

Hearing on Credit Default Swaps on Government Debt:
Potential Implications of the Greek Debt Crisis
Before the House Financial Service Committee, Subcommittee on Capital Markets,
Insurance and Government Sponsored Enterprises
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Chairman Kanjorski, Ranking Member Garrett, and members of the Committee, I thank you for the opportunity to address the issues related to credit default swaps (CDS) and their implications for government debt. As the Congress considers legislation on financial reform I applaud your efforts to explore the implications of financial practice and financial innovation, particularly in the area of derivative securities.

It is my view that the explosive growth of derivatives, and the immaturity of our market systems is at the core of financial danger we face moving forward. I have stated elsewhere, and continue to believe, that the Over the Counter (OTC) derivatives market is the San Andreas fault of the financial system. The interconnection of Too Big to Fail firms and OTC derivatives is a cocktail that may force the taxpayer to drink from disaster again in the future. Repair of this system to reduce complexity and opacity will allow the markets to function better when adversely shocked, as they were by the housing price downturn, and as they surely will be again.

Strong transparent markets that are well fortified with capital buffers and supervised and examined thoroughly are a means to help us reach our social goals. Market systems that are structured according to the profit imperatives of a few concentrated firms, firms that are supported by the backing of taxpayers, are very dangerous to the financial health of our nation. The structures that encourage a private appetite for risk that exceeds the social benefits of that risk are unhealthy. Markets are a public good and their structure has to attain and maintain integrity despite the formidable pressures that individuals and particular business interests bring to bear to refract that design for their private benefit and the detriment of society.

Today our concern is with the impact of the CDS derivatives market on the market for government debt. I want to emphasize that the history of government debt growth across many nations suggests that wars and financial crises are the greatest causes of extreme and rapid increases in public indebtedness. Some have estimated that the financial crisis of 2008 will result in a near doubling in the U.S. debt to GDP ratio. Therefore those concerned about our public finances must be very concerned about financial reform. Said another way, one cannot credibly claim to be a deficit hawk unless one is a financial reform hawk as well.

The credit default swap market has grown tremendously in recent years. The instruments played a large role in the financial crisis after the failure of Lehman Brothers, particularly with respect to the AIG bailout. At times innovation is

worshipped as a goddess of progress without measuring the value of that innovation. It is an article of faith. That does not appear to be the case regarding financial innovation any longer. Faith in the financial practices and the wisdom of unfettered markets has been shattered. At the same time faith in regulators and government action in the aftermath of the bailouts is also quite low. Experts in financial theory also lack credibility in light of the scale of the crisis and their inattention to the risks associated with innovation. Praying at the alter of liquidity and innovation rings hollow without a clear acknowledgement of the damage that immature market structures can do to social goals.

In the market for credit default swaps, some have been tempted to ban the instrument altogether and it is clear in light of recent revelations about financial practices and the tremendous social losses they can cause, that a profound shift in sentiment has taken place. At the same time, there is a sound logic that underpins the construction of instruments that isolate and transfer credit risk to where it is most able to be borne. Properly structured transparent CDS markets that are well capitalized and regulated can contribute to our well-being. In these controversial times it is important to keep in mind that markets are a useful tool, but a tool that must be managed and administered when constructing a balance between the social costs and benefits of a market for credit insurance.¹

¹ Richard Posner of the University of Chicago Law School made the following remark recently regarding financial markets in response to the following question:

KS The general wisdom is that you switched from a laissez-faire approach to one that accepts

Theories that depend upon the market possessing a highly quality of information, as a maintained hypothesis, may not be a good guide to the behavior of credit default instruments in some circumstances and give misleading perceptions of their value and cost to society. The standard fundamental theory of pricing operates from the premise that the market “knows” what the probability of default is. Prices, after a period of discovery, “reflect” that knowledge. Attempts to buy credit default swaps that increase the price are met with supply from those who know when the price gets too high. The price represents the truth and deviations from that truth are quickly arbitrated away.

An alternative perspective can be modeled that envisions a market environment filled with uncertainty and imperfect information. In this perspective, buyers of large amounts of CDS transmit a market signal that inspires market participants to believe that “someone knows something.” Drawing inference from

the role of government regulation to stabilize the economy. What has changed your view of capitalism?

Posner: This has really been only since September 2008—since the crisis, when I took another look at everything. There was erroneous monetary policy and much too low interest rates, which encouraged excessive borrowing. And then there’s this very lax regulation of financial institutions, which reflects a failure to recognize that the financial industry is very unstable and requires regulation. It is connected to everything in the economy—consumers and businesses alike depend on it—so when it collapses, you’ve got real problems. A lot of people failed to see that. The financial backbone of the economy is a corner of capitalism that requires more intrusive and careful regulations than a lot of economists thought. Because of the centrality of credit in a capitalist economy, a capitalist economy is inherently unstable. This instability can become catastrophic unless you have something in place to mitigate it. Unfortunately no one seems to have very many great ideas on how to do this. (Six Questions for Richard Posner by Ken Silverstein, Harpers.com <http://www.harpers.org/archive/2010/03/hbc-90006718>)

price the market participants sell bonds and stock in the belief that default risk is greater. The higher funding costs in turn depress earnings and validate the projection of greater risk. Here the causation runs from price to fundamental outcome. Credit risk rises because markets induce the change in costs that validates the market price.

Examples of market manipulation contained in the appendix suggest that there are cases that are cause for concern regarding the use of credit default swaps. Government and municipal services are essential and manipulative market methods may put at risk the provision of services that municipalities provide. The hierarchy of human needs for basic elements of social function implies this is a valid arena for concern of government officials.

The appendix that follows these remarks is organized to address the questions in your letter of invitation. The conclusions that are produced there include the following:

1. The Greek crisis in sovereign debt is not fundamentally caused by credit default swaps. It is caused by the profile of spending and tax revenues and a dynamic of government debt accumulation that is fundamentally unsustainable.
2. The regulation of credit default swaps should include reporting of all exposures and positions; provisioning by those who write CDS to create a loss reserve; subjecting of CDS in capital ratios/ leverage

ratio to the full implications of the imbedded leverage that they represent; consideration should be given to requiring that the amount of CDS purchased be associated with an insurable risk, particularly in smaller market segments; continued movement toward central clearing and exchange trading and publishing of pricing data on a rapid and freely available basis. CDS markets should not be dark markets.

I submit the balance of my remarks for the record.

Background Information and Response to Invitation Questions on Credit Default Swaps.

By Robert Johnson, Arjun Jayadev, Michael Konczal

1. Credit Default Swaps on Government Debt: A Brief Introduction

Credit Default Swaps (CDS) are swap agreements that seeks to disentangle the credit risk associated with an underlying asset such as a bond or loan and sell it to buyers who are willing to hold that risk. Thus, for example, in a typical CDS contract where the underlying asset is a bond, a buyer of the CDS will provide a series of payments to the seller of the CDS in return for payment in case the bond defaults. CDS spreads are therefore seen as providing valuable information as to the perception of default: an increase indicates deterioration in the perception of credit quality while a decline signals an improvement. CDS can be written on a wide range of financial instruments including bonds, loans and other instruments.

CDS have both pros and cons as instruments. Since they parcel out credit risk, they serve the function of hedging against this risk as well as providing an alternative to ratings agencies by acting as a market based method of pricing risk. Some studies suggest that they have outperformed ratings agencies in the financial crisis. But they also have serious problems that may destabilize financial systems. They can be used in so called 'bear raids' and increase the vulnerabilities of the underlying entities. They are opaque, in the sense that they are mostly traded over-the-counter (OTC) and so pricing information is not openly available to market participants. They are often subject to severe counterparty risk (i.e. the risk that the seller cannot or will not pay in the event of a credit event) since they are typically uncollateralized and sellers of CDS contracts are not required to provision for credit events.

Credit Default Swaps on government entities were virtually unknown 10 years ago, partly since government debt is historically less likely to exhibit defaults (see Table 1 below). Since then, the market has grown considerably, especially in the last two years as the financial crisis has resulted in increases in government indebtedness and potentially decreased tax revenue to service this debt. Credit events in government CDS bonds can be triggered by a missed interest payment, a debt moratorium or financial restructuring. CDS in this regard is a new instrument and method of reflecting views on the health of a nation's finances- especially negative views-in ways that are not possible using traditional methods such as shorting government bonds. The concern about the use of CDS in distressed sovereign debt such as Greece, Portugal, Ecuador or Jamaica is whether the volumes in the CDS markets are simply leading indicators of the fundamentals or whether it drives them.

Since CDS was traded mostly over the counter, there is little publicly available information about the volume of CDS written on government entities in the early

part of the decade. However, since 2009, the Depository Trust Clearing Corporation (DTCC) has published weekly data on gross notional outstanding contracts and value in CDS markets. This is the only source of aggregate information, though there is some reason to believe that this source underestimates the total volume of such transactions. Table 2 below provides the data for CDS contracts for this week and a year ago from the DTCC. Gross notional outstanding contracts stand at 2 trillion dollars up from 1.7 trillion dollars last year. The majority of trades are between dealers (around 90% of both dollar volume and number of trades). Motives for holding sovereign and local government CDS vary, and there are many institutional players in the market. Proprietary desks, credit funds and hedge funds are both buyers and sellers of CDS. Bank counterparty hedging desks are typically buyers of CDS, while correlation desks are typical sellers of CDS protection.

The increasing volume of trades in government entities has meant that there has been an rise in interest in developing indices for sovereign and municipal CDS. Thus for example, Markit's iTraxx SovX index provides four credit default swap indexes that track the perceived risks of sovereign debt in emerging economies and Western Europe. Emerging Market CDSs have traded for nearly a decade, but CDS on sovereign debt of western European economies has been very low volume and is thus a new index. Similarly, Markit also offers the MCDX index comprised of large investment-grade municipal credits. Unlike the global sovereign debt market however, there are fewer issuances of municipal bonds that makes the CDS market thin, more volatile, and more subject to the criticism that the markets are being used to manipulate yield. Most experts believe that the volumes in CDS markets for both sovereign debt markets and state and local government debt will probably increase since debt defaults might exceed historical norms. Continuing weakness in Greece's financial situation for example has meant that the gross volume of outstanding credit default swap contracts on Greek national debt has risen substantially from around \$ 40 billion last year to \$85 billion two months ago on a stock of bonds worth around \$400 billion.

While the motives of players in CDS market are clear (hedging against default risk, or speculating on default risk), one should note definite weaknesses on the supply side. Since CDS does not require an insurable interest, the volumes of CDS contract written are not bound by the value of the underlying asset. That is to say, one party does not need to own a bond in order to obtain protection through a CDS were it to default and thus any bond can have many contracts written on it. This is less of a problem if there are many sellers and it is a competitive market in selling so that risks are not concentrated in few entities. However, this has not always been the case. Furthermore, since writers have not been required to provision for losses and can book revenue as profits, writers can be undercapitalized when credit events occurred. The emblematic case of this was AIG in 2008, but MBIA and Ambac, two large bond insurers also faced severe problems during this time. These events severely disrupted confidence in the CDS market, necessitating immediate government intervention. Although that particular crisis was not triggered by credit

events in government entities, the rapid growth of CDS in government and muni bonds, the opacity of the market, the concentration of the supply side in the industry, and the fragility of the tax base for states might mean that a similar event could occur with protection issuers in the future.

2. The Greek Crisis and the Role of the CDS

Greece is undergoing a severe sovereign debt crisis. The country has sovereign debt of around \$400 billion, and a budget deficit of nearly 13%. In the last few months it became evident that the country had understated the depth of its debt and its fiscal position through the use of derivative contracts. There was consequently an increase in spreads for CDS on Greek bonds and a rise in the interest rate that the country faced for borrowing. This in turn limits its viability in the European Union in the absence of a bailout from other countries in the EU. CDS spreads have also increased in countries like Portugal and Spain which also display relatively weak fiscal positions.

There has been a great deal of discussion in the role of the CDS market in the crisis. Some stories suggest that speculation in CDS markets and leveraged shorting has led to sharp increases in interest rate payments, has caused ratings agencies to downgrade Greek debt to junk status and has put severe pressure on the viability of the Euro. As it stands, such stories appear overstated to us. First, as Figure 1 shows, the CDS market has been showing increasing spreads on Greek sovereign debt for a considerable period of time, since late November and there have been no sharp or sudden increases. Second, the volumes of trades (gross \$85 billion, and net \$9 billion dollars on an underlying portfolio of \$400 billion) is in line with CDS/debt ratios on other sovereign entities such as Spain, Portugal and Italy) as seen in Table 3 and as such, is unlikely to be driving bond prices².

CDS spreads on Greek debt, while among the highest in the world, are exceeded by several other countries, as displayed in Table 4. Furthermore, as the concerns about Greek debt cascades and puts the financial status of other countries in the EU under the microscope, one should expect to see a larger role of CDS for both sovereigns and financial institutions exposed to the sovereigns in the coming days and weeks and a potential re ranking of the countries listed in Table 4.

3. CDS on National and State and Local Governments:

While the Greek case does not seem to be about manipulation originating from the CDS market, it is possible that CDS markets can worsen fragile debt situations without due cause. If CDS spreads begin to widen, there can be a situation where market participants seek to buy more protection, thereby further increasing spreads and creating a self-fulfilling prophecy. This in turn can have serious impacts on a sovereign entity to the extent that CDS is taken as an accurate picture of underlying

² See Citibank's assessment in <http://www.scribd.com/doc/27775379/Citi-Sovereign-CDS-You-Can-t-Blame-the-Mirror-for-Your-Ugly-Face> for more details.

risk and used to set interest rates on its debt. Therefore, there is good reason to ask about the proper scope of CDS contracts in sovereign and local government debt. This is a concern with some valence since sovereign debt is often used to finance very important social services to vulnerable people and to the extent that these services are undermined by overstated risk of government default, this can have unnecessary negative social consequences. While this may not be a concern with the sovereign debt of the US at the current juncture, there are more serious issues with municipal debt. A recent Wall Street Journal article pointed to the fact that CDS use may be driving up borrowing costs for state and local governments³. Since these markets are thin at the moment, it is possible that there is substantial price volatility in the CDS prices, but there is very little easily available aggregate data on the subject.

Thus far, there have been a few sovereign credit events (Ecuador, Russia and Argentina) that have had credit derivatives written on them. Unlike in corporate defaults, investors cannot seize assets from sovereigns, and so the pricing of distressed sovereign CDSs will differ significantly from that on corporate distress. The value of the contracts will be based on more limited historical information and CDS spreads are likely therefore to be more volatile in during sovereign debt events than in corporate debt.

The municipal CDS market began active trading in 2003, with significant increases in liquidity in 2007, especially in the 10 year market. The majority of trades have been on state general obligations. There is assumed to be a high recovery rate compared to the corporate CDS sector.

4. Case studies for CDS manipulation

A 2006 report by Insol International, "Credit Derivatives in Restructurings," concluded that as the credit derivative market grows and matures, ownership of credit derivative positions could influence restructuring events. A party at a restructuring that has a CDS position may have different interests from other players at the restructuring. What is worse, they concluded that it is unlikely that it would be in the interests of the party holding the CDS to reveal their position, and they are unlikely to be under any obligation to disclose this position to the other interested parties. In the absence of disclosure of CDS protection to all person at a restructuring event, there will be a large information asymmetry that could lead to suboptimal bargaining and results for the firm in question.

A list they provide, compiled with Fitch Ratings, lists over 35 credit events under which credit derivatives have been called, including Air Canada, Delta Airlines, the sovereign debt of Ecuador, Indonesia and Russia, Xerox, Marconi, and Pacific Gas &

³ States Bristle As Investors Make Wagers on Defaults-Ianthe Jeanne Dugan- Wall Street Journal, 27th April 2010.

Electric. This list will grow in the future, and the problems of negotiations being drawn out and resulting in suboptimal situations only likely to grow with it.

The recent revelations on the hedge fund of Magnetar, reported by the non-profit reporting firm ProPublica and also in the book by Yves Smith "Econned", show another example of CDS being used in conflicting ways. The hedge fund Magnetar would put up money to create a CDO of risky subprime mortgages and then bet against it using credit derivatives. If markets worked perfectly, they should not be able to make any money doing this, but because of the opacity of the market they made a windfall.

And this has major social implications. According to some numbers provided by Smith, Magnetar deals could have accounted for 35% of 2006 subprime issuances. As we now know, the 2006 vintage of subprime loans were a particularly bad group in terms of performance. And according to ProPublica, Magnetar put pressure to make sure the mortgage bonds they were creating were particularly bad ones. The final number for defaults for Magnetar created bonds that were able to be found by ProPublica was 96%, compared to a default rate of around 65% for a comparable instrument.

This is an example of where poorly priced credit derivatives can distort the market, creating more risk than is optimal. As the housing market was likely to cool in 2005, creating instruments who

As the economist Perry Mehrling has said, in an interview with the Atlantic Monthly: "If you insure an earthquake, you are not making earthquakes more likely. The insurance contract is a purely derivative contract, it isn't influencing earthquakes. That is not true of insurance of financial risk. When AIG is selling you systemic risk insurance for 15 basis points, that price is too low. People said: '[If I can get rid of the whole tail risk that cheaply, I should load up. I should take more systemic risk.'"

5. Proper structure of CDS –insurable risk, premiums for provisioning.

Given that CDS, properly used can be a useful instrument for pricing and parceling risk--but that it can also have serious negative impacts on market integrity and social welfare and is subject to market manipulation-- making sure the regulatory structure governing these instruments is appropriate is a critical task for government. Several key issues have been debated that we address here.

a. Bans on naked CDS, especially in debt of government entities

Some discussion by legislators in both the EU and the US has suggested the banning of CDS in which the buyer does not have an insurable interest in the underlying asset, particularly if the asset is the debt of a government entity. At the current juncture, there appears to be little concern that naked shorts on CDS are driving bond yields upwards in some of the more distressed sovereign debt markets. While

there are speculators who are obtaining naked CDS positions on debt and profiting from these, it is not clear that these entities have enough volume in this market to drive yields in the much larger bond market. While this is not a concern at the moment this may become a bigger issue, as the CDS market grows especially for smaller sovereign nations. Just as importantly, for state and local governments, one can easily imagine that the CDS market can exceed the size of the underlying assets by a considerable margin and that CDS spreads can drive yields. Certainly, the volume of CDS written on private securities often exceed the value of the securities by multiples of the underlying value, showing that there are many entities buying naked CDS positions. Given the importance and sensitivity of government debt, policy makers will have to face the trade-off between the price discovery function of naked CDS contracts and the potential they provide for systemic disruption. Our contention is that naked CDS contracts do not help provide considerably more price information than ratings agencies for government entities since the balance sheet of these entities are easy to monitor and the revenue and expenditure streams are well known and stable.

b. Provisioning for Credit Events

We have noted a weakness on the sell side of the CDS contract, namely that sellers do not have to provision against the contingency of a credit event given the legal nature of a swap. This can be a huge problem as it means that a CDS writer can be highly undercapitalized in the event of a credit event. This should be remedied by a requirement for adequate capitalization for writer that reflects the substantial leverage embedded in the CDS contract.

c. OTC vs. Exchange/Clearinghouse

There is by now, a broad consensus that there should be a presumption that all derivative instruments be traded on exchanges or clearinghouses rather than over the counter. The financial crisis should that the current market structure for OTC derivatives could not adequately deal with disclosure and information for market participants, limiting the ability for a speedy resolution of distressed financial firms and exacerbating uncertainty. This creates a strong signal that all derivatives, including credit default swaps be traded on exchanges as best practice and those that cannot be standardized to such an extent be traded through clearinghouses. Those that are not exchange traded should be required to set aside additional capital to insure systemic integrity and to provide an incentive to move towards more transparent structures. This will have the effect of limiting bespoke and making buyers take on some additional basis risk associated with imperfect hedges. This will certainly be the case with sovereign and states and municipal debt.

d. Publication of data

There needs to be full disclosure of price, volume and open interests in the credit derivative markets. Understanding the price of recent transactions disciplines the

valuations of these instruments that can be used to mark prices on the balance sheets of large, complex financial institutions. In addition, prices serve as a reference to market participants and create a more efficient marketplace.

e. Systemic reporting so the entire constellation is known , particularly on sovereign debt and systemically important entities.

Table 1: CUMULATIVE HISTORIC DEFAULT RATES

	Municipals	Sovereigns	Corporates
Aaa/AAA.....	0.00	0.00	0.19
Aa/AA.....	0.06	0.00	0.41
A/A.....	0.03	0.00	1.71
Baa/BBB.....	0.13	3.53	4.13
Ba/BB.....	2.65	20.82	18.73
B/B.....	11.86	24.72	41.45
Caa-C/CCC-C.....	16.58	33.33	65.56
Investment Grade.....	0.07	0.66	2.01
Non-Invest Grade.....	4.29	22.95	32.52
All.....	0.10	6.36	10.55

* Source: Moody Investor Services, Default Rates within 10 years, 1970-2006

** Source: Moody Investor Services, Default Rates within 10 years, 1983-2008

Table 2: Gross Notional Outstanding Trades and Volumes in Sovereign/State Bodies
CDS: Source DTCC

		1 year ago	% of Total	Current (26th April 2010)	% of Total
Dealer	Notional Outstanding	1,589,247,140,433	89.60%	1,992,443,935,433	89.50%
	Number of Trades	124,612	90.30%	145,931	88.10%

Non-Dealer/Customer	Notional Outstanding	183,598,754,395	10.40%	233,068,684,759	10.50%
	Number of Trades	13,349	9.70%	19,683	11.90%

All	Notional Outstanding	1,772,845,894,828	100%	2,225,512,620,192	100%
All	Number of Trades	137,961	100%	165,614	100%

Table 3: CDS/Debt Ratios for Selected Sovereigns

	Gross CDS (\$bn)	Government Debt (\$bn)	CDS/Government Debt
Portugal	64	164	39%
Greece	85	406	21%
Spain	110	644	17%
Italy	231	2024	11%
UK	36	1398	3%
Germany	66	1690	4%

Source DTCC

Table 4: Top Sovereign Debt Risk as of April 07 2010 as rated by CDS spreads.

Global Ranking by CPD				
Country	CPD (%)	5yr Mid (bps)	CMA Implied Rating	CMA Implied Rating Q4
Venezuela	48.5%	944.6	CMA_ccc+	CMA_ccc
Argentina	46.0%	898.4	CMA_ccc+	CMA_ccc+
Pakistan	42.3%	791.9	CMA_b-	CMA_b
Ukraine	35.4%	624.2	CMA_b	CMA_ccc
Iraq	28.9%	471.3	CMA_b+	New Entry
Dubai	26.6%	436.1	CMA_b+	CMA_b+
Iceland	23.3%	386.5	CMA_bb-	CMA_bb-
Latvia	22.8%	365.6	CMA_bb-	CMA_b+
Greece	25.4%	335.9	CMA_bb-	CMA_bb+
Egypt	16.5%	251.5	CMA_bb	CMA_bbb-
Vietnam	16.4%	248.6	CMA_bb	CMA_bbb
Lebanon	16.2%	245.4	CMA_bb	CMA_bb
El Salvador	15.2%	230.0	CMA_bb+	New Entry
Lithuania	15.0%	229.1	CMA_bbb-	CMA_bb-
Romania	13.3%	200.0	CMA_bbb	CMA_bb
Bulgaria	13.0%	193.2	CMA_bbb	CMA_bbb
Croatia	12.7%	189.1	CMA_bbb	CMA_bbb
Hungary	12.2%	181.5	CMA_bbb+	CMA_bbb
Bahrain	11.6%	170.4	CMA_bbb+	CMA_bbb
Turkey	11.5%	169.4	CMA_bbb+	CMA_bbb+
Kazakhstan	11.5%	169.0	CMA_bbb+	CMA_bbb
Indonesia	10.9%	158.1	CMA_a-	CMA_bbb+
Philippines	10.7%	157.1	CMA_a-	CMA_a-
Colombia	10.3%	150.6	CMA_a-	CMA_a
Russia	9.8%	142.1	CMA_a	CMA_bbb+
Portugal	11.7%	139.6	CMA_bbb+	CMA_aa+
Ireland	11.7%	139.5	CMA_bbb+	CMA_bbb+
South Africa	9.1%	133.0	CMA_a+	CMA_a
Brazil	9.0%	131.0	CMA_a+	CMA_aa-
Peru	8.9%	128.6	CMA_a+	CMA_aa-
Panama	8.9%	128.2	CMA_a+	CMA_a+
Mexico	8.1%	116.0	CMA_aa	CMA_a
Spain	9.8%	115.6	CMA_a	CMA_aa
Italy	9.6%	113.7	CMA_a	CMA_aa
Israel	7.9%	113.1	CMA_aa	CMA_aa
Abu Dhabi	7.7%	112.3	CMA_aa	CMA_a-
Morocco	7.5%	109.6	CMA_aa	CMA_aa
Tunisia (Central Bank)	7.3%	104.9	CMA_aa	CMA_aa


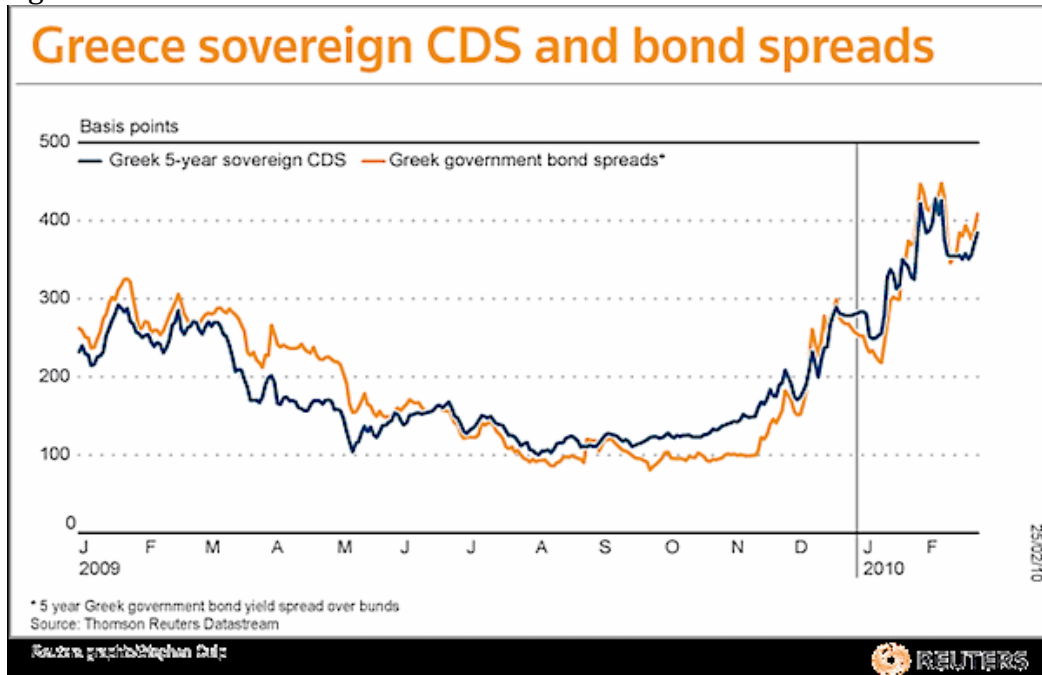
Global Sovereign Credit Risk Report	EU +44 (0)20 7796 5100	Confidential & Proprietary	
April 2010	US +1 646 351 8787	www.cmavision.com	
	info@cmavision.com		

Figure 1



Source: <http://blogs.reuters.com/felix-salmon/2010/02/25/chart-of-the-day-greek-bonds-and-cds/>