

# Euro public debt and the markets: sovereign fundamentals and CDS market dynamics

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*At the onset of the crisis, euro area – like all Organisation for Economic Co-operation and Development (OECD) countries – public finances have massively inflated, as is typical in financial crises. The major difference with the past is threefold: the synchronicity across countries of the increase, the debt levels which have been reached; and the existence of credit default swap (CDS) market which has influenced the dynamic of sovereign trading. In this note, we review quickly fundamentals before highlighting the role of the CDS market and the implications for sovereign trading.*

## 1 | DETERIORATING FISCAL VARIABLES

In the wake of the financial crisis, public debt to GDP ratios increased sharply, by more than 20 percentage points of GDP within 3 years (2009-2011), as is generally the case following financial crises. Yet, this time is different because all OECD countries are concerned, because the starting position of most countries was not really good, bringing debt to GDP ratio to record high levels (unseen in peace time), and because most countries will have to face rising public expenditures and diminishing receipts because of unfavourable demographic trends. For the first time in a long period, the question of the sustainability of some countries debt levels and solvencies appeared more acute.

In this section we give a snapshot of the deterioration in the fiscal metrics across euro area countries, highlighting the differences between the discretionary and structural part of this deterioration and the cost of the financial sector rescue. These differences contribute towards explaining the

variations in the financial markets assessment of sovereign risk across these countries.

Breaking down in this way the evolution of deficits and debt (Table 1) shows that apart from Ireland, and then but to a much lesser extent Austria, Belgium, Finland and the Netherlands, most of the deterioration in public finances is not due to direct cost of the rescue of the financial sector. Most of the cost is due to a cyclical deterioration of economic activity – which can be seen as a second round effect of the financial sector crisis. Indeed, discretionary packages have been relatively small. That said, the increase in debt has been fastest for these countries that had already deteriorated public finance positions in the first place.

Financial markets focused quickly on these issues, and lead to a forceful re-appraisal of risks and prices. Greece is the country which was in the worst position but Spain, Portugal and Ireland have also been under the financial markets spotlight, though for different reasons and to a somewhat lesser extent. For Portugal, the concerns focused on an elevated debt to GDP ratio, large external

**Table 1**  
Breaking down the evolution of public finances

(% GDP)

	2008		Deficit excluding discretionary measures (impact of recession and new structural measures) (A)			Discretionary temporary package (B) *			Deficit including discretionary package and higher interest payments (C)			Capital injection	Debt		
	deficit	debt	2009	2010	2011	2009	2010	2011	2009	2010	2011	2008-10	2009	2010	2011
Austria	-0.6	63	-2.4	-2.4	-2.9	-0.8	-0.5	0.2	-3.1	-2.9	-2.7	8.3	67	68	69
Belgium	-1.2	90	-5.0	-5.0	-4.7	-0.9	-0.3	0.5	-6.0	-5.2	-4.2	6.8	97	101	101
Finland	4.4	34	-0.5	-2.1	-2.7	-2.0	-1.0	0.2	-2.6	-3.1	-2.5	6.7	44	44	45
France	-3.4	67	-5.6	-7.3	-6.9	-1.8	-0.3	0.5	-7.5	-7.6	-6.3	0.5	78	84	88
Germany	0.0	66	-2.2	-3.3	-4.5	-1.0	-1.6	0.0	-3.3	-4.9	-4.5	3.3	73	76	78
Greece	-7.8	98	-12.3	-14.1	-10.1	-0.4	5.3	2.5	-13.6	-8.8	-7.6	4.8	115	126	135
Ireland	-7.1	44	-13.3	-16.0	-13.2	2.6	2.9	3.3	-14.2	-13.1	-9.9	45 **	64	98	109
Italy	-2.7	106	-5.1	-5.1	-3.9	-0.2	0.8	0.8	-5.3	-4.3	-3.1	0.9	116	118	117
Netherlands	0.7	59	-4.6	-4.7	-5.5	-0.9	-0.7	0.7	-5.3	-5.4	-4.8	9.6	61	69	72
Portugal	-2.7	66	-7.9	-8.6	-7.5	-1.5	2.2	1.0	-9.4	-7.6	-5.4	2.4	77	83	86
Spain	-3.8	40	-9.2	-11.5	-7.8	-2.1	2.9	2.1	-11.2	-8.6	-5.8	4.6	53	64	69
<b>Total euro</b>	<b>-1.9</b>	<b>69</b>	<b>-5.1</b>	<b>-6.0</b>	<b>-5.6</b>	<b>-1.1</b>	<b>0.1</b>	<b>0.7</b>	<b>-6.3</b>	<b>-6.1</b>	<b>-4.8</b>	<b>4.4</b>	<b>79</b>	<b>84</b>	<b>87</b>

\* A negative sign reflects fiscal loosening; a positive one fiscal tightening. The methodology to break down the evolution of the deficit and debt to GDP ratio was described in Euro Themes, April 2009. The total deficit (column C) is the sum of the discretionary deficit (column B) and non discretionary deficit (column A); sometimes a difference of rounding may occur due to a high increase in interest payments.

\*\* Include EUR 24 billion of additional capital injections deemed necessary, given the haircut applied by NAMA for purchasing assets.

Sources: National plans, Ecwin, Barclays Capital.

**Table 2**  
Cross-border banking sector exposures

(USD billions at end-September 2009)

Banks	Exposure to:					Total
	Greece	Ireland	Portugal	Spain	Em. Europe	
Austrian	6	9	3	9	220	247
Belgian	8	42	12	47	120	230
French	79	69	36	185	156	526
German	43	193	47	240	203	727
Greek	-	1	0	0	57	58
Irish	9	-	6	34	1	49
Italian	9	23	7	33	163	233
Dutch	12	32	13	125	94	277
Portuguese	10	5	-	30	17	62
Spanish	1	15	87	-	10	113
British	12	192	26	121	14	365

Source: BIS.

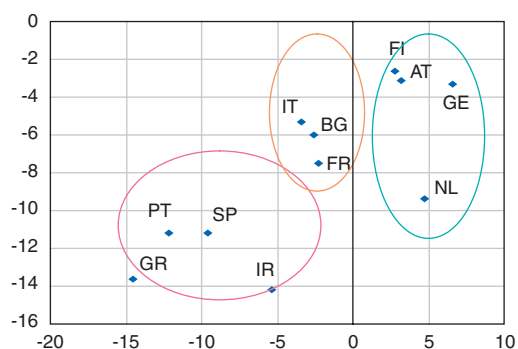
current account and low private sector saving ratio, together with a subdued potential growth (Chart 1). For Ireland, the state of the banking sector was of highest concern. Finally, Spain had as good an initial position as Ireland but it has been very severely hit by the collapse of the construction sector, which is affecting not only its banking sector, but also its growth model. Summarising the vulnerabilities of each of these countries show that markets have been correct in focusing on Greece, Portugal, Ireland, and finally Spain, in that order.

Looking ahead, and in the wake of sovereign market turbulences, most euro countries have now committed to adjust their public deficits

at a much faster pace than initially proposed, and than history suggests. No doubt, financial markets will keep monitoring closely the fiscal metrics and the commitments to fiscal consolidation, as well as the quality of the adjustment: given the euro countries integration (Table 2), fiscal adjustment across countries will have their impact magnified. Hence, it is not only the size of the adjustment and the implementation of the measures that markets will be watching, but the overall adjustment and growth strategy. Structural reforms will also have to be implemented to ensure financial markets that GDP growth will resume fairly quickly in spite of budgetary contractions.

**Chart 1**  
Twin deficits across euro area countries

(% GDP; X axis: current account; Y axis: public deficit)



Sources: Barclays Capital, Eurostat.

## 2 | THE INTERACTION BETWEEN CDS AND GOVERNMENT DEBT MARKETS

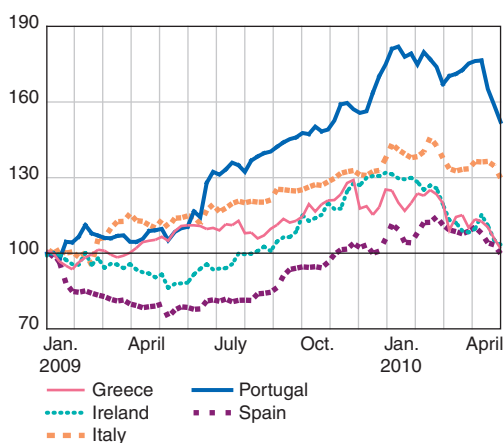
Global financial markets have been reacting to the fiscal deterioration seen everywhere in a much faster and stronger way than what has been the case before. This may be because of the heightened sensitivity of financial markets to such risks after the turmoil of the past few years. But one additional reason might be the emergence of the sovereign CDS market as a trading instrument and as a gauge of market sentiment (one has to look at just one widely available number, rather than compute spreads between bonds which generally do not have exactly the same maturity and characteristics).

## THE SOVEREIGN CDS MARKETS IN CONTEXT

In both absolute and relative terms, the sovereign CDS markets have grown a lot recently (see Chart 2), even if for most specific sovereign credits, these markets are still relatively small, compared to the much larger, established government bond markets. While most commentators tend to focus on the absolute size of the CDS exposures compared to the size of the underlying bond markets, we think it is important to focus rather on the traded volumes in these markets. The difference between the two is illustrated in Chart 3. The first column shows the size of the net CDS exposure (as reported weekly by the DTCC, we took the 12 May amounts) as a proportion of the outstanding government debt in that market (as shown in the iBoxx index). These range between a few percentage points to a maximum 10% (for Portugal). For other developed countries (eg, Germany, France, United States, United Kingdom) typically, the proportion is even smaller (maximum 1.5%, and even lower for the United States and United Kingdom). Note that the proportion is quite higher in the corporate markets: for the largest issuers in iBoxx, net CDS exposure is on average 30% of bonds outstanding, varying between 20 and 50% between issuers. There has thus been a general assumption that the CDS market for sovereigns was as representative as for corporates and banks, while this is actually not the case.

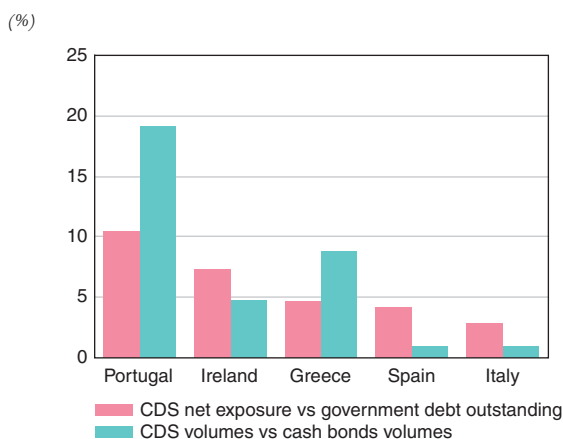
**Chart 2**  
Net CDS exposures

(USD billions; 100 = January 2009)



Source: DTCC.

**Chart 3**  
Government bonds and CDS markets compared (avg over past three months)



Sources: DTCC, Barclays Capital.

The second column in Chart 3 shows how the CDS and cash bond markets compare in terms of traded volumes. This is a bit more difficult to establish, on both the CDS side as well as on the bond side.

On the CDS side, the DTCC does not report volumes as such, but only gross and net exposures, as well as the number of outstanding contracts on a weekly basis. Broadly speaking, the traded volumes can be estimated by the rise in gross exposure (along with the number of swaps, which typically seem to have an average size of USD 25 millions), as compressions cycles (the netting of existing contracts) are relatively infrequent events, and the transfer of exposures between dealers is also fairly uncommon. This estimate should constitute the lower bound of activity, but should not be too far off the mark.

On the bonds side, the information available does vary considerably in the various euro area government bond markets. In some countries, only volumes traded by dealers on an electronic platform are reported (and these represent a varying proportion of the total volumes). In others, there is more detail or complete data sets (eg, Spain). We have taken the structures of the markets into account and come up with estimates of the total volumes by country. We recognise these may be off, though we are highly confident this would not change the overall picture, which is that in most markets, volumes traded in the sovereign CDS market are dwarfed by what is being

traded in cash bonds. One might argue that part of the traded volumes in the cash bond markets is just transfer of exposures between dealers which inflate bond markets volumes – in a sense, the bonds traded volumes probably represent an upper bound of 'real' activity. While there might be an element of that at times, there is no denying that issuance events (auctions, syndications) do constitute *bona fide* activity, and provide proper milestones in the price discovery process. It is interesting to note that in Western Europe only, there are five times more bonds being issued on a monthly basis than being traded in the CDS markets at this time.

Still, there are a few important exceptions. As shown in Chart 4, CDS volumes in Greece, Ireland and Portugal have moved quite higher than in other markets, and at times have been quite high compared to the volumes traded in the underlying bond markets (up to 30%, and probably even higher, if one were to adjust for measurement problems). Note that especially in late April and early May 2010, volumes in the Greek and Portuguese bond markets collapsed to close to zero, and therefore the relative importance of the CDS markets increased further. Interestingly, a high level of relative CDS activity has been typically associated to spread widening in these countries.

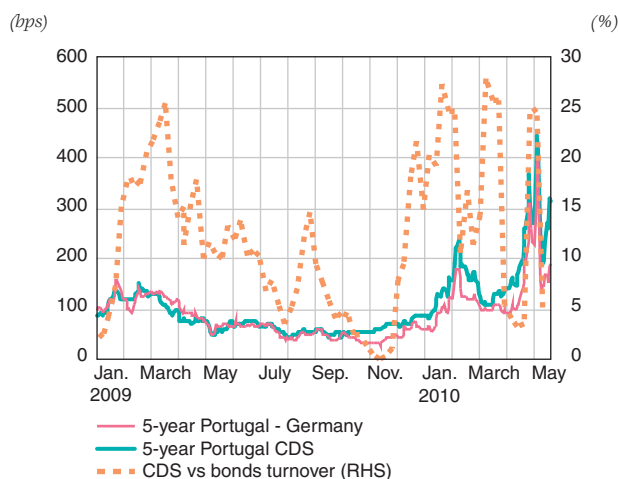
These charts show clearly that the CDS market has been much more active when spreads are volatile and widening. On the one hand, this is not

unexpected; market volatility tends to generate activity. The charts do not establish that activity in the CDS market leads the widening of spreads as such; the moves seem to be contemporaneous (similarly, an analysis of the evolution of cash and CDS sovereign spreads points to no particular lead or lags between them). On the other hand, both charts show that CDS activity drops quite a bit when spreads tighten. This would suggest that the sovereign CDS market tends to be dominated by players who are looking to buy protection (ie, be short in cash terms). This may be particularly the case in markets where it is more difficult to be short. For example, the Greek repo market is not centrally cleared, which limits the appetite of dealers and investors to be short in specific bonds. We suspect as well that the mark-to-market sensitivity of a number of CDS players might be higher than the one of those active in the cash markets (which would tend to be dominated by longer-term, more passive types of investor) – a factor that could generate more volatility.

### 3| THE 'CANARY IN THE COAL MINE' OR THE 'CAT AMONG THE PIGEONS'?

One might argue that the sovereign CDS market played the role of the proverbial 'canary in the coal mine'. It allowed the market to 'short' more efficiently and therefore improved the price discovery process and exposed the daunting fiscal challenges faced by a number of countries. Alternatively, one might argue that the sovereign CDS market played the role of 'the cat among the pigeons'. Spread widening, triggered by real issues, was exacerbated by the sovereign CDS market, where the price discovery process is more skewed towards 'shorts' than in the cash markets. The ensuing widening of spreads, and as importantly, volatility of these spreads, then caused cash market participants to adjust their positions (reducing longs or going underweight), with the move feeding on itself, and leading to a deterioration in the liquidity of the cash markets. Essentially, an initial CDS-driven move would thus have been followed by a generalised risk reduction and loss of liquidity (an explanation that is somewhat supported by the evolution of the cash-CDS basis, at times). Likely, the debate between one view or another will go on for some time.

**Chart 4**  
Portugal: spreads and relative activity in bonds and CDSs



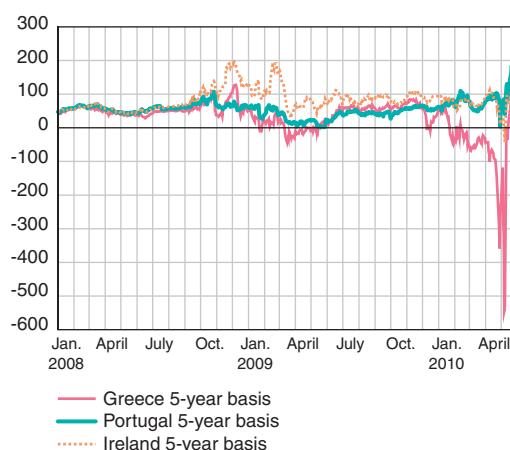
Sources: Barclays Capital, DTCC, IGCP.

## 4| THE CASH-CDS BASIS

Given the fact that approximately the ASW level of any sovereign bond should be equal to a CDS premium for the sovereign plus the appropriate funding level, investors should be able to buy or sell CDSs to take advantage of the relative movements between sovereign cash bonds in a liquid world. This also has the added bonus that this can be done without the relatively heavy balance sheet requirements imposed as a result of taking positions in the underlying cash bonds. The movement in the difference between CDS and the ASW level of the sovereign bond (which is called the "basis") can be explained most of the time by the changes in the repo funding spread of the bond over/below Libor (while there are other factors that affect the basis such as the CDS deliverable option and CDS counterparty risk, during the crisis funding spread has been one of the most important factors). However, sometimes the movements in the basis can be so extreme that the change in basis is not fully justified by changes in the funding spread which is typically seen at times of illiquid markets. This is particularly the case because the 'arbitrage' between these markets is imperfect, because of the nature of market participants, and transaction costs. The volatility of these bases can be seen in Chart 5: in a way it illustrates the varying biases that the CDS and cash markets can have over time.

**Chart 5**  
Evolution of the cash-CDS basis (5-year)

(bps)



Sources: DTCC, Barclays Capital.

## 5| SOVEREIGN CDS MARKET DYNAMICS

With increased focus on sovereign CDSs and its interplay with government bond markets, it is important to understand the dynamics of the sovereign CDS market, with a particular view to the nature of the trading activity.

The CDS market is an OTC market and as such little public information is generally available on the flows in the market. However, one useful data source comes from the Depository Trust and Clearing Corporate (DTCC). Settlement and confirmation of CDS trades is a legal requirement and even if the DTCC does not have a monopoly, by their own calculations, about 90-95% of all CDS trades (including sovereign CDSs) are settled and confirmed through them. The DTCC data should thus give a fairly accurate picture of overall market activity.

In addition to providing indications of trading volumes for CDS contracts, as used earlier in this article, the DTCC also provides measures of "open interest" for CDSs. In particular we use two kinds of data:

- **Net risk taken.** We define net risk taken as the total amount of protection bought by counterparties who are net protection buyers, which equals the total amount of protection sold by net protection sellers. This is equivalent to a measure of "open interest." This measure is available on a weekly basis for both single-name sovereign CDSs as well as credit indices such as iTraxx SovX Western Europe.

- **Net client protection buying.** On an aggregate level – across all single names in a sector – and on an index level, DTCC also provides information on the net amount of protection bought by "clients" – and hence sold by "banks". This data is not available on a single-name level.

The split between "banks" and "clients" is somewhat tenuous. In the present context, exposures taken by "banks" are defined as any buying/selling of protection by any trading function in a bank – be it the market making function, treasury, counterparty risk desk or any proprietary trading desks. "Clients" in this context are then any other market participants that are not banks: hedge funds, asset managers, and insurance companies predominantly.

## 6 | CLIENT POSITIONING IN SOVEREIGN CDS: MACRO LEVEL

Using DTCC data, we show net protection buying (USD billion) across all sovereign entities globally by clients in Chart 6 along with the development in the 5-year iTraxx SovX Western Europe index, highlighting the dynamic nature of sovereign CDS markets. iTraxx SovX Western Europe is a liquid, equal weighted index of 15 single-name sovereign CDS contracts covering essentially all of Western Europe.

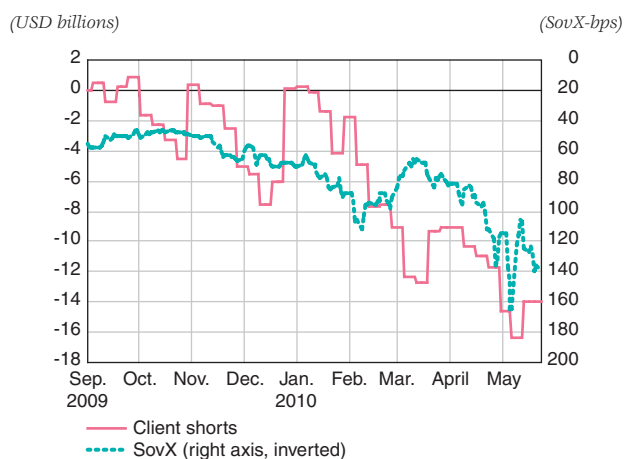
From October 2009 to November 2009, clients sold USD 4 billion of protection to banks across sovereigns, and subsequently went flat, and then started selling protection – for a total of USD 8 billion into late December – and went flat into January again. As SovX started widening at the beginning of the year, clients (on a net basis) started selling significant amounts of protection, reaching USD 16 billion of net protection sold in early May, as spreads reached their peak of 160 basis points (bp). Into late May, we have seen clients buying protection again.

In this context, with the pattern of a build-up in protection selling and then exiting, it is worth bearing in mind which counterparties are classified as clients

and which are dealers. Within banks, we have no objective information on the relative positioning – and general behaviour – of the different functions. Market makers would generally try to remain overall flat but some can take general trading views or hedge their sovereign CDS exposure with either government bonds or, for example, CDSs on banks. This means that even if a bank is flagged as being a net buyer of protection from the market-making function, they could in reality be flat, having hedged the exposure on another market. Counterparty risk desks are generally buyers of protection and due to their main function, they tend to be relatively price-insensitive and buy protection for the amount they need at the price they face in the market. Proprietary trading desks can be both buyers and sellers of CDS protection, using sovereign CDSs to take either an outright spread view or express relative value views between countries, as could be done via government bond markets.

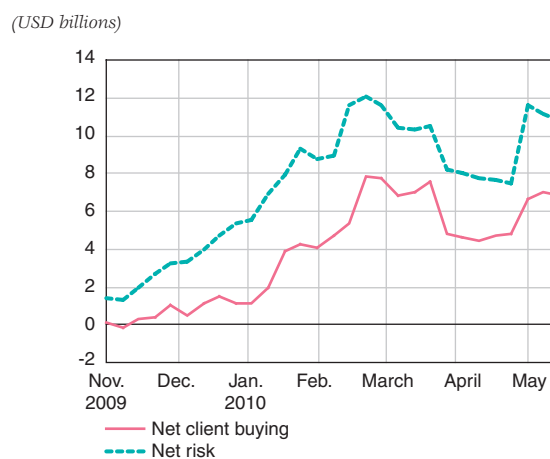
Since September 2009, asset managers and hedge funds have, on a net basis, been selling protection on sovereigns while banks – counterparty risk desks, proprietary trading desks and market-making functions – have been buying protection. On the opposite side of single name sovereigns, clients have been net buyers of protection in iTraxx SovX Western Europe (Chart 7) – building up from being flat in November 2009 to being buyers of USD 7 billion of protection into late May 2010.

**Chart 6**  
Change in net client protection buying in sovereigns globally vs 5-year iTraxx SovX Western Europe



Sources: DTCC, Markit, Barclays Capital.

**Chart 7**  
Net client buying of protection and net risk taken across dealers/clients in iTraxx SovX Western Europe



Note: iTraxx SovX Western Europe Series 2 only.  
Sources: DTCC, Barclays Capital.

## 7 | CASE STUDY: GREECE AND THE UNITED KINGDOM

In Chart 8 and Chart 9 we compare the developments in cumulative net risk taken to the 5-year sovereign CDS spreads for Greece and the United Kingdom.

For Greece, from September 2009 into December 2009, investors added risk for about USD 1.7 billion (both longs and shorts). This happened in a period where spreads, until around November 2009 where the Greek budget deficit was restated, were only marginally increasing. I.e., in a fairly stable market, some investors were buying USD 1.7 billion of (new or additional) protection on Greece, with other investors happy to sell protection at the given spread levels, taking more risk to Greece.

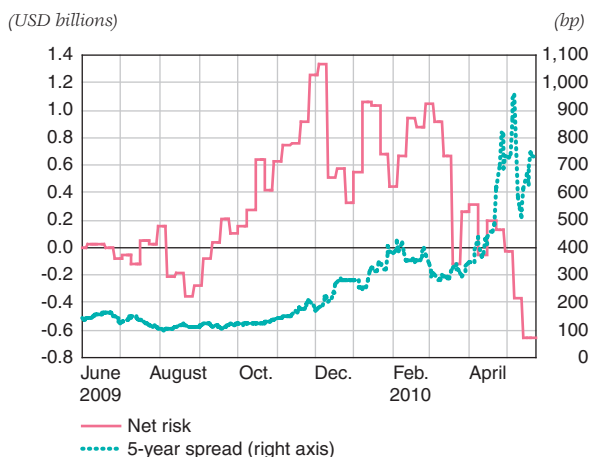
As Greek CDS spreads started widening from November 2009, net risk on Greece did not increase, in fact it dropped (even though it was highly volatile). To us, this is an indication that the investors who bought protection on Greece previously were unwinding into the widening market, taking profits and selling the protection to investors who, earlier, were not sellers of protection: i.e. the holders of the protection shifted at new prices in the market, but there was in general not any "new" (or more) risk being taken.

In May 2010, amid significant spread volatility, we have seen persistent risk reduction of about USD 700 millions.

For the United Kingdom (Chart 9), we get a distinctly different pattern in net risk taken compared to spread movements. Net risk taken in the United Kingdom is virtually constant between June 2009 and December 2009, even as the sovereign CDS spread on United Kingdom started widening in November 2009 into December 2009. Investors then start taking additional risk to the United Kingdom, in an ever increasing pattern, from December 2009 into March 2010, adding USD 4 billion of risk in an environment where spreads are fairly stable or widening. From March 2010 to April, there is little change in net risk taken but at the beginning of April and continuing into later May, we see net risk increasing towards and after the 6 May general election.

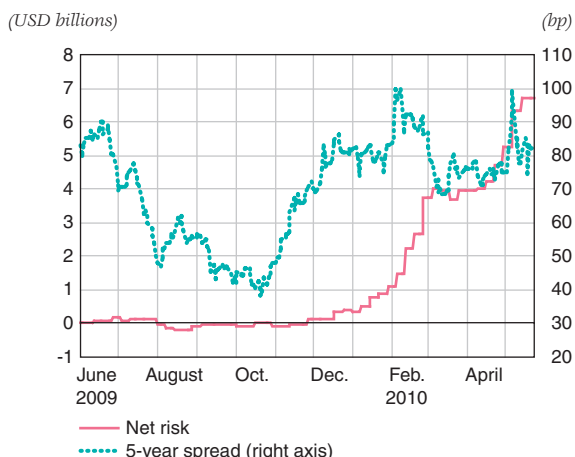
These two case studies illustrate the vastly different interactions between risk taking in CDSs across different sovereigns: for Greece, risk taking by market participants occurred predominantly before any significant price action, while for the United Kingdom, change in risk taking is almost a reactive phenomenon – some investors adding risk after spreads have widened out initially.

**Chart 8**  
Greece – cumulative change in net risk taken since June 2009 vs 5-year spreads



Sources: Markit, DTCC, Barclays Capital.

**Chart 9**  
United Kingdom – cumulative change in net risk taken since June 2009 vs 5-year spreads



Sources: Markit, DTCC, Barclays Capital.