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The Cost of Firms' Debt Financing

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THE COST OF FIRMS' DEBT FINANCING

by Daniele Pianeselli[*] and Andrea Zaghini[**]

Banca d'Italia; Banca d'Italia and CFS

Abstract

We provide an assessment of the determinants of the risk premia paid by non-financial corporations on long-term bonds. By looking at 5,500 issues over the period 2005-2012, we find that in recent years the sovereign debt market turbulence has been a major driver of corporate risk. Compared with the three-year period 2005-07 before the global financial crisis, in the years 2010-12 Italian, Spanish and Portuguese firms paid on average between 70 and 120 basis points of additional premium due to the negative spillovers from the sovereign debt crisis, while German firms got a discount of 40 basis points.

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1.Introduction[1]

We study the evolution of the actual cost of debt financing faced by non-financial corporations by analysing the yield offered on bonds at launch. We focus on a market measure of the risk of debt issuance: the asset swap (ASW) spread (sourced by *Thomson Reuters Datastream*) which is the difference between the bond yield and a corporate risk-free rate.[2] We rely on the yield at issuance since the secondary market pricing of any debt security is a measure of the soundness and creditworthiness of the issuing institution in that moment but it does not change the cost borne by firms on already issued bonds. Thus we differentiate from the literature on corporate bonds with respect to two aspects: on the one hand, we do not investigate the timing and the reasons supporting the firms' decision to finance themselves via debt (Cantillo and Wright 2000; Barry et al. 2009), since we look directly at the gross issuance; on the other hand, we depart from the literature on the evolution over time of credit spreads in the secondary market (Collin-Dufresne et al. 2001; Elton et al. 2001; Driessen 2005), since we focus on the funding cost faced by firms on the primary market. The papers closest to us are Morgan and Stiroh (2001), Sironi (2003) and Cardillo and Zaghini (2012) which, relying on market spreads on new bond issues, analyse the determinants of the risk premium on bank debt.

Our initial sample consists of 6,140 bonds – with maturity longer than 1 year – issued by non-financial corporations in the euro area, the UK and the US over the period 2005-

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[2] The ASW spread is the spread over the LIBOR (EURIBOR) which is paid on the floating leg of an asset swap contract in order to make the present value of the floating leg and fixed leg equal. Having to deal with corporate market instruments we preferred to rely on the reference corporate market rate. In addition, instead of using *ad hoc* interpolated yield curves of sovereign securities we relied on a publicly provided measure.

2012. The time span gives us the possibility to monitor two different phases of the recent financial turmoil: the turbulent period following the subprime mortgage crisis and the collapse of Lehman Brothers, and the later period of sovereign debt crisis which affected several euro-area economies.

Table 1: Issuance characteristics by country and size

Euro Area	Number of issues				Number of issuers				Volume				ASW				Stat		
Size	TOT	S	M	L	TOT	S	M	L	TOT	S	M	L	TOT	S	M	L	T1	T2	Med
2005	6	2	2	2	6	2	2	2	2.5	0.2	0.3	2.0	91	225	44	3	12.3	29.0	24.6
2006	113	19	37	57	47	15	16	16	49.9	7.1	17.0	25.8	37	117	36	12	6.9	27.9	19.2
2007	93	16	41	36	45	14	15	16	53.1	6.0	17.2	29.9	42	99	23	39	11.6	35.2	22.5
2008	142	51	28	63	49	17	14	18	73.5	21.6	14.7	37.2	138	112	162	148	18.2	30.2	26.5
2009	284	57	89	138	114	38	39	37	201.0	28.8	61.0	111.2	247	285	213	253	9.4	24.9	17.7
2010	228	46	67	115	113	39	36	38	112.6	15.1	30.1	67.4	207	333	211	155	4.2	22.6	10.2
2011	201	35	63	103	100	32	34	34	93.1	10.3	26.5	56.2	208	333	225	155	4.0	25.7	10.1
2012	334	63	84	187	144	47	48	49	150.6	17.5	34.5	98.6	229	367	249	174	6.1	26.7	10.2
Total	1401	289	411	701	319	150	106	63	736.2	106.5	201.3	428.5	188	264	183	161	9.1	27.8	17.6

UK	Number of issues				Number of issuers				Volume				ASW				Stat		
Size	TOT	S	M	L	TOT	S	M	L	TOT	S	M	L	TOT	S	M	L	T1	T2	Med
2005	7	2	1	4	5	2	1	2	4.5	0.4	0.8	3.3	22	13	73	14	24.4	46.8	25.9
2006	39	8	9	22	15	5	5	5	20.3	2.2	5.6	12.5	52	68	101	26	5.0	20.6	9.0
2007	35	5	17	13	12	4	4	4	17.7	1.7	9.2	6.7	51	73	56	35	6.4	32.0	16.3
2008	57	9	30	18	20	7	6	7	35.3	4.6	15.5	15.2	177	315	162	132	11.9	28.4	19.7
2009	97	13	36	48	34	11	12	11	43.3	3.5	9.6	30.2	254	356	283	204	3.8	21.4	10.9
2010	46	10	16	20	28	9	10	9	21.0	2.6	7.0	11.3	230	302	245	183	1.7	7.3	4.3
2011	43	14	9	20	22	7	7	8	21.4	6.0	5.0	10.3	236	307	295	159	4.4	26.9	9.5
2012	91	18	25	48	45	15	15	15	50.2	5.2	14.1	30.9	233	425	236	158	3.3	11.9	8.7
Total	415	79	143	193	104	47	35	22	213.5	26.3	66.7	120.5	194	296	206	144	7.6	24.4	13.0

US	Number of issues				Number of issuers				Volume				ASW				Stat		
Size	TOT	S	M	L	TOT	S	M	L	TOT	S	M	L	TOT	S	M	L	T1	T2	Med
2005	81	15	15	51	40	13	13	14	32.9	2.6	3.0	27.2	32	82	88	1	4.8	16.5	6.9
2006	270	44	52	174	113	37	38	38	123.5	10.7	18.1	94.7	85	204	156	34	3.9	15.4	6.3
2007	538	109	138	291	224	77	72	75	222.3	24.4	44.1	153.7	108	215	130	57	3.0	9.9	5.0
2008	510	93	128	289	206	72	66	68	210.6	17.8	35.3	157.4	200	281	216	166	4.1	13.2	8.2
2009	697	120	160	417	292	99	96	97	285.4	27.2	50.9	207.3	304	414	363	250	4.0	13.1	6.7
2010	639	117	164	358	285	96	93	96	238.3	30.3	57.2	150.8	196	328	214	145	3.3	10.7	5.8
2011	711	129	163	419	281	95	95	91	261.9	35.5	61.7	164.7	173	312	189	123	4.6	13.4	7.0
2012	878	160	221	497	400	134	132	134	395.9	46.6	83.8	265.5	213	385	243	145	3.4	10.9	6.1
Total	4324	787	1041	2496	851	387	277	187	1,770.7	195.1	354.2	1,221.4	193	317	224	140	3.9	12.9	6.5

NOTE.– Volume in billion of euro; ASW spread in basis points. For each year, issuers by country are divided into three size groups (Small, Medium, Large) according to the total assets distribution: the two threshold values (tertiles) and the median are reported in the last three columns (billion of euro).

Sources: Dealogic and Thomson Reuters Datastream

Table 1 shows a common pattern across-geographic areas in the development of the issuance activity: the annual amount of new debt raised in the capital market more than doubled between 2006 and 2012. The placement volume shows a steady upward path with

two peaks in 2009 and 2012. We have 4,324 bonds placed by companies located in the US, 1,401 in the euro area and 415 in the UK. In the euro-area sub sample, about two thirds of the overall issuance are by French and German firms with 529 and 368 bonds issued, respectively.[3] While there is a steady dominance of US companies as regards the number of bonds issued, the average issuance per firm is rather similar across countries, ranging from 4.0 bonds issued by non-financial corporations in the UK, to 4.4 in the euro area and 5.1 in the US.

Bearing in mind these main stylised facts, we focus on two firm characteristics which significantly influence the ability to access debt capital markets: size and rating class. As for the former, size affects the ability to issue bonds because of the fixed cost associated to the public placement as searching, monitoring and agency costs (Blackwell and Kidwell 1988). Large firms with bigger issues can cope better with these costs, since they are able to generate significant economies of scale (Denis and Mihov 2003). By dividing the sample in tertiles according to the total assets distribution, from Table 1 we can compute the share of bonds issued by small firms: it ranges from 18.2 to 20.6 per cent, whereas the same share in terms of volumes is even smaller (from 11 per cent in the US to 12.3 in the UK and 14.5 in euro area).

Regardless of the geographic location, the ASW spread paid at issuance is significantly higher for smaller issuers. Companies within the first tertile often paid a premium between two and three times that of firms within the third tertile. In addition, the financial crisis seems to have hit firms of the same size differently by geographic area.

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[3] Nationality and industry group are those of the parent company. Data related to euro area are available for 13 countries (Austria, Belgium, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal and Spain).

During the first phase of the financial turmoil (2007-2008), the ASW spread increased more for large than small companies in the US and euro area, while it was the other way around for the UK. However, from 2009 the difference in the ASW spread paid by small and large firms significantly increased to reach the maximum in 2012 in each of the three economies (194 bp in euro area, 240 bp in the US and 267 bp in the UK).

Table 2: ASW spread by country and issuer rating

Country		2005	2006	2007	2008	2009	2010	2011	2012	Total
Italy	IG	-11	46	41	228	225	159	241	267	194
		1	*4*	*13*	*6*	*26*	*13*	*13*	*22*	*98*
	HY		205			403	519	403	477	389
			2			*1*	*1*	*3*	*2*	*9*
Germany	IG	40	6	19	153	217	103	156	96	121
		2	*44*	*18*	*38*	*74*	*36*	*33*	*77*	*322*
	HY		161	157		476	510	427	489	455
			1	*2*		*3*	*12*	*13*	*15*	*46*
France	IG		30	16	91	219	139	142	165	135
			32	*41*	*71*	*91*	*84*	*81*	*92*	*492*
	HY			221		584	375	364	446	410
				3		*4*	*9*	*7*	*14*	*37*
Spain	IG	26	38	35	171	173	96	214	290	165
		1	*6*	*4*	*4*	*15*	*10*	*9*	*16*	*65*
	HY		321			634	688	537	489	590
			1			*1*	*6*	*3*	*2*	*13*
Greece-Ireland-Portugal	IG		64		345	234	184	224	546	294
			3		*4*	*8*	*4*	*5*	*7*	*31*
	HY					504	596	655	621	601
						3	*6*	*2*	*11*	*22*
Euro Area	IG	91	23	31	133	230	138	158	173	150
		6	*107*	*87*	*140*	*270*	*185*	*167*	*275*	*1,237*
	HY		289	206	467	582	495	442	488	470
			6	*6*	*2*	*14*	*44*	*35*	*57*	*164*
United Kingdom	IG	22	52	51	177	224	179	174	177	161
		7	*39*	*35*	*57*	*89*	*40*	*39*	*78*	*384*
	HY					591	570	833	564	607
						8	*6*	*4*	*13*	*31*
United States	IG	21	34	67	183	251	132	126	130	141
		77	*222*	*446*	*477*	*602*	*516*	*607*	*680*	*3,627*
	HY	232	321	303	439	638	464	443	502	462
		4	*48*	*92*	*33*	*95*	*123*	*104*	*198*	*697*

NOTE.– ASW spread in basis points, number of placements in italic.
Sources: Dealogic and Thomson Reuters Datastream

As for the rating class of bonds, Table 2 reports the pattern of the issuance premium, splitting the issues in *"Investment Grade"* and *"High Yield"* (henceforth IG and HY). In the period considered, the risk premium on bonds increased in all areas and for both rating classes. In 2006 the average ASW spread for IG issues was 6 basis points for Germany and

46 bp, 38 bp and 64 bp for Italy, Spain and the GIP group (Greece, Ireland and Portugal), respectively. IG placements from firms in the UK and the US paid an ASW spread somewhat higher than euro area (34 bp and 52 bp, respectively versus 23 bp of euro area). In the same year, risk premia for HY issues were considerably higher: they ranged from 161 bp in Germany to 321 bp in Spain and the US.

As for the crisis period, in the US and the UK, the ASW spread substantially increased for IG issues in the early phase of the subprime mortgages crisis (2007 and 2008), and after a peak in 2009, it levelled off at a lower level. The pattern is similar for HY placement by firms in the US, while it is more erratic in the UK given the reduced issuance of HY bonds by British firms. In the euro area there were sizeable differences across countries: Germany exhibited a development relatively similar to that of US and UK bonds with IG rating, but not to that of HY placements. In particular, while for German IG bonds the average ASW spread reached 217 bp in 2009 to decline to 96 bp in 2012, for HY issues the spread fluctuated around the 2009 levels also in the following years, thus not showing signs of a recovery.

An even clearer effect of the sovereign bond crisis can be detected in Italy, Spain and GIP countries. Italian firms were significantly hit by the first wave of the financial crisis with the ASW spread for IG placements considerably increasing from 2007 to 2008 when it reached a peak at 228 basis points, badly performing with respect to Germany, France and Spain. After a very difficult 2009, in 2010 financing conditions on bond markets seemed to have started improving and moving back towards pre-crisis times, at least as credit spreads are concerned: Italy moved in accordance with all the other countries, even though only the issuances from GIP countries paid a higher ASW spread. However, in 2011 and 2012, when the government bond crisis after Ireland and Portugal hit also Italy and Spain, a decoupling

from France and Germany became evident. While in Italy and Spain the ASW spread increased significantly to reach the maximum in 2012, it decreased in Germany and it increased only slightly in France. Italian and Spanish IG issues paid in 2012 around 170 bp and 200 bp, respectively, more than German bonds within the same rating class. Instead, the cost of the HY issuance behaved in a similar way in the four countries; in 2012 the average ASW spread ranged from 446 bp in France to 489 bp in Spain and Germany.

2. Econometric evidence

In order to empirically assess the determinants of the premium on corporate bonds we propose a panel regression of the ASW spread paid at launch by firms over the 8 years from 2005 to 2012. From the complete set of bonds for which the ASW spread is available, our analysis restrict to around 5,500 issues for which we have the complete list of bonds' characteristics. They are issued by 1,100 firms headquartered in 15 countries (13 euro-area countries, the UK and the US). The value of the premium paid on bonds is determined by several factors, including the characteristics of the issuer (such as size and industry group), those of the bond (such as issuance volume and maturity), and of course the market sentiment. It can also reflect the creditworthiness of the sovereign: in fact, as happens for banks, the sovereign rating is almost everywhere perceived by market agents as a cap for the risk assessment of issuing institutions. Our empirical investigation tries to disentangle the contribution of each characteristic of these four groups. We thus run the following regression by means of pooled OLS with time dummies to take into account the dynamics:

$$spread_i = \alpha_0 + \sum \alpha_j V_{i,j}^{issuer} + \sum \alpha_k V_{i,k}^{issue} + \sum \alpha_l V_{i,l}^{country} + \sum \alpha_z D_z^{time} + \varepsilon \; ;$$

where spread is the ASW spread at launch of each bond, V_j^{issuer} are the variables characterizing the issuer (size, leverage, industry, rating), V_k^{bond} are the variables of the bond

features (volume, maturity, currency, rating), $V_l^{country}$ are the variables associated with the country of residence of the parent issuer (rating, CDS spread, geographic area), D_z^{time} are time dummies which take into account the market conditions at the time of issuance. In the regressions all exogenous variables are taken at time t (the exact issuance day) with the exception of balance sheet data which are lagged by one year. Table 3 reports the summary statistics of the main variable employed in the regression procedure, excluding dummy variables.

Table 3. Summary statistics

	Observations	Mean	Median	Std. Dev.	Max	Min
ASW spread	5,427	185	140	174	1,072	-155
Leverage	5,427	54	51	31	99	0.1
Total asset	5,427	91	24	180	544	2.8
Duration	5,427	3,745	2,931	3,365	36,680	365
Volume	5,427	448	351	389	3,720	0.6
Firm Rating	5,427	12	12	3.6	20	2.0
Bond Rating	5,427	13	13	3.6	20	2.0
Sovereign Rating	5,427	20	20	1.1	25	1.0
Sovereign CDS	5,427	70	42	770	3,703	1.3
Issuer CDS	5,050	103	57	147	3,120	3.8
Employees	1,994	90,947	49,861	179,136	2,100,000	22

ASW spread is the difference between the bond yield and the fixed-leg rate of a swap contract with the same maturity (basis points). Leverage is the ratio between debt and debt+equity multiplied by 100. Total asset is the firm balance sheet value of all assets (billion of euros). Duration is the bond maturity at issuance (days). Volume is the face value of the bond (million of euro). Firm Rating, Bond Rating and Sovereign Rating are the average of the ratings provided by Moody's, Fitch and Strandard&Poors linearised between 0 (C-) and 25 (AAA). Issuer CDS and Sovereign CDS are the average of the daily credit default swap for 5-year contracts computed in the 15-day period before the bond issuance (basis points). Employees is the number of employees working for the non-financial corporation.

We start with a basic specification and then we add some variables at each estimation round; we report only the estimates for which the explanatory variables turned out to be significantly different from zero. The first column of Table 4 shows that the standard characteristics of the issue have the expected sign: the longer the duration and the larger the volume the higher the cost at launch. Also the currency denomination in euro seems to abate

the ASW spread paid by firms (negative coefficient). Note that the positive sign of the issuance size may reflect the fact that the market assesses negatively the increased debt burden, or simply that, in order to place a larger issue, firms are required to pay a higher spread (Shi; 2003). In addition, the estimated coefficient of the bond rating has the expected negative sign (a better rating leads to a smaller risk-premium).

Table 4: OLS regressions over the whole sample[1]

	(1)	(2)	(3)	(4)	(5)
Leverage	0.5742 ***	0.5657 ***	0.5627 ***	0.4384 ***	0.4464 ***
	0.0840	0.0834	0.0865	0.0756	0.0768
Total Assets	0.2568 ***	0.2540 ***	0.2338 ***	0.2880 ***	0.2847 ***
	0.0160	0.0163	0.0183	0.0171	0.0172
Total Assets^2	-0.0006 ***	-0.0005 ***	-0.0005 ***	-0.0006 ***	-0.0006 ***
	0.0000	0.0000	0.0000	0.0000	0.0000
Duration	0.0047 ***	0.0047 ***	0.0049 ***	0.0065 ***	0.0065 ***
	0.0005	0.0005	0.0005	0.0005	0.0005
Volume	0.0320 ***	0.0308 ***	0.0318 ***	0.0231 ***	0.0241 ***
	0.0047	0.004759	0.004896	0.004307	0.004304
Issuance in euros	-19.822 ***	-25.550 ***	-19.170 ***	-19.344 ***	-17.085 ***
	4.5230	4.5511	4.5533	4.0554	4.6065
Firm Rating	-10.091 ***	-9.8168 ***	-11.808 ***	-12.138 ***	-12.071 ***
	2.0012	2.0025	1.9758	1.8250	1.8222
Bond Rating	-28.950 ***	-28.951 ***	-27.571 ***	-30.065 ***	-29.999 ***
	1.9447	1.9433	1.9240	1.7877	1.7866
Sovereign Rating		-10.483 ***	-10.805 ***	-13.157 ***	-12.587 ***
		1.4751	1.5087	1.4847	1.5152
Consumer Goods			-28.706 ***	-30.682 ***	-31.073 ***
			6.1777	5.4298	5.4287
Utilities			-14.141 **	-34.029 **	-33.436 **
			5.9166	5.2449	5.2313
Industrials			16.379 ***	11.524 ***	11.204 ***
			6.2794	5.5610	5.5732
Oil			39.124 ***	20.496 ***	22.113 ***
			7.2483	6.5584	6.6079
Basic Materials			-24.136 ***	-29.359 ***	-28.495 ***
			6.5993	5.7904	5.7969
Telecommunication			-25.826 ***	-38.975 ***	-38.289 ***
			8.0008	6.9629	6.9960
Financial Crisis				140.83 ***	
				4.2065	
Sovereign debt crisis				29.139 ***	
				3.0938	
EA * Financial crisis					124.82 ***
					6.9979
Non-EA * Financial crisis					145.11 ***
					4.7097
EA * Debt crisis					36.242 ***
					5.7970
Non-EA * Debt crisis					27.469 ***
					3.3082
R-squared	0.481	0.485	0.498	0.606	0.607

(1) Dependent variable: ASW spread; included observations: 5,427; White (1980) robust standard errors & covariances; symbols ***, ** and * denotes statistical significance at 1% 5% and 10%, respectively.

In order to take into account the possible non-linearities in the relationship between the premium on bond and the firm dimension highlighted in the previous section, we introduce

in the regression the variable size (expressed as total asset) both in levels and squared. The results confirm the non-linearity hypothesis with a positive coefficient for levels and a negative coefficient for squared values. However, it turns out that the beneficial effect of the size (the equivalent of the too-big-to-fail implicit support provided by governments to systemic banks) kicks in only at a very large dimension. In fact, from the estimated coefficients, it can be computed that only firms with a total asset from around 400 billions of euro enjoy a discount on the ASW spread paid at launch. As far as other firm-specific characteristics are concerned, the leverage and the firm rating have, as expected, a positive and a negative coefficient, respectively.

The second column of Table 4 shows instead that the implicit guarantee provided by a sound sovereign has a beneficial effect on the ASW spread paid by firms. In fact, the coefficient of the sovereign rating turns out to be negative and the coefficients of both bond rating and issuer rating do not change.[4] This effect is similar to that detected for the banking system (Grande et al. 2011; Lindh and Schich 2012, Cardillo and Zaghini 2012): a high sovereign rating reflects a positive market assessment of the soundness of public finances, which in turn means room of manoeuvre to intervene in the economy with expansionary measures when needed (via direct support to the economy as a whole or targeted industry interventions). In addition, rating agencies are attaching raising importance to the growth outlook of scrutinised economies, thus a high sovereign rating hint at a favourable economic framework for domestic firms' activities. The estimated coefficient suggests that an increase

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[4] By interacting the "Sovereign Rating" variable with two time dummies (non-crisis period and crisis period), it turns out that the negative coefficient is significantly higher in absolute terms during the phases of financial distress.

in the sovereign rating by one notch reduces the spread paid at launch by domestic firms by 10 basis points. [5]

When looking at the industry group we detect a precise pattern with firms belonging to *consumer goods*, *utilities*, *basic materials* and *telecommunication* paying a statistically significant smaller premium on bond issuance, while those from *industrials* and *oil* paying a larger premium (Table 4, third column).

In order to take into account the time dynamics of the ASW spread we introduce two time dummies in the regression. Focusing on the first wave of the financial crisis (2008 and 2009), we estimate an increase of 141 bp in the premium paid by non-financial corporations in that period, while the second wave of the crisis – which from the second half of 2010 took the form of a sovereign debt crisis – brought about a relatively smaller increase of around 30 bp in the ASW spread (fourth column). However, given that the two waves of the crisis were felt differently across geographic areas, we interact the time dummies with two sub-samples: euro-area firms and "UK plus US" (non-EA) firms. In fact, the last column of Table 4 shows that while the crisis which originated in the summer 2007 in the US subprime mortgage market hit US and UK firms in 2008 and 2009 in a more painful way than euro-area peers (145 bp and 125 bp, respectively), the opposite is true for the second wave of the financial turbulence, which hit primarily euro-area firms with an increase in the ASW spread paid at issuance of 36 bp versus 27 bp for non euro area firms. [6]

Given that the sovereign debt crisis was felt differently also within the euro area, we further investigate the issue by focusing on firms from the euro area only, which consists in

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[5] Cardillo and Zaghini (2012) estimate that the implicit guarantee provided by a triple-A sovereign may add up to a reduction of the premium of about 80 bp. Following their framework over the same time spam, we estimate that the reduction amounts to 21 bp for the non-financial corporations.

[6] Both differences are statistically significant according to the standard Wald test.

an initial set of 1,200 bonds issued by 300 non-financial corporations. The first column of Table 5 shows that the basic characteristics and even the magnitude of the coefficients are maintained also in the restricted euro-area sample, with the only exception of size: total asset in levels has the expected negative sign – even though the statistical significance is weaker – and non-linearities do not appear any more. At the same time, it is confirmed that a sound creditworthiness of the sovereign reduces the premium at launch (second column).

Table 5: OLS regressions for the euro area[1]

Leverage	0.5527 ***	0.4787 ***	0.4786 ***	0.4959 ***	0.4507 ***
	0.1356	0.1334	0.1402	0.1416	0.1402
Total Asset	-0.1246 *	-0.1728 **	-0.0738 *	-0.0320	-0.0783 *
	0.0675	0.0554	0.0420	0.0465	0.0448
Duration	0.0073 ***	0.0074 ***	0.0064 ***	0.0063 ***	0.0073 ***
	0.0013	0.0013	0.0013	0.0013	0.0014
Volume	0.0562 ***	0.0508 ***	0.0494 ***	0.0531 ***	0.0374 ***
	0.0089	0.0086	0.0089	0.0089	0.0085
Issuance in euros	-26.800 ***	-25.099 ***	-15.906 **	-12.939 *	-18.965 **
	8.3594	8.1367	7.8036	7.8102	7.7046
Firm Rating	-22.668 ***	-21.563 ***	-18.478 ***	-17.432 ***	-16.715 **
	6.0944	6.0616	6.1126	6.2561	6.5566
Bond Rating	-18.929 ***	-18.067 ***	-27.238 ***	-27.932 ***	-30.078 ***
	6.0402	5.9990	6.3501	6.4285	6.5850
Sovereign Rating		-11.872 ***	-10.831 ***	-11.941 ***	-5.5021 **
		1.4279	1.4765	2.1019	2.8956
Oil			84.011 ***	77.813 ***	92.200 ***
			18.8065	18.9229	15.0365
Basic Materials			57.512 ***	56.629 ***	56.549 ***
			18.9416	18.7868	16.8399
Consumer G&S			-27.372 ***	-29.751 ***	-16.845 *
			11.2387	11.2590	9.1608
T&T			-19.610 *	-21.613 *	-19.816 **
			12.2547	12.2773	9.7494
Germany				-22.713 ***	
				8.5711	
Italy				-40.301 **	
				18.0638	
Spain				-2.0770	
				19.6864	
Portugal				15.709	
				31.4365	
Ireland				-11.004	
				32.1462	
GER*Financial Crisis					72.959 ***
					12.4322
ITA*Financial Crisis					54.521 **
					25.3089
SPA*Financial Crisis					45.590 **
					22.6261
POR*Financial Crisis					71.093 *
					49.8823
IRE*Financial Crisis					179.07 ***
					13.3718
GER*Debt Crisis					-41.754 ***
					10.3408
ITA*Debt Crisis					66.705 ***
					25.5322
SPA*Debt Crisis					87.169 ***
					25.9905
POR*Debt Crisis					119.07 ***
					39.9507
IRE*Debt Crisis					17.053
					46.7349
R-squared	0.471	0.497	0.532	0.538	0.563

(1) Dependent variable: ASW spread; included observations: 1126; White (1980) robust standard errors & covariances; symbols ***, ** and * denotes statistical significance at 1% 5% and 10%, respectively.

Finally, when looking at the industry breakdown, we have that firms from *Telecommunication & Technology* and *Consumer Goods & Services* pay a smaller premium, whereas those from *Oil* and *Basic material* pay a higher ASW spread (third column).[7]

In order to control for cross-country differences within the euro area, we introduce a dummy variable for each country involved in the sovereign debt crisis and Germany (fourth column). The country coefficients shows that, ceteris paribus, German firms were able to get a 23 bp smaller premium at issuance. Also Italian firms had a discount on their bond placement (40 bp), most likely due to the fact that only major Italian firms (ENEL, ENI and FIAT) tap regularly the bond market. At the same time, the coefficient is not statistically significant for Spain, Portugal and Ireland.

When considering the crisis period specifically divided into the first and second wave of turmoil, we find that in the period 2008-2009 all firms in the sample, regardless of the nationality, faced an increase in the ASW spread paid when issuing medium- to long-term bonds, ranging from the 46 bp of Spanish firms to the 179 bp of Irish firms. The striking difference concerns the sovereign debt crisis period which involved mainly Southern Europe countries: firms headquartered in Italy, Spain and Portugal witnessed an increase in the premium paid of 67, 87 and 119 basis points, respectively. At the same time German firms where able to get a reduction in the ASW spread of 42 bp.

The negative spillover from the sovereign debt market to the private sector, which characterised the issuance of bank bonds,[8] seems to have affected also non-financial firms

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[7] Firms operating in the basic materials industry pay an additional premium with respect to other firms in the euro area, while it is the contrary in the US. This might be due to: 1) the different overall specialization pattern in the two economies; 2) the fact that there are less raw materials in Europe than US.

[8] For a thorough analysis of the different channels through which sovereign risk affects bank funding conditions and viceversa see CGFS (2011) and Gerlach et al. (2010).

adding a second channel of influence from the sovereign to the corporate sector. In fact, in addition to the fact that a poor sovereign creditworthiness increases the ASW spread paid by domestic firms with respect to non-financial corporations headquartered in sounder countries (the direct effect of the sovereign rating found over the whole sample), the sovereign debt crisis added a burden only on firms from the weakest states, widening the gap with firms from higher rated states. The case of German firms is striking: during the first wave of the financial crisis, when the sovereign debt market was not yet affected, they faced a significant increase in the premium paid at issuance – in line with firms from Italy, Spain and Portugal – however, when the market overhaul of the sovereign risk assessment took place, German firms were able to get a sizable reduction in the premium paid.

3. Conclusion

The paper provides a broad overview of the recent trend in medium to long-term funding costs by non-financial firms in the US, the UK and the euro area. In particular, we study the dynamics of the premium paid at issuance by non-financial corporations and analyse the contribution of several factors to the cost incurred by firm when issuing bonds. We focus on the asset swap spread at issuance which is a measure of the actual cost faced by firms on each bond in addition to the risk-free component (which can not be diversified away). Indeed, the ASW spread reflects the market assessment of the firm riskiness at the moment of the bond placement and represents the idiosyncratic additional cost for the firm.

In order to disentangle the factors affecting the cost at launch, we propose an empirical investigation based on around 5,500 bonds issued between January 2005 and December 2012. The time span allows us to analyse the two phases on the current crisis: the early financial crisis following the collapse of the subprime mortgage market and the demise of Lehman Brothers and the later euro-area sovereign debt crisis. As for the latter, starting from

mid 2010, concerns about the sustainability of public finances in several euro-area countries led to a deterioration of the perceived sovereign creditworthiness. In parallel with the worsening of funding conditions of the domestic country and the related sovereign downgrades by the rating agencies, many non-financial corporations suffered the same fate with increasing CDS spreads and widespread downgrades by several notches.

The econometric evidence shows that the soundness of public finances played a substantial role in shaping the cost of bond issuance, in particular in the euro area. We find that the backing of a sound sovereign provides an important implicit support to the domestic private issuer, while weaker governments add a burden on the funding cost of domestic firms. In fact, during the sovereign debt crisis firms headquartered in Italy, Spain and Portugal paid between 66 and 119 basis points of extra premium due to the negative spillover from the sovereign debt market turbulence. On the contrary, German firms faced a significant increase in the premium paid at issuance in the early phase of the financial crisis – in line with firms from Italy, Spain and Portugal – but during the sovereign debt crisis they were able to get a sizable reduction in the premium paid (42 basis points). Thus, our findings suggest that the vicious linkage between the sovereign and banking system acknowledged by the literature extends also to non-financial corporations.

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