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## **Changes in Sovereign Yield Spreads Over Time: U.S., Germany and the Euro Zone**

In an effort to address the question of what is a normal U.S. Treasury versus German Bund yield spread, we have analyzed 10 years' worth of monthly yield spread data of these two instruments. For the analysis we have selected yields on 10-year maturity debt for both countries over the period from December 31, 2000 to December 31, 2010. The U.S. Treasury debt is denominated in U.S. dollars while the German debt is denominated in euros.

This yield spread is important as the U.S. and German government debt markets are arguably the two most important government debt markets in the world. U.S. Treasury debt serves as the benchmark for all debt issued in U.S. dollars, the world's largest fixed income market. Similarly, German Bunds serve as the benchmark for all euro issuance.

Insurance regulators might care about this because to some degree insurers invest in different geographic locations to enhance their portfolio diversity and also improve portfolio returns. If they invest in instruments denominated in currencies other than U.S. dollars, they are exposed to currency risk, but it is our belief that in the vast majority of such cases, this is addressed through a hedge of the associated resulting currency risk to the insurance company. In addition, it might be the case that the foreign investments might be exposed to a higher level of market value volatility than a U.S.-based investment.

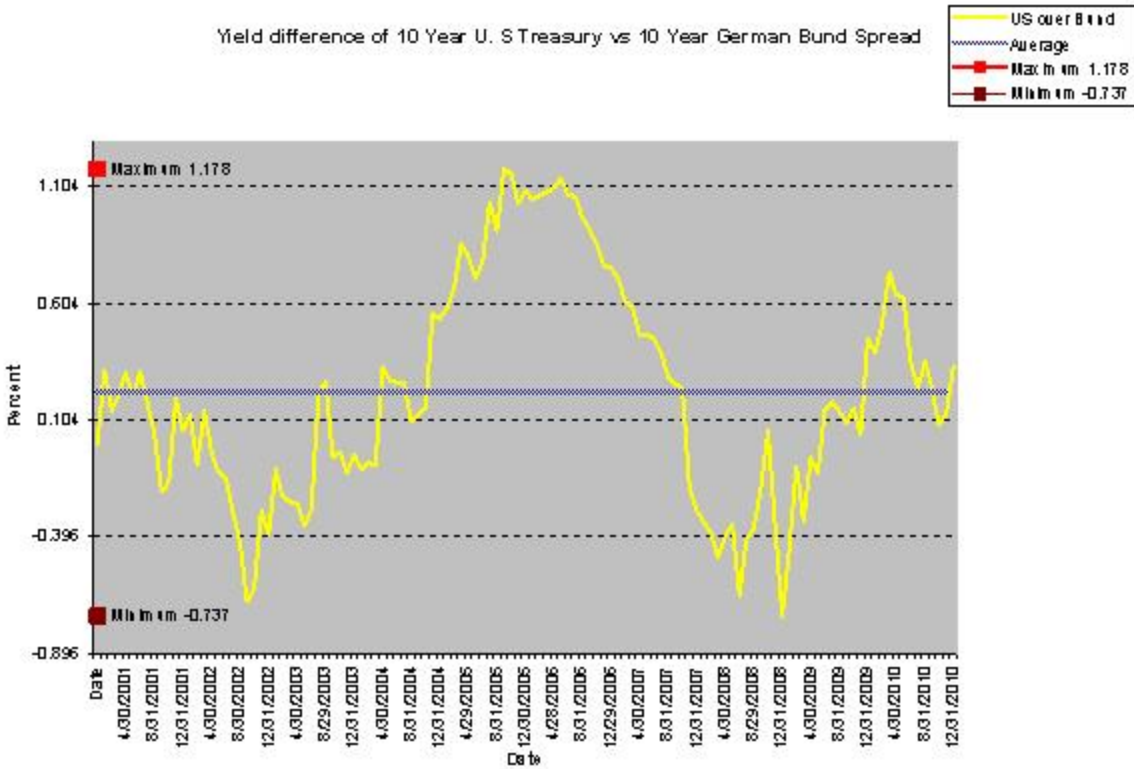
As is clear from the graph, this yield spread has varied substantially over time for a variety of factors.

The average yield spread of Treasuries over Bunds during this period was 22 b.p. As of the most recent date, December 31, 2010, the spread was quite close to this level at 33 b.p. Yields of sovereign debt of different countries can vary for a wide variety of reasons. In particular, yields on Treasuries and Bunds will vary because the debt of the two nations is denominated in different currencies with different current and expected future inflation rates. Many other factors can also be involved such as monetary and fiscal policy, investment alternatives, and domestic saving rates. There is no single explanation why one rate is higher than the other or why they vary over time. However, it has been clear for example that Treasury rates tend to decline relative to other rates in times of unusual stress since Treasury bonds are considered a safe haven and highly liquid.

However, the variation in this spread over time has far exceeded this average.

The maximum spread was 118 b.p. in mid-2005. The minimum spread was -74 b.p. at December 31, 2008 during the depths of the recent financial crisis.

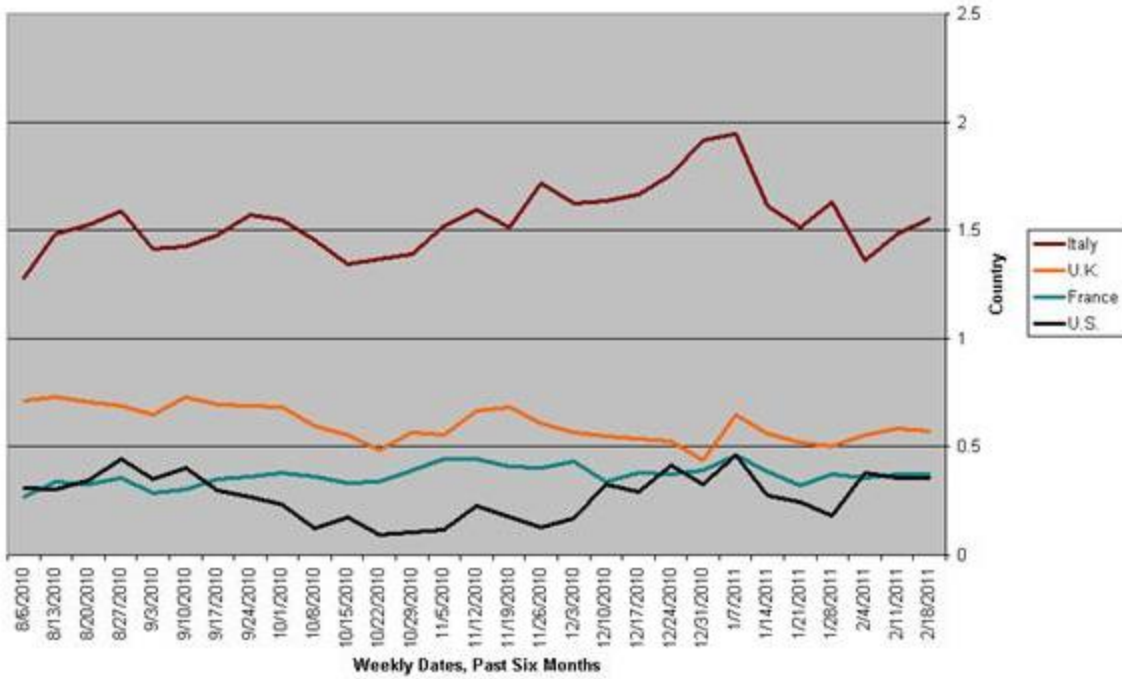
Of the 120 observations during this period, U.S. yields were higher 78 times. Conversely, Bund yields were higher 42 times.



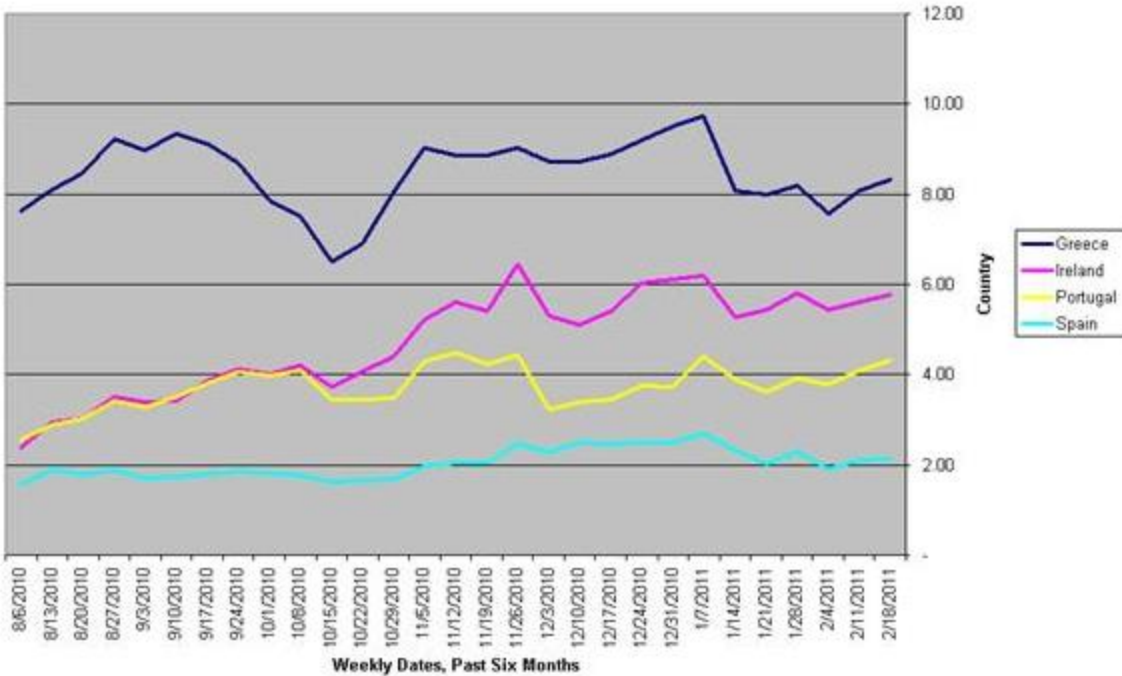
With the recent problems in Europe, as a point of comparison for three other euro zone countries that have been in the news lately, the most recent auctions for Portugal, Spain and Italy have issued bonds at spreads of 378 b.p., 234 b.p., and 167 b.p., respectively versus yields on comparable German bunds. Since Ireland and Greece have reached support arrangements with the European Union and the International Monetary Fund, they have not had an occasion to publicly issue debt of late.

We have also compared the yields on various other European countries to yields on the 10 year German bund for the last 6 months. In this analysis we have included yield spreads of two countries that have not been mentioned as being of concern, the U.K. and France. We have also included yield spreads on the weaker euro zone countries known as the PIIGS (Portugal, Ireland, Italy, Greece and Spain). As is obvious from the chart, the spreads on the U.K. and France are much lower than for the other countries. Yields on Greek bonds are by far the highest, followed by Ireland and then Portugal. Spreads on Spain and Italy are in between these countries. In general, changes in the spreads, especially, on the weaker countries, are highly correlated since they are driven by similar market factors related to concerns of the viability of the continuation of the euro zone in its present form.

Spreads Between 10 Year Global Gov't Bond Vs. 10 Year German Bund



Spreads Between 10 Year Global Gov't Bond Vs. 10 Year German Bund



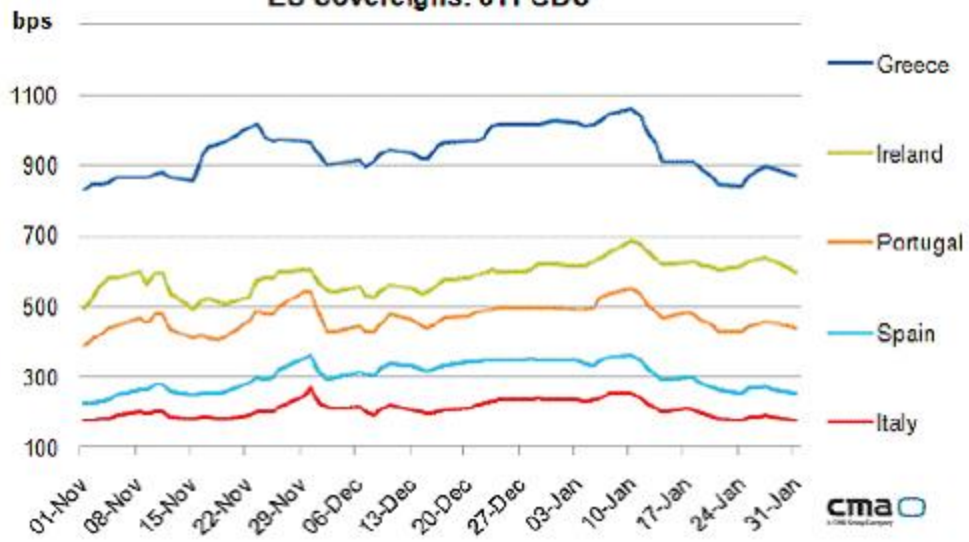
Spread vs Bunds			
July 2010-January 2011			
Country	Min	Avg	Max
Greece	6.51	8.38	9.74
Ireland	2.36	4.22	6.46
Portugal	2.55	3.54	4.48
Spain	1.56	1.99	2.69
Italy	1.28	1.53	1.95
U.K.	0.44	0.63	0.78
France	0.27	0.36	0.46
U.S.	0.09	0.28	0.46

We have also included below a table of correlations of changes in yield spreads for the last six months for the same set of countries. The yields on all these countries are benchmarked versus the German bund. As you can see, in most cases the correlations in these changes in yield spreads are quite significant. For example, for Ireland the correlation was generally 76% or higher versus every other country with the exception of the U.K. and the U.S. Neither of these other countries are in the euro zone and both benefit when the euro zone market becomes disrupted.

Correlation Matrix of Yield Spread Changes by Country								
July 2010 to January 2011								
	<i>Greece</i>	<i>Ireland</i>	<i>Portugal</i>	<i>Spain</i>	<i>Italy</i>	<i>U.K.</i>	<i>France</i>	<i>U.S.</i>
Greece	100%							
Ireland	62%	100%						
Portugal	55%	81%	100%					
Spain	63%	81%	48%	100%				
Italy	74%	83%	61%	91%	100%			
U.K.	9%	-46%	-14%	-29%	-24%	100%		
France	49%	76%	72%	64%	69%	-9%	100%	
U.S.	45%	-11%	-17%	32%	34%	46%	-7%	100%

Lastly, as an additional point of comparison, we have included a chart of credit default swap levels over the last three months for some of the weaker European sovereigns. Changes in these levels are correlated over time to changes in yield spreads. In the short term, there can be significant differences due to different market dynamics between cash instruments and the swaps market. In addition, these levels often move in unison as changes in credit concerns typically are reflected across the spectrum of credits rather than in just one credit at a time.

### EU Sovereigns: 5Yr CDS



February 25, 2011

Major Insurer Share Prices

		Close	Change %			Prior		
			Week	QTD	YTD	Week	Quarter	Year
Life	Aflac	\$57.84	(2.1)	2.5	2.5	\$59.08	\$56.43	\$56.43
	Ameriprise	63.52	(1.9)	10.4	10.4	64.73	57.55	57.55
	Genworth	13.30	(4.9)	1.2	1.2	13.99	13.14	13.14
	Lincoln	31.58	(1.5)	13.6	13.6	32.06	27.81	27.81
	MetLife	46.78	(1.8)	5.3	5.3	47.65	44.44	44.44
	Principal	33.94	(2.2)	4.2	4.2	34.69	32.56	32.56
	Protective	28.19	(2.5)	5.8	5.8	28.92	26.64	26.64
	Prudential	64.77	(3.4)	10.3	10.3	67.02	58.71	58.71
	UNUM	26.60	(1.0)	9.8	9.8	26.87	24.22	24.22
PC	ACE	\$63.28	(3.7)	1.7	1.7	\$65.74	\$62.25	\$62.25
	Axis Capital	36.11	(4.5)	0.6	0.6	37.81	35.88	35.88
	Allstate	31.48	(2.0)	(1.3)	(1.3)	32.11	31.88	31.88
	Arch Capital	89.90	(0.2)	2.1	2.1	90.12	88.05	88.05
	Cincinnati	33.70	(1.4)	6.3	6.3	34.18	31.69	31.69
	Chubb	60.11	(2.0)	0.8	0.8	61.31	59.64	59.64
	Everest Re	88.23	(2.6)	4.0	4.0	90.58	84.82	84.82
	Progressive	20.43	0.1	2.8	2.8	20.40	19.87	19.87
	Travelers	59.60	(2.2)	7.0	7.0	60.92	55.71	55.71
	WR Berkley	29.93	(1.4)	9.3	9.3	30.37	27.38	27.38
	XL	23.28	(5.6)	6.7	6.7	24.65	21.82	21.82
	Other	AON	\$52.49	(0.8)	14.1	14.1	\$52.93	\$46.01
AIG		38.54	(7.2)	(20.2)	(20.2)	41.51	48.27	48.27
Assurant		40.64	(2.6)	5.5	5.5	41.71	38.52	38.52
Fidelity National		13.86	(2.8)	1.3	1.3	14.26	13.68	13.68
Hartford		29.42	(4.5)	11.1	11.1	30.80	26.49	26.49
Marsh		30.20	(1.9)	10.5	10.5	30.78	27.34	27.34
Health	Aetna	\$37.33	(2.5)	22.4	22.4	\$38.29	\$30.51	\$30.51
	Cigna	41.99	(2.6)	14.5	14.5	43.13	36.66	36.66
	Humana	62.60	1.9	14.4	14.4	61.44	54.74	54.74
	United	42.52	(0.7)	17.8	17.8	42.84	36.11	36.11
	WellPoint	66.52	(1.3)	17.0	17.0	67.40	56.86	56.86
Monoline	Assured	\$14.55	(11.0)	(17.8)	(17.8)	\$16.35	\$17.70	\$17.70
	MBIA	11.30	(6.2)	(5.8)	(5.8)	12.05	11.99	11.99
	MGIC	8.57	(8.1)	(15.9)	(15.9)	9.33	10.19	10.19
	PMI	3.03	(2.6)	(8.2)	(8.2)	3.11	3.30	3.30
	Radian	7.04	(4.6)	(12.8)	(12.8)	7.38	8.07	8.07
	XL Capital	23.28	(5.6)	6.7	6.7	24.65	21.82	21.82

February 25, 2011

Major Market Variables

		Close	Change %			Prior		
			Week	QTD	YTD	Week	Quarter	Year
Dow Jones Ind		12,130.45	(2.1)	4.8	4.8	12,391.25	11,577.51	11,577.51
S&P 500		1,319.88	(1.7)	4.9	4.9	1,343.01	1,257.64	1,257.64
S&P Financial		225.73	(2.3)	5.1	5.1	231.16	214.77	214.77
S&P Insurance		198.78	(1.7)	5.6	5.6	202.18	188.22	188.22
US Dollar \$			Change %			Prior		
/ Euro		\$1.38	0.4	2.8	2.8	\$1.37	\$1.34	\$1.34
/ Crude Oil bbl		97.88	13.8	6.1	6.1	86.00	92.22	92.22
/ Gold oz		1,409.30	1.5	(0.8)	(0.8)	1,388.20	1,420.78	1,420.78
Treasury Ylds %		%	Change			%	%	%
1 Year		0.25	(0.02)	(0.03)	(0.03)	0.27	0.27	0.27
10 Year		3.42	(0.17)	0.12	0.12	3.58	3.30	3.30
30 Year		4.50	(0.19)	0.16	0.16	4.69	4.34	4.34
Corp Credit Spreads -bp			Change %			Prior		
CDX.IG		83.10	4.7	(2.2)	(2.2)	79.35	85.00	85.00
CDX.XO		159.5	1.9	(16.8)	(16.8)	156.5	191.67	191.67

Questions and comments are always welcome. Please contact the Capital Markets Bureau at [CapitalMarkets@naic.org](mailto:CapitalMarkets@naic.org).

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