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20 March 2007,

Gerry Cross
Financial Services Authority
25 The North Colonnade
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Dear Gerry,

RE: Computation level of Effective Expected Positive Exposure

Summary:

Firms using the Internal Model Method (IMM) to calculating counterparty credit risk (CCR) charges under Basel II or the Capital Requirements Directive must compute the exposure at default (EAD) attributable to portfolios of derivative and securities financing trades entered into with each one of their counterparties. EAD under the IMM is a function of Effective Expected Positive Exposure (EEPE), defined as:

“the weighted average over time of effective expected exposure over the first year, or over the time period of the longest maturity contract in the netting set, where the weights are the proportion that an individual expected exposure represents of the entire time interval.” [*Source: International Convergence of Capital Measurement and Capital Standards, June 2006, Annex 4, I (2) E*]

As clearly expressed above, EEPE must be computed at the level of the netting set. Firms wish to record that this definition is not consistent with the level at which they manage credit exposures, which is that of the counterparty itself. Calculating EEPE at netting set level will therefore require upgrading systems and internal validation practices, at a significant cost, and for no clear purpose other than to abide by a regulation divorced from firms' practice. The change will cause a rift between exposures used for risk management purposes, and those calculated for regulatory

capital purposes, causing system differences and a dichotomy in user/senior management understanding.

Firms do not believe that computing EEPE at the level of the counterparty would substantially change the size of their total Counterparty Credit Risk capital. Two firms have developed stylized examples showing that capital would be more likely to rise, if only slightly, as a result of aggregating at the counterparty level [see Appendix to this letter and memorandum by Evan Picoult (Citigroup) shared with the FSA's Counterparty Risk Expert Group].

The Associations have brought this issue to the attention of the Basel Committee [meeting with Accord Implementation Group Trading Book Working Group in September 2006], the FSA [response to CP06/3], and European institutions [Capital Requirements Directive Transposition Working Group meeting of 5 March 2007].

The purpose of this letter is to assist the FSA in its dialogue with other regulators on this topic at both European and Basel level. We would support a constructive reading of the Capital Requirements Directive (CRD) on this point and hope that the FSA can lend its backing to such a reading in the EU forum and in the Basel Committee. The Associations would be pleased to provide further information as appropriate.

Detail:

In their response to CP 06/3, the Associations drew the FSA's attention to concerns raised by member firms regarding the level at which Effective EPE (EEPE) must be computed in BIPRU:

- (i) Computation at netting set level is not consistent with the use test. Internally, banks manage and mitigate EAD at counterparty level: credit exposure limits are counterparty specific; collateral agreements are typically entered into at the level of the counterparty: when a counterparty has more than one netting set, there is no clear way to ascribe collateral to specific netting sets. Calculating EEPE at netting set level furthermore distorts the profitability measures for the counterparties effected, causing a disconnect between return and real risk.
- (ii) Because credit exposure is defined at the counterparty level, model aggregation software is designed to perform aggregation at that level. Bank reporting groups who adjust and correct exposures also typically rely on validation and diagnostic tools functioning at the level of the counterparty. A capital calculation at the netting set level will therefore require time-consuming changes to the software and reporting tools and retraining of reporting personnel. The cost of making these changes will crowd out or significantly delay other, arguably more relevant, projects.

Whilst we understand that the FSA is complying with the terms of the directive, when we analyse the issue, we cannot identify any conceptual justification for requiring EEPE to be computed at netting set level, rather than counterparty level:

- (i) Historically, the measure of future exposure recommended by the Associations to the Basel Committee was EPE, which is additive across netting sets and as such is the same whether computed at netting set level and

summed up to the level of the counterparty, or calculated directly at counterparty level. Effective EPE by contrast is not additive. Neither the regulators nor industry really measured the consequences of losing additivity when the Trading Book Review was finalised.

- (ii) Furthermore, going back to first principles, EEPE as a measure of exposure was brought in to cater for roll-off risk. We believe that roll-over is a counterparty level concept, i.e. that maturing transactions are expected to be replaced so that the exposure to the counterparty might not reduce. Applying the non-reducing construct at netting set level conflicts with the level at which firms manage their credit exposures.

We acknowledge that the Trading Book Review published in July 2005 by the BIS, which the Directive mirrors, explicitly requires the computation of Effective EPE at netting set level. We have approached the AIG Trading Book Working Group to recommend amending Basel II (see Appendix- Evan's memo) in September 2006 and the preliminary discussion appeared to indicate that there had been no conscious decision on the part of the regulatory community to prevent the computation of EEPE at counterparty level.

However our dialogue with the AIG TB WG has not progressed further, which we believe is because the issue has not been given priority by the Basel regulators. This could be because it is not seen as posing significant difficulties in the US, where Basel II implementation has been delayed. Nevertheless, the issue causes concern in the EU.

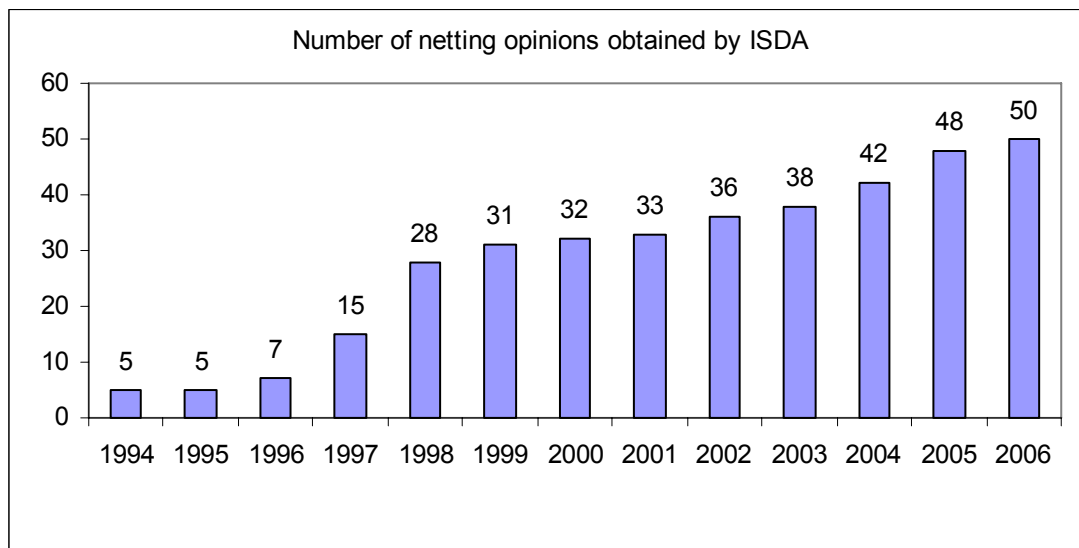
The Associations understand that the Capital Requirements Directive Transposition Group is discussing the level of computation of EEPE (Question 194 on the CRDTG website). We would support a constructive reading of the CRD on this point and hope that the FSA can lend its backing to such a reading.

At a Counterparty Risk Expert Group meeting held on 15 February 2007, the FSA requested information on the capital impact of calculating EEPE at counterparty level versus netting set level.

We have obtained the following information from member firms in this regard:

- (i) Respondents report that more than 50% of trades are with counterparties covered by a single netting set. Of the remaining trades, an overwhelming majority are in portfolios where 90% of the trades net.
- (ii) More than 60% of counterparties are covered by a single netting set.
- (iii) Firms who are able to compare the CCR charge based on counterparty level EEPE with the CCR charge based on netting set level EEPE find no significant difference between the two numbers, as exposure is principally entered into with counterparties where one or only very few netting sets exist. Some firms report slightly higher counterparty level numbers, because of the behaviour of factor M: taking a stylized example of two netting sets of different maturity, counterparty level M is not very much lower than M computed in the longer dated netting set. Netting set level M however reflects the short maturity of trades in one of the

netting sets, depressing the netting set level CCR charge (see Appendix for further detail on this point). By contrast, the netting set level charge can exceed the counterparty level charge in jurisdictions where netting is not supported by local bankruptcy law. However, “non-netting” exposures represent only a small percentage of the total portfolio. It is felt that with the continuing development of netting as a recognized means of reducing exposure in emerging countries, the significance of these exposures in firms’ books will not grow. ISDA is advocating the adoption of netting enabling legislation globally and has substantially expanded its library of netting opinions over the past 10 years (See chart below).



The FSA has suggested that, absent an interpretation of the CRD allowing the computation of EEPE at counterparty level, firms may nevertheless be able to rely on counterparty level EEPE if they can demonstrate that this measure, or a multiple of it, is more conservative than netting set level EEPE.

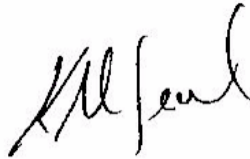
This proposition has been discussed in the ISDA Counterparty Risk Working Group. However, member firms have rejected the approach on the grounds that it is an inadequate fix for a conceptual flaw in the capital rules, and that it would be difficult to calculate a scaling factor that would satisfy the FSA’s conservatism test without significant system development or use of manual resource. Member firms consider this a distraction from core risk management functions and objectives.

Please feel free to contact Emmanuelle Sebton at ISDA (esebton@isda.org) or Katharine Seal at LIBA (Katharine.seal@liba.org.uk) should you have any questions on the above.

Yours sincerely,



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**Appendix – Comparing counterparty level CCR charges with
netting set level CCR charges**

One of our member firms has compared CCR charges computed at counterparty level with charges computed at netting set level for a set of stylized examples. The simulation permits the evaluation of the impact of changing the level of aggregation on both EEPE and maturity factor M. Their findings are presented below.

Stylised portfolio:

We do a simple potential exposure simulation of 2 simplified plain vanilla swaps, each assumed to be in a separate netting group. We assume the yield curve is flat at 4% and simulate parallel shifts in the yield curve by representing the interest rate as being governed by a Brownian motion process with zero drift and 20% volatility. We do 1000 simulations of the model over the life of the trades and calculate capital according to the Basel rules using a fixed LGD of 63.35%. As a first example, we take 2 5-year swaps, each receiving float and struck at par.

	Trade 1	Trade 2
Notional	100,000,000	100,000,000
Is Float?	1	1
Fixed Rate	4.00%	4.00%
Maturity	5	5

The expected exposure and PE profiles for each trade and at the counterparty level are as follows:

Time Horizon	EE Trade 1	EE Trade 2	EE Portfolio
0	0	0	0
0.25	631,746	631,746	1,263,493
0.50	972,085	972,085	1,944,169
0.75	1,070,689	1,070,689	2,141,378
1.00	1,273,651	1,273,651	2,547,302
1.25	1,274,286	1,274,286	2,548,571
1.50	1,400,594	1,400,594	2,801,188
1.75	1,379,465	1,379,465	2,758,929
2.00	1,495,913	1,495,913	2,991,826
2.25	1,347,972	1,347,972	2,695,944
2.50	1,448,095	1,448,095	2,896,191
2.75	1,250,616	1,250,616	2,501,232
3.00	1,302,484	1,302,484	2,604,968
3.25	1,116,878	1,116,878	2,233,756
3.50	1,155,491	1,155,491	2,310,981
3.75	882,549	882,549	1,765,099
4.00	935,810	935,810	1,871,620
4.25	630,029	630,029	1,260,058
4.50	649,415	649,415	1,298,829
4.75	338,545	338,545	677,089
5.00	352,818	352,818	705,636

Calculation of EEPE for each trade and the counterparty level are reported below:

Time Horizon	EEE Trade1	EEE Trade2	EEE Portfolio
0	0	0	0
0.25	631,746	631,746	1,263,493
0.5	972,085	972,085	1,944,169
0.75	1,070,689	1,070,689	2,141,378
1	1,273,651	1,273,651	2,547,302
EEPE	789,634	789,634	1,579,268

Finally, we report capital for each trade, at the combined netting set level, and at the counterparty level for various probabilities of default:

		Trade 1	Trade 2	Netting Set Level	Counterparty Level	% Difference
	EEPE	789,634	789,634	1,579,268	1,579,268	0.00%
	M	5.00	5.00	N/A	5.00	N/A
Capital (at PD)	0.03%	32,226	32,226	64,453	64,453	0.00%
	0.10%	59,712	59,712	119,424	119,424	0.00%
	0.50%	122,871	122,871	245,742	245,742	0.00%
	1.50%	171,401	171,401	342,803	342,803	0.00%
	6.00%	235,651	235,651	471,302	471,302	0.00%
	27.00%	336,891	336,891	673,782	673,782	0.00%

As expected, there is no difference between the two methods when exposure in each netting group is identical. (Note: A positive percent difference implies that capital at the counterparty level is higher than capital at the netting set level.)

To see how the methods can differ, we take as the next example 2 swaps, both receiving float and struck at par, but one swap has a 3 year maturity and the other has a 5 year maturity:

	Trade 1	Trade 2
Notional	100,000,000	100,000,000
Is Float?	1	1
Fixed Rate	4.00%	4.00%
Maturity	3	5

The exposure profile for this case is as follows:

Time Horizon	EE Trade 1	EE Trade 2	EE Portfolio
0	0	0	0
0.25	363,931	627,114	991,045
0.50	544,362	935,711	1,480,073
0.75	577,132	1,054,546	1,631,678
1.00	732,326	1,277,199	2,009,525
1.25	635,588	1,231,270	1,866,858
1.50	678,850	1,336,884	2,015,734
1.75	583,097	1,323,378	1,906,475
2.00	636,484	1,424,220	2,060,703
2.25	416,144	1,215,562	1,631,707
2.50	450,934	1,302,250	1,753,184
2.75	234,072	1,108,781	1,342,854
3.00	237,592	1,184,865	1,422,457
3.25	0	1,025,847	1,025,847
3.50	0	1,069,376	1,069,376
3.75	0	817,251	817,251
4.00	0	883,810	883,810
4.25	0	617,571	617,571
4.50	0	634,304	634,304
4.75	0	336,658	336,658
5.00	0	343,369	343,369

The calculation of EEPE is straightforward:

Time Horizon	EEE Trade1	EEE Trade2	EEE Portfolio
0	0	0	0
0.25	363,931	627,114	991,045
0.5	544,362	935,711	1,480,073
0.75	577,132	1,054,546	1,631,678
1	732,326	1,277,199	2,009,525
EEPE	443,550	778,914	1,222,464

However, capital calculated at the risk party level is greater than capital calculated at the netting set level:

	Trade 1	Trade 2	Netting Set Level	Counterparty Level	% Difference	
EEPE	443,550	778,914	1,222,464	1,222,464	0.00%	
M	2.75	5.00	N/A	4.23	N/A	
Capital (at PD)	0.03%	10,889	31,789	42,678	43,078	0.94%
	0.10%	22,000	58,901	80,901	81,541	0.79%
	0.50%	50,686	121,203	171,889	172,905	0.59%
	1.50%	76,056	169,074	245,131	246,252	0.46%
	6.00%	113,669	232,452	346,121	347,157	0.30%
	27.00%	175,082	332,317	507,399	508,184	0.15%

Note that portfolio aggregation capital is greater than netting set aggregation because portfolio aggregation uses a blended M that is not very much lower than the M of the second trade. However, by splitting the calculation by netting node, the trade with the shorter maturity receives a lower M, thereby depressing the capital.

As can be seen intuitively, there will be a general tendency for capital calculated at the counterparty level to be greater than capital calculated at the netting set level because of the behaviour of M. However, it is possible to reverse this behaviour if exposure in the short trade were sufficiently front loaded so that EEPE is high for the first year. We illustrate with an example where the 3 year trade is way in-the-money and the 5 year trade is at-the-money.

	Trade 1	Trade 2
Notional	100,000,000	100,000,000
Is Float?	1	1
Fixed Rate	2.00%	4.00%
Maturity	3	5

The exposure profile is given below:

Time Horizon	EE Trade 1	EE Trade 2	EE Portfolio
0	5,682,248	0	5,682,248
0.25	5,721,396	637,771	6,359,167
0.50	5,775,098	915,247	6,690,345
0.75	4,769,625	1,019,739	5,789,364
1.00	4,764,933	1,212,115	5,977,048
1.25	3,785,724	1,124,066	4,909,790
1.50	3,811,119	1,210,799	5,021,918
1.75	2,862,624	1,198,513	4,061,137
2.00	2,900,781	1,316,149	4,216,930
2.25	1,924,470	1,158,543	3,083,013
2.50	1,930,681	1,243,747	3,174,427
2.75	961,615	1,097,373	2,058,989
3.00	972,985	1,116,818	2,089,803
3.25	0	953,266	953,266
3.50	0	1,004,007	1,004,007
3.75	0	756,995	756,995
4.00	0	818,664	818,664
4.25	0	562,779	562,779
4.50	0	578,658	578,658
4.75	0	305,701	305,701
5.00	0	318,876	318,876

Note that EEPE is high for the first trade throughout the year because of its recursive definition:

Time Horizon	EEE Trade1	EEE Trade2	EEE Portfolio
0	5,682,248	0	5,682,248
0.25	5,721,396	637,771	6,359,167
0.5	5,775,098	915,247	6,690,345
0.75	5,775,098	1,019,739	6,690,345
1	5,775,098	1,212,115	6,690,345
EEPE	5,745,787	756,975	6,422,490

Capital under the netting set method is correspondingly higher. However, there are countervailing forces at work. The recursive nature of EEPE drives up the exposure for trade 1, resulting in greater combined exposures from aggregation at the netting group level than in at the counterparty level. This effect tends to drive up the capital, other things being equal. On the other hand, the high exposure of trade 1 in year 1 tends to reduce the blended M at the portfolio level, which tends to reduce the capital. The net effect is that the percentage difference in the two methods for probabilities of default that are representative of typical bank portfolios is not very significant. The difference grows as the probability of default increases, since the effect of the difference in exposure is magnified by the increases in the probability of default.

		Trade 1	Trade 2	Netting Set Level	Counterparty Level	% Difference
	EEPE	5,745,787	756,975	6,502,762	6,422,490	-1.23%
	M	1.67	4.90	N/A	2.06	N/A
Capital (at PD)	0.03%	96,299	30,353	126,652	125,692	-0.76%
	0.10%	213,360	56,378	269,738	267,375	-0.88%
	0.50%	542,824	116,415	659,240	652,637	-1.00%
	1.50%	859,741	162,797	1,022,538	1,011,609	-1.07%
	6.00%	1,356,428	224,503	1,580,931	1,562,982	-1.14%
	27.00%	2,180,178	321,896	2,502,074	2,472,373	-1.19%

We illustrate with another example, where each trade has a maturity of 5 years but the first trade is in-the-money:

Trade Details:

	Trade 1	Trade 2
Notional	100,000,000	100,000,000
Is Float?	1	1
Fixed Rate	2.00%	4.00%
Maturity	5	5

Exposure Profile:

Time Horizon	EE Trade 1	EE Trade 2	EE Portfolio
0	9,108,779	0	9,108,779
0.25	9,267,113	687,465	9,954,578
0.50	9,357,407	979,883	10,337,290
0.75	8,463,761	1,141,748	9,605,509
1.00	8,499,787	1,372,438	9,872,225
1.25	7,541,673	1,337,252	8,878,925
1.50	7,664,355	1,469,271	9,133,626
1.75	6,655,454	1,388,984	8,044,439
2.00	6,711,917	1,492,707	8,204,624
2.25	5,729,459	1,324,799	7,054,258
2.50	5,764,779	1,402,355	7,167,134
2.75	4,809,432	1,249,790	6,059,222
3.00	4,900,119	1,334,506	6,234,625
3.25	3,936,390	1,132,440	5,068,829
3.50	3,969,224	1,182,318	5,151,541
3.75	2,988,558	896,840	3,885,398
4.00	3,060,985	978,715	4,039,701
4.25	2,049,853	674,480	2,724,332
4.50	2,076,685	686,665	2,763,350
4.75	1,038,538	355,772	1,394,310
5.00	1,051,703	369,436	1,421,139

EEPE Calculation:

Time Horizon	EEE Trade1	EEE Trade2	EEE Portfolio
0	9,108,779	0	9,108,779
0.25	9,267,113	687,465	9,954,578
0.5	9,357,407	979,883	10,337,290
0.75	9,357,407	1,141,748	10,337,290
1	9,357,407	1,372,438	10,337,290
EEPE	9,289,622	836,307	10,015,046

Capital Calculation:

		Trade 1	Trade 2	Netting Set Level	Counterparty Level	% Difference
EEPE		9,289,622	836,307	10,125,929	10,015,046	-1.10%
M		2.51	5.00	N/A	2.74	N/A
Capital (at PD)	0.03%	211,955	34,131	246,087	245,555	-0.22%
	0.10%	434,983	63,242	498,225	496,231	-0.40%
	0.50%	1,020,622	130,134	1,150,756	1,143,654	-0.62%
	1.50%	1,547,748	181,532	1,729,280	1,716,410	-0.74%
	6.00%	2,338,900	249,580	2,588,479	2,565,743	-0.88%
	27.00%	3,635,264	356,803	3,992,068	3,952,599	-0.99%

Note that again the lower blended M at the counterparty level counterbalances the tendency of the higher EEPE of the first trade to increase capital.

A shorter exposure that is substantially in the money in one netting group can also produce a much higher capital at the counterparty level, especially if the exposure in the other netting group is of a much longer maturity. The reason is that the in-the-money nature of the exposure in the first netting group will tend to lower M for that netting group by front loading the exposure. However, the higher exposures in the second netting group will produce a blended M at the portfolio level that is relatively higher, thus exaggerating the exposure at the counterparty level relative to the netting set level. Here is an example:

Trade Details:

	Trade 1	Trade 2
Notional	100,000,000	100,000,000
Is Float?	1	1
Fixed Rate	2.00%	4.00%
Maturity	5	10

Exposure Details:

<u>Time Horizon</u>	<u>EE Trade 1</u>	<u>EE Trade 2</u>	<u>EE Portfolio</u>
0	9,108,779	0	9,108,779
0.25	9,192,395	1,237,959	10,430,353
0.50	9,315,334	1,771,730	11,087,064
0.75	8,237,562	1,915,901	10,153,463
1.00	8,273,284	2,247,495	10,520,779
1.25	7,400,878	2,446,450	9,847,327
1.50	7,474,361	2,725,620	10,199,981
1.75	6,498,244	2,753,775	9,252,019
2.00	6,578,443	3,070,638	9,649,081
2.25	5,610,827	3,007,501	8,618,329
2.50	5,686,099	3,247,715	8,933,813
2.75	4,734,910	3,192,497	7,927,408
3.00	4,843,430	3,458,484	8,301,914
3.25	3,859,461	3,256,859	7,116,320
3.50	3,875,581	3,394,717	7,270,299
3.75	2,924,197	3,263,701	6,187,898
4.00	2,960,964	3,364,318	6,325,283
4.25	1,980,944	3,235,346	5,216,291
4.50	2,000,105	3,294,234	5,294,339
4.75	1,003,230	3,062,487	4,065,718
5.00	1,012,395	3,181,490	4,193,886
5.25	0	3,005,966	3,005,966
5.50	0	3,054,595	3,054,595
5.75	0	2,800,324	2,800,324
6.00	0	2,885,240	2,885,240
6.25	0	2,579,766	2,579,766
6.50	0	2,684,262	2,684,262
6.75	0	2,379,808	2,379,808
7.00	0	2,492,872	2,492,872
7.25	0	2,150,081	2,150,081
7.50	0	2,206,072	2,206,072
7.75	0	1,890,810	1,890,810
8.00	0	1,975,468	1,975,468
8.25	0	1,567,237	1,567,237
8.50	0	1,634,949	1,634,949
8.75	0	1,234,339	1,234,339
9.00	0	1,263,021	1,263,021
9.25	0	852,207	852,207
9.50	0	886,450	886,450
9.75	0	439,208	439,208
10.00	0	473,360	473,360

EEPE Calculation:

Time Horizon	EEE Trade1	EEE Trade2	EEE Portfolio
0	9,108,779	0	9,108,779
0.25	9,192,395	1,237,959	10,430,353
0.5	9,315,334	1,771,730	11,087,064
0.75	9,315,334	1,915,901	11,087,064
1	9,315,334	2,247,495	11,087,064
EEPE	9,249,435	1,434,617	10,560,065

Capital Calculation:

		Trade 1	Trade 2	Netting Set Level	Counterparty Level	% Difference
EEPE		9,249,435	1,434,617	10,684,052	10,560,065	-1.16%
M		2.48	5.00	N/A	3.97	N/A
Capital (at PD)	0.03%	209,303	58,549	267,852	352,551	31.62%
	0.10%	430,325	108,486	538,810	673,061	24.92%
	0.50%	1,011,797	223,234	1,235,031	1,443,872	16.91%
	1.50%	1,536,187	311,404	1,847,591	2,072,334	12.16%
	6.00%	2,324,283	428,134	2,752,416	2,948,123	7.11%
	27.00%	3,616,133	612,067	4,228,200	4,351,454	2.92%

Note the long maturity of trade 2 produces a relatively higher blended M at the portfolio level of 3.97. As a consequence, capital calculated at the counterparty level can be substantially higher than capital calculated at the netting set level, particularly for counterparties with good credit quality.

Conclusion:

The stylized evidence suggests that when exposures in netting groups are roughly similar there will be a tendency for capital calculated at the counterparty level to be slightly greater than capital calculated at the netting set level, especially for probabilities of default that are typical of bank portfolios. While it is possible for capital at the netting set level to be greater, we have seen that that tendency is reduced at probabilities of default representative of bank portfolios. We would therefore expect that in real portfolios we would see small differences between the methods but that when differences are large, we would expect the calculation at the counterparty level to be greater.