income statements.

EU Short Selling Regulation

Policymakers in Europe considered for some time the outright banning of ‘naked’ CDS in ES reference entities. Partly as a result of industry action, the actual Short Selling Regulation permits the use of ES CDS as a hedge of the counterparty exposure from financial contracts. The regulation will be converted into technical standards by the European Securities Markets Authority (“ESMA”) and the Associations, respectfully, strongly recommend the ESMA respect the clear intent of the Regulation, particularly as regards its identification of financial contracts as exposures that firms might legitimately hedge through CDS. As can be seen, the need for ES CDS for hedging purposes is large and the inability of dealer firms to use ES CDS in this context might create unhealthy concentrations of credit risk and reduce ES access to the OTC derivatives marketplace.

Basel Capital Requirements

Under Basel II, exposure to sovereign risk was handled under one of two approaches. Under the standardized approach, exposures were given zero risk weighting provided the sovereign was rated AA or above. Under the Internal Model Method (“IMM”), firms were able to develop capital charges using models approved by regulators. As a result, it is believed the exposures mentioned above carried little capital charge until certain ES were downgraded in the past year.

Basel III retains the capital charge methodology with respect to sovereign exposure but adds a new capital charge linked to CVA. This capital charge may be computed in one of two ways. First, using a standard approach, a probability of default derived from a counterparty’s rating is calculated for annual calendar points and a loss given default assumed. The resulting small percentage is then applied to expected exposure and discounted to the present. The sum of these amounts is then a form of expected losses and is the CVA risk weighted asset amount. Under a modeling approach, dealer firms use credit

default spreads to calculate probabilities of default. Given the current environment, this approach produces much larger capital charges.

Basel III does provide capital relief if positions are hedged with single name CDS. This can only provide even more incentive for dealers to hedge their exposure to sovereigns with CDS. However, there is a very serious shortfall in the Basel III rules regarding CVA hedging. As we have seen, interest rate and foreign exchange products are important means of managing CVA risk. However, they are not considered hedges of CVA risk, and, hence, do not lead to reduced capital charges. To the contrary, they are considered proprietary positions and themselves attract further capital charges. This creates unsatisfactory unintended consequences as it discourages hedging. The industry will continue to promote the correction of this which it views to be a serious error. While ES did not create this rule, the application of the rule would have much less effect if ES posted collateral.

Conclusion

The Associations believe the use of one-way CSAs by ES has created meaningful credit risks in the financial system and has also drained liquidity from the banking system. The CDS market for ES reference entities is an important hedging tool and it is very important that its use for hedging remains permissible under recent EU legislation. Dealers also hedge EPE risk with interest rate and FX products. Unfortunately use of these products will attract significant capital charges under proposed Basel III rules. Adoption of two-way CSAs by ES would ameliorate all of the issues discussed in this paper and the Associations accordingly recommend that such a change be given careful consideration. An additional benefit we have not discussed is the increased transparency this product would bring to the level of ES indebtedness which is surely not a bad side effect.

Appendix
European Sovereign CDS Exposures
September 30, 2010

| Reference Entity | Sector | Market Type | Gross Notional (USD EQ) | Net Notional (USD EQ) | Contracts |
|--|------------|-------------|--------------------------|------------------------|---------------|
| CZECH REPUBLIC | Government | Sov | 9,869,406,935 | 919,710,073 | 770 |
| FEDERAL REPUBLIC OF GERMANY | Government | Sov | 79,859,178,790 | 15,403,782,471 | 2,288 |
| FRENCH REPUBLIC | Government | Sov | 67,486,428,968 | 12,548,441,132 | 2,820 |
| HELLENIC REPUBLIC | Government | Sov | 80,170,668,800 | 7,078,595,515 | 4,375 |
| IRELAND | Government | Sov | 40,664,226,742 | 4,500,734,987 | 2,109 |
| KINGDOM OF BELGIUM | Government | Sov | 33,639,291,172 | 5,754,034,960 | 1,702 |
| KINGDOM OF DENMARK | Government | Sov | 11,412,918,348 | 2,296,595,866 | 511 |
| KINGDOM OF SPAIN | Government | Sov | 119,099,422,776 | 14,847,013,226 | 5,152 |
| KINGDOM OF SWEDEN | Government | Sov | 16,343,803,269 | 3,207,910,770 | 827 |
| KINGDOM OF THE NETHERLANDS | Government | Sov | 18,687,427,419 | 2,983,608,721 | 869 |
| PORTUGUESE REPUBLIC | Government | Sov | 66,351,649,083 | 7,659,980,180 | 3,128 |
| REPUBLIC OF AUSTRIA | Government | Sov | 47,754,574,833 | 8,566,849,825 | 2,025 |
| REPUBLIC OF BULGARIA | Government | Sov | 18,066,533,883 | 1,117,220,206 | 1,746 |
| REPUBLIC OF ESTONIA | Government | Sov | 3,222,654,274 | 423,869,440 | 391 |
| REPUBLIC OF FINLAND | Government | Sov | 14,026,738,606 | 2,322,903,900 | 539 |
| REPUBLIC OF HUNGARY | Government | Sov | 59,288,096,948 | 3,724,516,767 | 4,610 |
| REPUBLIC OF ITALY | Government | Sov | 255,526,875,046 | 27,710,728,633 | 7,127 |
| REPUBLIC OF LATVIA | Government | Sov | 8,662,607,057 | 735,054,454 | 977 |
| REPUBLIC OF LITHUANIA | Government | Sov | 5,663,427,400 | 708,312,472 | 601 |
| REPUBLIC OF POLAND | Government | Sov | 31,052,168,524 | 2,222,273,457 | 2,628 |
| REPUBLIC OF SLOVENIA | Government | Sov | 4,253,306,728 | 799,371,985 | 320 |
| ROMANIA | Government | Sov | 16,113,632,219 | 1,248,085,450 | 1,574 |
| SLOVAK REPUBLIC | Government | Sov | 9,416,781,065 | 781,233,634 | 686 |
| UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND | Government | Sov | 54,665,035,351 | 10,224,009,028 | 3,701 |
| Total | | | 1,071,296,854,236 | 137,784,837,152 | 51,476 |

Appendix
European Sovereign CDS Exposures
December 31, 2010

| Reference Entity | Sector | Market Type | Gross Notional (USD EQ) | Net Notional (USD EQ) | Contracts |
|--|---------------|--------------------|--------------------------------|------------------------------|------------------|
| CZECH REPUBLIC | Government | Sov | 10,017,045,511 | 823,712,432 | 813 |
| FEDERAL REPUBLIC OF GERMANY | Government | Sov | 80,314,942,593 | 15,143,458,497 | 2,411 |
| FRENCH REPUBLIC | Government | Sov | 79,642,462,626 | 17,540,610,679 | 4,043 |
| HELLENIC REPUBLIC | Government | Sov | 77,478,458,495 | 6,427,440,389 | 4,233 |
| IRELAND | Government | Sov | 45,502,040,200 | 3,999,946,094 | 2,621 |
| KINGDOM OF BELGIUM | Government | Sov | 36,279,911,220 | 5,669,497,030 | 1,868 |
| KINGDOM OF DENMARK | Government | Sov | 12,157,926,987 | 2,357,496,898 | 554 |
| KINGDOM OF SPAIN | Government | Sov | 131,795,970,017 | 16,876,046,941 | 5,890 |
| KINGDOM OF SWEDEN | Government | Sov | 18,071,183,603 | 2,973,485,210 | 928 |
| KINGDOM OF THE NETHERLANDS | Government | Sov | 20,366,778,898 | 3,020,942,530 | 996 |
| PORTUGUESE REPUBLIC | Government | Sov | 68,508,021,015 | 7,961,150,840 | 3,408 |
| REPUBLIC OF AUSTRIA | Government | Sov | 47,500,593,266 | 7,025,481,209 | 2,008 |
| REPUBLIC OF BULGARIA | Government | Sov | 18,103,583,526 | 1,099,010,117 | 1,807 |
| REPUBLIC OF ESTONIA | Government | Sov | 2,975,974,411 | 419,085,957 | 381 |
| REPUBLIC OF FINLAND | Government | Sov | 16,080,941,806 | 1,926,604,700 | 620 |
| REPUBLIC OF HUNGARY | Government | Sov | 61,234,812,036 | 3,560,673,851 | 5,017 |
| REPUBLIC OF ITALY | Government | Sov | 267,314,760,371 | 26,389,814,749 | 7,838 |
| REPUBLIC OF LATVIA | Government | Sov | 8,644,297,426 | 643,269,785 | 977 |
| REPUBLIC OF LITHUANIA | Government | Sov | 5,590,727,700 | 614,004,094 | 614 |
| REPUBLIC OF POLAND | Government | Sov | 32,255,719,616 | 2,185,134,499 | 2,787 |
| REPUBLIC OF SLOVENIA | Government | Sov | 4,366,745,384 | 861,804,621 | 338 |
| ROMANIA | Government | Sov | 17,098,779,007 | 1,079,956,130 | 1,726 |
| SLOVAK REPUBLIC | Government | Sov | 9,680,069,516 | 799,254,966 | 713 |
| UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND | Government | Sov | 60,545,098,938 | 11,924,160,297 | 4,282 |
| Total | | | 1,131,526,844,168 | 141,322,042,515 | 56,873 |

Appendix
European Sovereign CDS Exposures
March 31, 2011

| Reference Entity | Sector | Market Type | Gross Notional (USD EQ) | Net Notional (USD EQ) | Contracts |
|--|---------------|--------------------|--------------------------------|------------------------------|------------------|
| CZECH REPUBLIC | Government | Sov | 10,485,165,774 | 871,114,720 | 841 |
| FEDERAL REPUBLIC OF GERMANY | Government | Sov | 85,136,427,114 | 16,645,260,417 | 2,699 |
| FRENCH REPUBLIC | Government | Sov | 89,059,595,881 | 18,530,040,059 | 4,544 |
| HELLENIC REPUBLIC | Government | Sov | 87,433,591,093 | 5,624,130,890 | 5,041 |
| IRELAND | Government | Sov | 52,353,528,458 | 4,372,889,888 | 3,162 |
| KINGDOM OF BELGIUM | Government | Sov | 41,346,878,070 | 6,955,042,307 | 2,159 |
| KINGDOM OF DENMARK | Government | Sov | 11,900,897,389 | 2,276,654,790 | 644 |
| KINGDOM OF SPAIN | Government | Sov | 176,559,251,178 | 18,344,356,876 | 8,487 |
| KINGDOM OF SWEDEN | Government | Sov | 17,380,189,680 | 2,977,979,316 | 970 |
| KINGDOM OF THE NETHERLANDS | Government | Sov | 20,237,836,235 | 2,855,687,597 | 1,015 |
| PORTUGUESE REPUBLIC | Government | Sov | 82,250,707,931 | 7,318,515,810 | 4,401 |
| REPUBLIC OF AUSTRIA | Government | Sov | 45,913,361,765 | 6,233,478,490 | 1,931 |
| REPUBLIC OF BULGARIA | Government | Sov | 18,921,976,453 | 993,121,593 | 1,870 |
| REPUBLIC OF ESTONIA | Government | Sov | 2,965,611,684 | 454,867,501 | 386 |
| REPUBLIC OF FINLAND | Government | Sov | 15,655,018,607 | 2,245,863,700 | 619 |
| REPUBLIC OF HUNGARY | Government | Sov | 64,345,250,202 | 3,837,100,403 | 5,279 |
| REPUBLIC OF ITALY | Government | Sov | 308,422,962,552 | 26,619,348,527 | 9,325 |
| REPUBLIC OF LATVIA | Government | Sov | 8,882,489,400 | 626,956,965 | 1,019 |
| REPUBLIC OF LITHUANIA | Government | Sov | 5,819,048,409 | 641,016,335 | 654 |
| REPUBLIC OF POLAND | Government | Sov | 33,617,838,621 | 2,268,151,789 | 2,951 |
| REPUBLIC OF SLOVENIA | Government | Sov | 4,551,034,669 | 773,291,140 | 367 |
| ROMANIA | Government | Sov | 17,103,291,382 | 1,137,322,192 | 1,785 |
| SLOVAK REPUBLIC | Government | Sov | 10,127,789,923 | 831,867,496 | 749 |
| UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND | Government | Sov | 60,334,918,601 | 12,040,920,233 | 4,424 |
| Total | | | 1,270,804,661,071 | 145,474,979,034 | 65,322 |