DETERMINANTS OF SPREADS IN SYNDICATED LOANS TO EURO AREA CORPORATES*

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1. INTRODUCTION

A clear-cut ranking of factors underlying price differentiation of banks' new business calls for the analysis of data at the operation level. Unfortunately, such a database is not readily available for retail bank loans for all euro area countries. With that in mind, this paper is intended to derive general results for the loan market in the euro area by making use of a rich database of syndicated loans at the operation level (for a description of the functioning of the syndicated loan market see Gadanecz (2004)). This market is usually identified as a transaction market for more transparent companies or projects, a feature that suggests that it should be more integrated cross-border than the market for bank loans at large. In fact, the direct reading of the information available for the primary market shows up a widespread presence of non-resident banks in each syndicate, in many cases acting as leading managers of the operations. Notwithstanding those considerations, the present study intends to evaluate if the theoretical predictions in the literature concerning factors for interest rate differentiation among borrowers are observed in the syndicated loans to euro area corporations, and it intends also to verify if cross-country differences persist after controlling for economically relevant factors.[1] In particular, this work provides some evidence of home bias in the syndicated loan market in the euro area, i.e. operations conducted exclusively by banks whose nationality was different from that of the borrower presented systematically higher spreads than those operations in which at least a bank with the same nationality was present. Given the more transactional nature of syndicated loans than average bank loans and the *a priori* evidence of deep cross-border bank presence in this market, there is a case for considering these results as a starting counterfactual for more general conclusions on the cross-country integration of corporate bank loans in the euro area. To be sure, based on these findings, it should not be surprising if future empirical studies based on retail operations concluded for the lack of or incomplete integration of the several national corporate bank loan markets in the euro area.

According to ECB (2006), cross-country differences in aggregate statistics are observed in the euro area, which may be associated to a large set of factors. Among these, differences in product characteristics and in the market environment were identified, as well as structural issues related to the aggregation of interest rates in individual operations. The evidence uncovered in this study may also inform the ongoing debate on the fine-tuning of economically meaningfully breakdowns in the euro area official statistics on bank loan interest rates aggregate statistics.

(1) The available empirical literature is focused essentially on the loans market to corporations in the United States. In particular, it is worth mentioning the results obtained in Angbazo *et al* (1998), who identified relevant factors in price determination in the riskier segment of syndicated loans market, and tested for the existence of a relation between this market and the bond market.

The paper is outlined as follows. In section 2, the database used is described and some general features of the syndicated loan market are presented. In section 3, the econometric approach is explained and the corresponding results are discussed. Section 4 contains a further exploration on the role of collateral and on the results pointing to the presence of "home bias" in this market. Section 5 provides a short elaboration on the quantification of country-specific effects in this framework. Finally, section 6 outlines the most salient conclusions.

2. DATA AND DESCRIPTIVE STATISTICS

According to the Dealogic Loanware database, the main source for this work, the syndicated loan market for non-financial corporations has posted a remarkable growth at the global level over the last few years, climbing from a total amount of deals closed of 1500 billions euro in 1999 to 2700 billions euro in 2006. These recent developments continue to shape a structural change in this market, which was fostered in the 1980's mostly as a means of developing countries' sovereign financing. Further, in what concerns non-financial corporations, this market has spread geographically very substantially: while 57 percent of money raised through loan syndicates were to US borrowers in 1999, this percentage dropped to 40 percent in 2006. This decline occurred at the expense of a rise of the growth in the financing of euro area residents in this market, whose share rose from 18 percent to 25 percent in the same period, and the stronger presence of Asian residents in the international syndicated loans market. The growth in the market concerning euro area borrowers has occurred essentially in the non-rated borrowers' segment, even though the predominance of non-rated borrowers is present at the global level also. The enormous expansion in this market in the euro area recently raises the interest of understanding its functioning, pricing mechanisms and the way it organizes (see Rhodes (2006) for the details of either the economic, legal aspects or conventions in this market, as well as a brief review of its development over the last three decades). Even though no precise estimates of how much
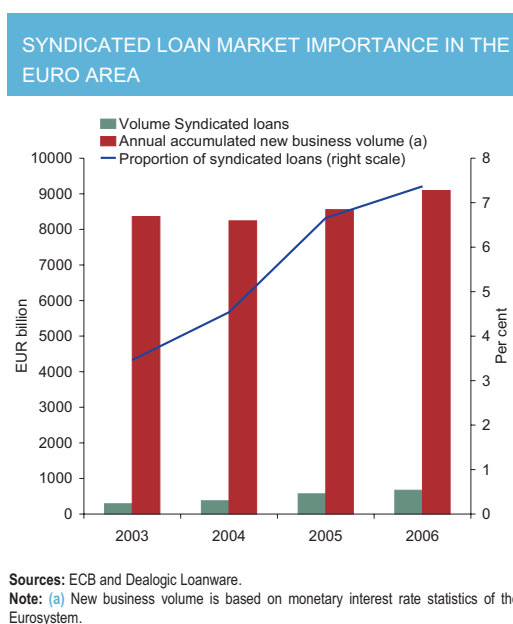
Chart 1

SYNDICATED LOAN MARKET IMPORTANCE IN THE EURO AREA

Sources: ECB and Dealogic Loanware.
Note: (a) New business volume is based on monetary interest rate statistics of the Eurosystem.

Table 1

DESCRIPTIVE STATISTICS																									
	1999			**2000**			**2001**			**2002**			**2003**			**2004**			**2005**			**2006**			**Total observations**	
	Spread		Obs.	Spread		Obs.	Spread		Obs.	Spread		Obs.	Spread		Obs.	Spread		Obs.	Spread		Obs.	Spread		Obs.	of which: rated	
	(1)	(2)	#	(1)	(2)	#	(1)	(2)	#	(1)	(2)	#	(1)	(2)	#	(1)	(2)	#	(1)	(2)	#	(1)	(2)	#		
Austria			0	188	121	4	189	180	9			0	363	379	6	247	130	5	191	101	4	16	16	1	29	2
Belgium	59	68	5	88	80	16	97	84	17	130	59	10	211	145	15	222	203	43	174	63	34	254	118	24	164	3
Ireland	170	127	15	209	171	10	161	178	8	258	337	13	165	167	19	164	154	20	280	138	7	236	253	36	128	27
Finland	154	108	10	150	98	12	168	94	18	73	58	6	202	73	6	130	67	13	81	48	25	215	91	17	107	16
France	144	70	128	149	61	149	147	76	125	198	133	173	224	156	114	214	69	219	210	66	329	233	110	367	1604	186
Germany	120	63	40	174	107	57	206	108	79	222	56	83	269	105	93	250	121	219	266	117	255	250	80	253	1079	148
Greece	95	58	20	97	86	14	112	82	21	127	76	29	143	118	30	165	149	20	188	163	21	135	89	10	165	14
Italy	95	94	55	146	61	58	150	116	53	131	104	57	180	147	108	212	165	147	183	144	215	199	164	108	801	48
Luxembourg	109	102	3	266	283	7	199	132	14	223	64	6	331	331	12	335	147	17	285	186	28	189	78	16	103	9
Neetherlands	125	78	50	156	71	80	187	119	59	186	96	49	268	213	77	211	106	78	228	172	96	281	201	134	623	88
Portugal	133	117	6	122	70	16	85	67	14	68	35	3	128	100	8	138	65	8	106	68	19			0	74	15
Spain	87	77	75	107	60	83	116	105	72	116	85	90	148	131	111	168	101	191	149	97	288	166	99	253	1163	49
Euro Area	120	74	407	144	75	506	155	103	489	173	94	519	210	149	599	211	106	980	201	102	1321	224	113	1219	6040	605
St-dev	87			101			109			124			176			173			185			187				

Source: Dealogic Loanware.
Note: (1) Simple average; (2) Weighted average by loan amount.

this type of financing represents in the European banks loan books, a rough estimate point to a doubling of its importance between 1999 and 2006 (see Chart 1).[2]

As stated above, this work was undertaken making use of the Dealogic Loanware database for syndicated loans, identified at the operation level, granted to non-financial corporations domiciled in the euro area in the period January 1999 to October 2006. Further, loans with identified purpose as "public finance" were disregarded and it was imposed that the information about pricing at issue (excluding fees), loan amount and signing date (or at least funding date) was available. After these requirements, the database ended up with 6040 observations. Some aggregate statistics at the country and euro area levels are shown in Table 1. Loans granted to corporates resident in France, Germany and Spain are the most frequent, while borrowers in Portugal and Austria are the least frequent in the sample. Further analysis was undertaken with loans drawn by firms for which explicit default risk information was available (borrowers rated by either Standard&Poors or Moody's). This implied a very significant compression in the database, giving rise to a sample of 605 observations. Observations for Austria and Belgium were very few; accordingly, the results concerning these countries must be interpreted with particular caution.

3. ECONOMETRIC APPROACH

3.1. The general model and variables

Econometric regressions were performed with the interest rate spread as dependent variable. Dummies for the country of residence and for the economic sector of the borrower, other borrower and operation specific characteristics and time specific dummies were taken as explanatory variables. The specification taken is as follows:

$$Spread_{jit} = \alpha + \beta \cdot country\ dummies_j + \delta \cdot sector\ dummies_j + \varphi \cdot borrower_j \\ + \rho \cdot operation_i + \xi\ time\ dummies \tag{1}$$

The specification in (1) was estimated by OLS in two samples: one set of regressions includes all loans in the database (after selection criteria), while the other restricts the sample to rated firms only. The reason why the analysis was performed for both samples is related to the fact that, in the database and in line with what is observed in general in banks' credit portfolio, only a narrow sub-set of firms presents information related to rating. Consequently, bias may be arising through the absence of control for the market's perceived risk of the borrowers in most operations. Analysing the narrower sample, in which all firms considered have external rating, it is possible to appraise the relevance of the lack of rating information, as well as to test whether the conclusions for the remaining characteristics are robust to the omission of explicit controls for default risk in the regression concerning the larger sample.

In the appendix the variables used are explained. These include the usual determinants of the spread applied in loans. We focus on the interest spread on each selected loan operation (*Spread*).[3] Loan size was taken into account with dummies for the quartiles of the loan amount of the operation, sorted by year (*lncrp* stands for the log of the loan amount, while lncrp25 is the dummy for operations in the first quartile of the distribution of loan amounts in a given year). This variable controls for possible economies of scale in the design of the operation, with a higher dilution of fixed costs for larger operations. At

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the same time, the size of the operation can be a proxy for borrower size, allowing for the control of systematic differences associated to firm size.

The rating at issue was aggregated into adjacent classes and included as a direct measure of credit risk. Most operations involve unrated firms, while among rated ones, investment grade operations are the most frequent in this sample.[4] The maturity of the operation was synthesized into classes and introduced into the regression as dummy variables. A large strand of literature focus on the relationship between maturity and loan spreads and it points to the existence of an upward sloping credit spread curve over the maturity spectrum (see Jackson and Perraudin (1999) and related references). Hence, operations with longer maturity are expected to be more expensive, irrespective of the shape of the yield curve.

The announced purpose of the loan, with a dummy for controlling for the cases when this information is undisclosed, was taken also as a controlling variable. In particular, it is possible to identify in the database loan operations whose proceeds were intended to finance take-overs or recapitalization of the obligors (*takeover*), project finance and other specific purposes (*project finance*), very different by nature from a general purpose loan or credit line (*general*).

A dummy variable specifying whether the loan is a credit line (*credit lines*), a term loan (*term loan*), a bridge loan (*bridge loan*), a mezzanine loan (*mezzanine*) or other type of loan (*other*) was introduced. In practice, the purpose of all mezzanine loans in the database was classified as takeover, so that this loan type was considered as a sub-type of the takeover purpose. Previous research for the United States point to the existence of a positive premium on term loans when compared to credit lines. This empirical fact can be associated to the insurance role that credit lines offer to firms, when confronted with adverse shocks, in conjugation with the liquidity provision service provided by banks by means of this instrument (Berger and Udell (1992); Kashiap and Stein (2002)).

Fees (measured in basis points) accrued to loan arrangers, book runners and providers were included to control for possible substitution effects between fees for services and interest spread. In addition, a distinction between commitment (*commitment fees*) and other types of fees (*other fees*) was considered. Further, a dummy for controlling whenever information on fees is undisclosed was also included (*fees undisclosed*).

Dummies for the existence of guarantees (*guarantor*) and for the existence of collateral (*collateral*) attached to the operation were also considered. The sign of the impact of these factors on pricing is ambiguous in light of both theoretical considerations and previous empirical researches. In what concerns guarantees, it is our impression that they reflect chiefly support from entities in the same economic group of the borrower, in particular a guarantee from the parent company to its subsidiary. As such, a lower price was expected in association with the presence of guarantees. In what concerns loans secured on collateral, all else equal, it is natural to expect that, by the time a delinquency event has already occurred, loans with collateral are less risky than the ones without it. Conversely, the *ex-ante* relationship between collateral and risk (and subsequently pricing) is not obvious. In fact, at the time of approval of the loan, if all relevant characteristics of the borrower are not known to the lender, in some circumstances, it may be more probable that collateral is demanded for those borrowers perceived as riskier (Boot, Thakor and Udell (1991) for a thorough description of the relationship between risk and collateral). Empirical results point to a positive relationship between collateral and risk (see Jiménez and Saurina (2004) for a large sample of Spanish debtors); and collateral and pricing (Berger and Udell (1990) and Carey and Nini (2004) for the international syndicated market). Further, banks may demand collateral as a substitute of ex-post monitoring efforts (Manove and Padilla (1999); Manove,

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(4) Ratings corresponding to investment grade are those BBB- or above in the Standard & Poors scale, while the remaining ratings correspond to borrowers or debt issues which are commonly labelled as non-investment grade or with junk status.

Padilla and Pagano (2001)). Other arguments point to the opposite direction, i.e. collateral may serve as a screening device. The economic cost of pledging collateral is lower for low risk borrowers than for high risk ones, so that the former are willing to trade the pledging of collateral against a lower interest rates (Besanko and Thakor (1987a,b)). Given this ambiguity, there was no *a priori* straightforward expected role for collateral before the empirical approach was implemented.

The share-holding relationships of the borrowers with the general government were approached by means of a dummy controlling for the public (*public*) versus private (*private*) control of the borrower. Asymmetry of information between banks with a local presence and remote-located banks was taken into account by attaching to each operation a dummy variable (labelled as *home bias*) for the cases when the nationality of all banks listed as providers of funds in the operation was different from the borrower's. A set of dummies controlling for industry and nationality of the borrower were also put in place, even though their coefficients are not reported.

3.2. Results

Table 2 presents the results of the models using the full sample in columns (1) and (2) and the sub-sample of borrowers with credit rating in the columns (3) and (4). As described before, the idea underlying the running of parallel regressions with and without controlling for rating is to neglect direct information about borrower risk and to test if the general conclusions for the remaining factors are robust to default risk measurement omission.

The main results of these regressions conform to the literature on the topic. For instance, the higher the loan size, the lower the spread, most significantly when comparing the quartile of the largest operations with the remaining.[5] This may be the result of economies of scale in the preparation of a syndicated loan, i.e. there may be fixed costs, which can be diluted in larger loans. An alternative and more plausible explanation is that loan size may be a proxy for borrower size, so that this variable captures banks' perceived lower risk in (very) large borrowers.

Loan ratings are intended to be *ex-ante* measures of default probability expectations, so that better loan ratings should be associated with lower spreads. The empirical findings in Table 2 indeed point to such a relationship. In particular, rating seems to have a sizeable marginal impact on pricing for ratings below triple B class and insignificant among investment grade classes (between the best rating class and BBB- class). Further, the spread paid by non-rated borrowers is slightly below the double B average, suggesting that, if rated, those firms would be, on average, at the margin between the BB+ and the BBB- rating.

Spreads increase monotonically with maturity. In particular, spreads of operations with over 5 years maturity (*maturity > 5 years* dummy variable, omitted in the regression) differ significantly from operations with lower maturities. In turn, operations with unknown or uncertain maturity (*maturity unknown*) carry, on average, spreads which locate between the 1 to 5 years maturity class and the over 5 years class. These results are indicative of no significant maturity bias in those operations, as the above-mentioned classes are the most frequent in the sample.

According to the results of the regressions underlying Table 2, loans for takeover or recapitalization purposes are perceived as riskier than all other. This is not surprising, since takeovers financed by means of debt are conductive to increased leverage of the acquirer. Among these, the mezzanine

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[5] In fact, the variables representing the first three quartiles of loan size post very similar coefficients, suggesting that these dummies could be aggregated. Anyway, the most general specification was kept in order to allow for the assessment of this feature in the remaining regressions.

Table 2

REGRESSION RESULTS								

Dependent variable:	Full sample				Sample with rated borrowers only			
Spread	(1)		(2)		(3)		(4)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Explanatory variables								
Constant	38.42	4.11	85.27	12.35	53.20	2.88	50.15	2.61
2000	9.19	1.54	6.40	1.07	32.63	2.56	24.18	1.62
2001	14.68	2.47	12.36	2.07	28.29	2.14	15.22	1.01
2002	42.07	7.43	40.16	7.03	60.76	4.01	68.66	4.06
2003	57.94	9.88	57.54	9.74	44.27	3.16	60.69	3.92
2004	54.09	10.10	54.89	10.17	31.08	2.23	54.11	3.60
2005	40.90	7.92	41.38	7.95	-3.35	-0.25	11.46	0.76
2006	45.53	8.41	45.37	8.33	-14.34	-0.86	-6.08	-0.34
Loan size								
lncrdp25	50.02	13.98	58.44	16.74	30.23	2.77	85.89	7.22
lncrdp50	50.01	13.19	57.48	15.46	4.46	0.52	46.96	4.46
lncrdp75	44.50	12.56	52.39	14.82	10.17	1.25	32.16	3.26
Rating								
a	-10.62	-1.20	-	-	-8.80	-1.02	-	-
bb	84.21	7.37	-	-	105.99	8.57	-	-
b	103.37	8.74	-	-	149.09	8.75	-	-
no rating	57.54	8.14	-	-	-	-	-	-
Maturity								
maturity unknown	-34.45	-2.67	-35.99	-2.79	-43.75	-2.24	-59.73	-2.13
maturity < 1 year	-70.12	-13.25	-80.41	-15.18	-60.06	-5.29	-84.07	-6.48
maturity 1 up to 5 years	-61.36	-21.45	-64.17	-22.17	-48.22	-5.83	-67.23	-7.51
Loan purpose								
take over	45.79	14.62	47.59	15.00	20.77	2.93	33.07	3.92
mezzanine	583.17	25.12	582.65	25.09	575.22	4.12	578.98	3.64
asset backed	-21.22	-2.42	-21.09	-2.43	1.22	0.04	-5.14	-0.15
project finance	-14.86	-2.56	-9.38	-1.61	-56.63	-2.05	-10.42	-0.35
unknown	0.29	0.03	4.25	0.37	-	-		
Instrument type								
credit lines	-31.16	-14.31	-34.08	-15.47	-17.64	-2.80	-37.34	-5.27
bridge loan	31.32	2.81	32.19	2.81	121.24	2.87	102.75	2.39
other	75.52	7.01	69.88	6.32	27.76	1.57	16.78	0.86
Fees								
commitment fees	0.18	3.35	0.21	3.96	-0.01	-0.07	0.36	1.64
other fees	0.36	2.69	0.46	3.26	0.66	1.87	1.22	3.32
fees undisclose	-3.42	-0.42	-1.09	-0.14	26.35	0.56	44.87	1.14
Guarantor	-30.04	-5.06	-28.31	-4.75	-20.89	-1.48	-26.92	-1.58
Collateral	11.97	3.50	15.03	4.33	39.35	2.62	61.95	3.56
Home bias	26.60	3.96	26.80	3.97	23.34	1.18	20.51	0.96
Public	-36.64	-5.66	-46.30	-7.35	-2.75	-0.27	-22.25	-1.80
Number of observations	6040		6040		605		605	
R-squared	0.68		0.67		0.75		0.66	
Adj R-squared	0.68		0.67		0.72		0.63	

Note: Borrower business and country dummies were included in the regression, but their coefficients are omitted in the present table.

tranches are extremely expensive, posting a spread almost 6 percentage points higher than general purpose loans.

Term loans (*term loans*, omitted in the regression) and most specially bridge loans (*bridge loan*) carry higher spreads than credit lines (*credit lines*). Bridge loans are a way of interim financing that can be assessed as embodying higher risk in the sense that are supposed to be replaced by more stable financing still in preparation that may not materialize due to, *inter alia*, the deterioration in market conditions. In what concerns the relative price of term loans and credit lines, the fact that the latter show up to be cheaper is in line with other works carried on for the United States. In addition to what was outlined before about the insurance role of credit lines for firms, these instruments may have an hedging interest for banks, in case there is positive correlation between shocks in deposit supply and credit demand. This hypothesis would mean that shocks to savers' liquidity and to investors' financing requirements are positively correlated.

As expected, loan facilities carrying guarantees have lower spreads, while, in the sample under consideration, collateral is positively related to loan spreads. This effect is stronger in specifications that do not include rating as a regressor, which is indicative of positive correlation between the presence of collateral and borrower default risk, i.e., those firms carrying worse credit rating are more likely to post collateral when borrowing.

Entities owned or controlled by the general government pay less for their loans than their private peers. This result should be reflecting that the relationship with public administrations corresponds ultimately to an implicit public guarantee.

The facilities in which banks with the same nationality of the borrower do not participate as providers of funds in the primary market carry higher spreads. This variable (identified as *home bias* in Table 2) is intended to account for the hypothesis that domestic banks are better information processors than foreign banks. In this way, if there is no single bank with the same nationality of the borrower, that may constitute a signal for all other potential participants that unknown information to them is biased towards high risk. These results give support to the idea that, even in the syndicated loans market, there may be information asymmetries between local and foreign players in the credit market.

The results presented in Table 2 allow also observing that loans with higher fees carry higher spreads, i.e. fee business and pure intermediation seem to be complements rather than substitutes from the perspective of banks' revenues. In fact, in the full sample, 1 percentage point of additional fees (other fess) corresponds to around 40 basis points of higher spread, and this result shows up to be slightly stronger when no control for rating is carried out. When restricting the analysis to rated borrowers only, the magnitude of the coefficient is significantly higher. This result is consistent with those presented by Angbazo *et al* (1998) in a sample of loans granted between 1987 and 1994.

Another piece of interesting information that can be inferred from the set of regressions is the identification of a time-series credit cycle. The time dummies in the regression point to a hump shaped time-series of spreads (with a peak in 2003-2004), after controlling for the remaining factors. This cycle was not so evident when reading the average spreads presented in Table 1.

4. EXPLORING FURTHER THE ROLE OF COLLATERAL AND OF THE "HOME BIAS" VARIABLE

In order to better understand the reasons behind the positive association between collateral pledging and the interest spread applied on loans, a more detailed study of this effect was performed. This involved running additional regressions in which other characteristics of the borrowers and/or the opera-

tions were crossed with the variable identifying the presence of collateral. A comprehensive set of trials describing loan purpose, instrument type, borrower rating and loan size were put in place. Only the last two characteristics showed up to be relevant in shedding additional light to this issue and the respective results are reported in Table 3 for the full sample[6]. The results concerning the association between the impact of the collateral and loan rating are under column (1) and are illustrative of the fact that the positive association is similar across rating classes. Column (2) presents the results of the regressions exploring the role of loan size crossed with the variable concerning the presence of collateral. In all specifications the positive association between collateral and spread appeared robust for the largest loans (the 4th quartile, omitted in the regression), while there seems to be a general tendency for the effect to disappear in smaller loans. To be sure, the coefficient of the dummy for the first quartile of the loan size crossed with the dummy for the existence of collateral is statistically significant and close to the symmetric of the coefficient of the collateral variable.

A similar procedure was undertaken trying to uncover what firm/operation characteristics could be associated with the positive relationship found between the non-presence of domestic banks in the syndicate (*home bias*) and loan spreads. The statistically significant differentiation in this effect was found along the credit risk rating scale, with a strong differential effect in the double B rated borrowers, when compared to triple B borrowers. As can be seen in column (3) in Table 3 the effect is not monotonic in the rating scale and can be observed both in the full sample and in the sample with rated borrowers only.

Table 3

REGRESSION WITH INTERACTION TERMS FOR *COLLATERAL* AND *HOME BIAS* VARIABLES						
Dependent variable: Spread	**(1)**		**(2)**		**(3)**	
	Coefficient	**t-statistic**	**Coefficient**	**t-statistic**	**Coefficient**	**t-statistic**
Explanatory variables						
lncrdp25	50.13	14.01	59.67	14.29	50.70	14.32
lncrdp50	50.22	13.22	53.86	12.01	50.75	13.60
lncrdp75	44.46	12.51	48.39	11.91	44.91	12.71
lncrdp25*collateral	-	-	-35.52	-4.73	-	-
lncrdp50*collateral	-	-	-15.89	-1.97	-	-
lncrdp75*collateral	-	-	-16.38	-1.99	-	-
a	-10.64	-1.17	-10.00	-1.13	-5.34	-0.62
bb	83.78	6.37	82.51	7.25	74.90	7.11
b	90.71	7.22	99.19	8.40	113.68	8.75
no rating	59.49	8.18	55.23	7.79	58.35	7.79
collateral	34.63	1.29	30.25	4.93	11.86	3.47
a*collateral	18.84	0.49	-	-	-	-
bb*collateral	-14.14	-0.44	-	-	-	-
b*collateral	18.26	0.53	-	-	-	-
no rating*collateral	-24.68	-0.91	-	-	-	-
a*home bias	-	-	-	-	-68.78	-1.30
bb*home bias	-	-	-	-	207.76	2.44
b*home bias	-	-	-	-	-46.30	-1.53
no rating*home bias	-	-	-	-	-8.74	-0.41

Note: The results concerning the remaining variables of the model were omitted for the sake of simplicity of reading of the interaction effects.

[6] The same analysis applied to the sub-sample of rated borrowers yielded similar results.

5. WHAT CAN WE SAY ABOUT CROSS-COUNTRY DIFFERENCES?

In the raw data, the difference between the country carrying the whole-sample highest average spread and the one with the lowest spread is as high as 150 basis points. A very crude exercise of contrasting the country dummies in the most general model (reported to in column (1) in Table 2) suggests that this metric compresses to less than 50 basis points. Additionally, the standard deviations of the country dummies are only one third of the standard deviation of the spreads in the raw data, after scaling all countries against France, the omitted country in the regression (Chart 2).

Wald tests on the joint statistical relevance of the coefficients underlying sets of characteristics of the borrowers or operations were performed and are presented in Table 4. Borrower nationality stands out as significant in all specifications, giving further support for the conclusion that country-specific effects still remain after taking into account the remaining borrower and loan operation characteristics.

6. CONCLUSIONS

This work provides an overview of empirical findings for the factors underlying the pricing of syndicated loans in the euro area. The findings from previous empirical literature are confirmed and the results are in line with established theoretical predictions in what concerns the role of maturity, loan size and credit risk rating. The results also show that collateral and guarantees matter differently in the pricing of corporate loans with a positive association between spreads and collateral pledging and the opposite in the case of guarantees. As such, it provides indications of important factors to take into consideration when stratifying loan operations into homogeneous classes for the purpose of building up aggregate interest rate statistics. Additionally, the approach allows for isolating country specific from borrower/operation specific effects.

Further, some interesting stylized facts emerge which deserve future research, in order to identify their underlying reasons. First, fees seem to be complements to interest income for banks, rather than substitutes, as common wisdom would suggest and the literature on the role of up-front fees predicts. As such, this issue deserves further analysis, taking into consideration that not all fees payable on a loan contract are front-end fees; rather, they accrue over regular payment periods in the same fashion as interest. Second, there is some evidence of the presence of home bias in the syndicated loan market, in the sense that loan facilities in which no bank with the same nationality as that of the borrowers are more expensive than the remaining. This conclusion, if confirmed in subsequent work, suggests that one should not be surprised by evidence of incomplete integration in the retail loan market in the euro area. This is particularly relevant if one takes into consideration that the syndicated loan market is, by its nature, a much more integrated and transparent market than that for bank loans in general. Accordingly, a more detailed analysis crossing nationality and the roles of participating banks in each syndicate, for instance distinguishing between arrangers of the operation and the remaining banks, may provide finer conclusions about the structural factors underlying these findings.

Chart 2

DIFFERENCES TO FRANCE AVERAGE SPREADS
Average spreads
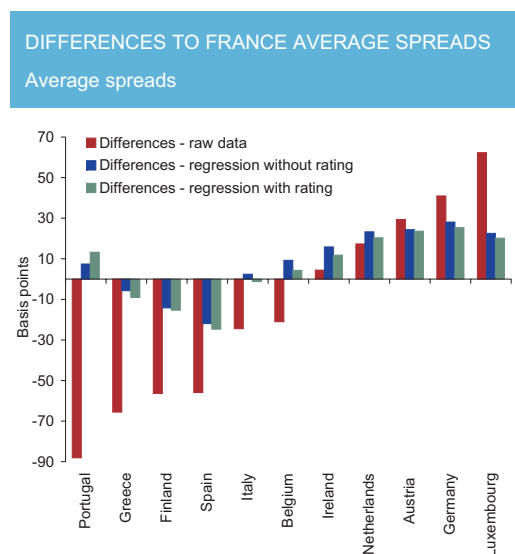
Note: Country differences stemming from the regression results as posted in columns (1) and (2) in Tables 2. Only Germany, Netherlands, Spain are statistically significant at 5% significance level.

Table 4

WALD TESTS ON JOINT SIGNIFICANCE OF GROUP OF VARIABLES

Group of variable	Table 2			
	Equation (1)	**Equation (2)**	**Equation (3)**	**Equation (4)**
Year				
	30.01	31.94	6.16	6.48
	(0.00)	(0.00)	(0.00)	(0.00)
Borrower nationality				
	13.95	13.56	3.80	5.09
	(0.00)	(0.00)	(0.00)	(0.00)
Loan size				
	85.73	122.38	2.98	18.12
	(0.00)	(0.00)	(0.03)	(0.00)
Rating				
	45.57	-	30.80	-
	0.00	-	0.00	-
Maturity				
	165.06	183.86	12.08	19.94
	(0.00)	(0.00)	(0.00)	(0.00)
Loan Purpose				
	181.67	180.96	8.60	7.56
	(0.00)	(0.00)	(0.00)	(0.00)
Instrument Type				
	103.55	110.67	9.62	15.48
	(0.00)	(0.00)	(0.00)	(0.00)
Fees				
	6.76	9.44	1.29	5.97
	(0.00)	(0.00)	(0.28)	(0.00)
Borrower sector				
	17.00	18.52	3.59	4.70
	(0.00)	(0.00)	(0.00)	(0.00)

Note: Wald test p-value are presented in parentesis.

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Annex 1

Variable	Definition
Dependent variable	
Spread	Interest spread applied to loans (basis points)
Explanatory variables	
Time Dummies	
year$_t$	Dummies equal to one if the loan takes place in year t (1999-2006)
Borrower specific variables	
Borrower business	16 dummies variables representing the industry of the borrower
Nationality	12 dummies variables related with borrower's nationality
Rating	
a	Dummy equals one if borrower rating is between AAA and A-
bbb	Dummy equals one if borrower rating is between BBB+ and BBB- (omitted in regressions)
bb	Dummy equals one if borrower rating is between BB+ and BB-
b	Dummy equals one if borrower rating is between B+ and CCC+
no rating	Dummy equals one if the borrower is not rated
Type of borrower	
public	Dummy equals one if the borrower is controlled by the general government
private	Dummy equals one if the borrower is controlled by the private sector (omitted in regressions)
Operation specific variables	
Loan size	
lncrdp25	Dummy equals one if the loan is less than the percentile 25 of the loan size distribution (by year)
lncrdp50	Dummy equals one if the loan is between the percentile 25 and 50 of the loan size distribution (by year)
lncrdp75	Dummy equals one if the loan is between the percentile 50 and 75 of the loan size distribution (by year)
lncrdp100	Dummy equals one if the loan is grather than the percentile 75 of the loan size distribution (by year) - (omitted in the regression)
Maturity	
maturity unknown	Dummy equals one if the loan maturity is unknown
maturity <1 year	Dummy equals one if the loan maturity is lower than or equal to 1 year
maturity 1 up to 5 years	Dummy equals one if the loan maturity is higher than 1 year and lower than 5 years
maturity > 5 years	Dummy equals one if the loan maturity is higher than 5 years (omitted in regressions)
Loan Purpose	
takeover	Dummy equals one if primary loan purpose is takeover or recapitalization
mezzanine	Dummy equals one if among takeover or recapitalization operations the category is a mezzanine tranche
asset backed	Dummy equals one if the loan is asset backed
project finance	Dummy equals one if primary loan purpose is project finance
general	Dummy equals one if primary loan purpose is general corporation purposes (omitted in regressions)
unknown	Dummy equals one if primary loan purpose is unknown
Instrument Type	
term loans	Dummy equals one if the category is term loan (omitted in regressions)
credit lines	Dummy equals one if the category is credit lines
bridge loans	Dummy equals one if the category is bridge loan
mezzanine	Dummy equals one if the category is mezzanine loan
other	Dummy equals one if the category is another type of loan
Fees	
commitment fees	Commitment fees (basis points)
other fees	Other fees (basis points)
fees undisclosed	Dummy equals one if fees are undisclosed
Garantor	Dummy equals one if there is a garantor in the operation
Collateral	Dummy equals one if the loan is secured
Lenders nationality	
home bias	Dummy equals one if all lenders' nationality are different from borrower nationality

Annex 2

DESCRIPTIVE STATISTICS OF THE EXPLANATORY VARIABLES								
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Credit (€ m)								
mean	245.72	378.11	282.12	317.73	187.36	193.61	261.26	305.84
[min; max]	[0.23; 9424]	[0.18; 20000]	[1.02; 5000]	[1.1; 10000]	[1.35; 6148]	[0.35; 7500]	[0.53; 8000]	[1; 21333]
Rating								
a	0.04	0.08	0.05	0.06	0.03	0.03	0.03	0.03
bbb	0.02	0.03	0.04	0.05	0.03	0.02	0.02	0.02
bb	0.01	0.02	0.01	0.02	0.03	0.03	0.02	0.01
b	0.01	0.02	0.00	0.02	0.02	0.02	0.02	0.02
no rating	0.90	0.86	0.90	0.85	0.90	0.91	0.91	0.92
Maturity								
maturity unknown	0.04	0.06	0.04	0.01	0.02	0.02	0.02	0.01
maturity < 1 year	0.14	0.13	0.14	0.10	0.05	0.06	0.04	0.04
maturity 1 up to 5 years	0.32	0.27	0.31	0.34	0.30	0.29	0.29	0.21
maturity > 5 years	0.50	0.54	0.51	0.55	0.63	0.64	0.65	0.73
Loan Purpose								
takeover	0.59	0.61	0.70	0.73	0.78	0.78	0.77	0.84
mezzanine	0.01	0.02	0.03	0.02	0.03	0.03	0.04	0.05
asset backed	0.02	0.03	0.01	0.01	0.00	0.01	0.01	0.02
project finance	0.09	0.14	0.09	0.06	0.10	0.08	0.09	0.05
general	0.21	0.21	0.20	0.20	0.12	0.13	0.12	0.08
unknown	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Instrument Type								
term loans	0.51	0.53	0.52	0.55	0.51	0.58	0.50	0.53
bridge loans	0.02	0.03	0.02	0.03	0.03	0.02	0.03	0.03
credit lines	0.43	0.40	0.40	0.39	0.42	0.35	0.38	0.34
other	0.03	0.02	0.03	0.02	0.02	0.02	0.05	0.05
Fees								
commitment fees (b.p.)								
mean	11.13	14.16	16.63	15.45	18.17	10.20	8.75	6.50
[min; max]	[0; 100]	[0; 125]	[0; 150]	[0; 150]	[0; 190]	[0; 350]	[0; 150]	[0; 158]
other fees (b.p.)								
mean	4.02	6.92	7.00	7.60	7.90	4.57	4.29	3.92
[min; max]	[0; 85]	[0; 100]	[0; 162]	[0; 300]	[0; 270]	[0; 160]	[0; 145]	[0; 360]
fees undisclose	0.03	0.01	0.02	0.02	0.00	0.02	0.03	0.05
Garantor	0.06	0.04	0.02	0.04	0.05	0.04	0.03	0.02
Collateral	0.18	0.26	0.19	0.18	0.31	0.25	0.33	0.23
Type of borrower								
public	0.03	0.05	0.05	0.04	0.03	0.02	0.03	0.02
private	0.97	0.95	0.95	0.96	0.97	0.98	0.97	0.98
Lenders nationality								
home bias	0.07	0.13	0.10	0.05	0.07	0.09	0.09	0.14

Note: In percent of the total number of observations unless otherwise stated.