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What Determines IPO Gross Spreads in Europe?

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Abstract

This paper examines the behaviour of underwriting gross spreads in European IPO markets using a data set of 565 IPOs by European issuers in the period 1986–99. Privatisations have lower gross spreads than other IPOs, other things remaining equal. Gross spreads on European listings by European issuers are significantly lower than on US listings by European issuers, except on the technology stock-oriented EASDAQ and Frankfurt Neuer Markt exchanges. IPOs involving a US bulge bracket underwriter (for joint US/Europe listings) or bookbuilding are characterised by relatively higher spreads.

Keywords: *initial public offerings*; *gross spreads*; *European equity markets*.

JEL classification: *G*24, *G*32.

1. Introduction

The level of underwriter compensation in IPOs has recently attracted a great deal of attention in both the academic and the business worlds. This interest has been driven, in particular, by the results of Chen and Ritter (2000) who analyse the high level of spreads charged in the US markets and note that this level is higher than in international markets. As the gross spread normally represents the largest direct cost item in an IPO, the interest of the issuers in the subject is hardly surprising. Even among the indirect costs of an IPO, only underpricing normally represents a larger expense than the gross spread.

Despite this, the literature devoted to gross spreads is significantly smaller than the one discussing underpricing. Ritter (1987), James (1992), Beatty and Welch (1996), and Lee *et al*. (1996), among others, have documented the level and determinants of

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US underwriting fees. Research on underwriter compensation using European data is very limited, despite the fact that the European underwriting market differs from the US market in important respects. In a concurrent and independent working paper, Ljungqvist *et al.* (2000) discuss European and Asian underwriting fees, concentrating on the effects of bookbuilding, while Torstila (2000) analyses the existence and determinants of gross spread clustering. Possible reasons that might lead to lower gross spreads in Europe include the importance of large scale privatisation programmes and, perhaps, lower quality underwriting services in issues managed by small local banks and without bookbuilding.

This paper analyses gross spreads in European IPOs using a data set of 565 IPOs from 1986 to August 1999. The data is from the Capital Data Bondware database, which was launched in 1984, and is widely used by practitioners in the European market. The paper examines the development of spreads in different markets, by the type of offering and underwriter, and over time, to find evidence on the level of gross spreads in Europe. This paper documents the fact that the general level of gross spreads is significantly lower in Europe than in the USA, by comparing IPOs by European issuers on European markets with those by European issuers on US markets. The 7.0% fees so prevalent in the USA, as reported by Chen and Ritter (2000), are practically absent in Europe (except for the EASDAQ[1] market, where gross spreads of 6.0–7.0% are typical).

The paper proceeds with a firm level regression analysis of the determinants of IPO spreads in Europe. As expected, gross spreads are found to be significantly lower for privatisation IPOs. Gross spreads are also significantly lower when the gross proceeds are large; for European listings and Europe/US joint listings; and when the number of bookrunners increases. Gross spreads are significantly higher, on the other hand, for US bulge bracket underwriters in Europe/US joint listings; for listings on the technology-oriented EASDAQ and Frankfurt Neuer Markt markets; and for bookbuilding IPOs.

The result that privatisations have lower underwriter fees than other IPOs, other things remaining equal, is of particular interest. This effect could be due to the bargaining power of national governments who control whole privatisation programmes: investment banks value the follow-up possibilities that a large privatisation presents and may be more willing than usual to compete on price.

The rest of this paper is organised as follows. Section 2 describes the data and presents descriptive statistics on the general level of gross spreads on a country-by-country and on a European basis. Section 3 discusses the theoretical justification of various explanatory variables and analyses the determinants of gross spreads in a regression framework. Section 4 concludes.

2. The data

The data used in this study is from the Capital Data Bondware database. The initial sample includes all IPOs by European issuers between 1986 and August 1999. The

[1] The EASDAQ (European Association of Securities Dealers Automated Quotation) is a marketplace operating on a pan-European basis with one regulatory structure and one trading and settlement system. Its emphasis is on technology stocks. As of end October 1999, 51 companies were listed on EASDAQ.

database groups IPOs mainly by issuer nationality. The exchange(s) where the offering takes place are, however, available in the IPO details of the database. The offerings were regrouped according to the exchange where the major listing took place. The major new information thus obtained was the separation of the EASDAQ and Frankfurt Neuer Markt exchanges. This treatment differs from Ljunqvist *et al.* (2000).

906 IPOs in the database correspond to these sample selection criteria. 284 of these IPOs have no gross spread data available.[2] In addition, 57 closed end funds and ADR listings are excluded from the sample, leaving a final sample of 565 IPOs. Of these 565 IPOs by European issuers, 437 took place on a European stock market (of which 15 on EASDAQ), 59 on US stock markets, mainly NASDAQ, and 69 simultaneously on a US and European stock market.

Table 1 presents descriptive statistics on the average (value weighted and equally weighted), median, and standard deviations of the gross spreads, as well as the average gross proceeds of the IPOs by European issuers on European stock exchanges. The figures reported in this table are simple descriptive measures that do not yet control for differences in the size or risk of the offerings. All monetary amounts have been adjusted for inflation using the US GDP Price Deflator, and are expressed in terms of 4Q 1999 dollars. On an equally weighted basis, the gross spreads seem to be highest on the EASDAQ (6.47%) and Frankfurt Neuer Markt (5.26%), followed by the group others (4.72%), which consists mostly of IPOs from Eastern Europe. Of the traditional national markets, Sweden (4.35%) tops the list, while Belgium (2.80%) has the lowest average gross spreads in the sample.

The level of the gross spreads on the EASDAQ exchange and the Frankfurt Neuer Markt, both geared towards technology stocks, is remarkably high in comparison to the rest of Europe. In particular, the Neuer Markt spreads are on average 1.22% higher than on the Frankfurt main exchange. These markets, however, have the lowest average proceeds observed (US$45 million for EASDAQ and US$78 million for the Neuer Markt), a major factor contributing to the high gross spreads. Although the spread level on the technology exchanges is close to that in the USA, the offerings were underwritten mostly by European underwriters (with only two exceptions). In other words, European underwriters do not charge low spreads everywhere they operate. This indicates that the European underwriting markets have price competition at least in that the spreads charged depend on the situation in each market.

Table 2 presents descriptive statistics based on different groupings of IPOs according to the main stock exchange listing and the nature of the underwriter. The sample in this table is that of Table 1, plus 59 IPOs by European issuers on a US stock exchange only. Overall, for all 565 observations of IPOs by European issuers over the sample period (1986 – August 1999), the value weighted average gross spread is 3.04%, the equally weighted average 4.31%, and the median 4.00%. These observations differ drastically from the US results by Chen and Ritter (2000). Chen and Ritter report only annual

[2] The IPOs which have spread information available are on average larger. For IPOs with gross spread data, the nominal median gross proceeds were US$100 million, against US$43 million for IPOs with no gross spread data (averages US$409 and 77 million respectively). On a country-by-country basis, the UK has gross spread data available for 85% of the IPOs, while Switzerland has gross spread data only for 50% of the IPOs. Other countries fall between these two in terms of gross spread data availability.

Table 1

Gross spreads in European stock markets.

Table 1 presents descriptive statistics for the underwriting gross spreads of IPOs by European issuers on European stock exchanges. The sample contains 506 IPOs from 1986 to August 1999. This table excludes an additional 59 IPOs by European issuers on US exchanges only. Average gross proceeds are expressed in terms of millions of 4Q 1999 dollars. The average gross spreads are presented on both a value-weighted and equally weighted basis. The group 'Others' includes IPOs from Estonia, Luxembourg, Romania and Russia.

		Gross spread (%)				
Countries	Average gross proceeds (US$m)	Value-weighted average	Equally weighted average	Median	Standard deviation	N
Austria	156.5	3.49	3.50	3.50	0.70	23
Belgium	320.9	2.89	2.80	2.50	0.56	11
Denmark	303.1	3.61	4.22	4.00	1.13	12
EASDAQ	45.2	6.49	6.47	6.00	0.55	15
Finland	279.4	3.26	3.74	3.75	0.80	12
France	789.4	2.93	3.59	3.00	1.28	48
Germany (excl. Neuer Markt)	462.7	3.15	4.04	4.00	0.85	52
Germany (Neuer Markt)	77.5	5.05	5.26	5.13	0.75	36
Greece	307.6	3.41	3.52	3.00	0.84	5
Hungary	121.4	3.22	4.03	3.60	1.01	15
Ireland	858.1	2.32	3.77	3.25	2.04	6
Italy	351.8	3.29	3.86	4.00	1.02	55
Netherlands	316.8	3.81	4.25	3.68	1.21	52
Norway	176.3	4.12	4.33	4.13	0.71	7
Poland	189.5	2.63	4.08	4.46	1.71	14
Portugal	407.2	3.01	3.51	3.45	0.78	12
Spain	230.0	3.10	3.28	3.50	0.55	34
Sweden	289.9	4.22	4.35	4.25	1.46	27
Switzerland	1022.6	3.11	3.96	4.00	0.90	12
UK	1094.1	2.17	3.64	3.65	1.85	53
Others	368.5	4.06	4.72	4.25	2.04	5
Totals	433.3	2.98	4.02	4.00	1.33	506

averages instead of an overall average, but even the lowest annual averages that they show in the period 1985–98 are as high as 5.52% (value weighted) and 6.72% (equally weighted).

On an equally weighted basis, the IPOs listed only on a US stock exchange have the highest average gross spread (6.79%). These IPOs have a median gross spread of 7.0%. IPOs on EASDAQ have gross spreads very close to the US level, with an equally weighted average gross spread of 6.47% and a median of 6.00%. IPOs initially listed on both a US and a European exchange are the group with the next lowest spread level of 4.89% on an equally weighted average basis (median 5.10%). European offerings have the lowest average spreads of 3.79% (median 3.75%). On a value-weighted basis, however, the joint European and US offerings have spread levels close to the European offerings.

Table 2

Descriptive statistics by listing and underwriter.

Table 2 presents descriptive statistics for the gross spreads on IPO underwriting. The sample contains 565 IPOs by European issuers from 1986 to August 1999. Average gross proceeds are expressed in terms of millions of 4Q 1999 dollars. The average gross spreads are presented on both a value-weighted and equally weighted basis. In the division of offerings by listing, 'European and US stock exchange' refers to IPOs which are simultaneously listed on a European and US stock exchange. US underwriters are divided into 'bulge bracket' and 'non-bulge bracket' groups. This division is based on the Carter–Manaster (1990) measure, as calculated by Carter *et al.* (1998). The bulge bracket underwriters are defined as having a Carter–Manaster measure of 8.88 and over, resulting in a bulge bracket of seven banks.

	Average gross proceeds (US$m)	Gross spread (%)				
		Value-weighted average	Equally weighted average	Median	Standard deviation	N
All observations	397.3	3.04	4.31	4.00	1.57	565
Divided by listing:						
European stock exchange only	343.0	2.92	3.79	3.75	1.09	422
EASDAQ only	45.2	6.49	6.47	6.00	0.55	15
European and US stock exchange	1076.2	3.06	4.89	5.10	1.81	69
US stock exchange only	81.1	5.92	6.79	7.00	1.22	59
Divided by underwriter:						
European underwriter only	301.0	3.02	4.02	4.00	1.42	354
US non-bulge bracket underwriter	252.9	3.31	5.61	6.00	2.04	42
US bulge bracket underwriter	634.7	3.04	4.58	4.38	1.52	169

Figure 1 is based on the same division according to the market of listing, and illustrates the relationship between IPO gross proceeds and the gross spread. The difference in gross spread levels between European and US listings stands out clearly, as does the dependence of the gross spread on offering size. When similar gross spread – IPO proceeds diagrams are drawn for the individual countries, the gross spreads form clustering patterns in some markets. These patterns are analysed in further detail in Torstila (2000).

There are significant disparities in the average IPO sizes on the various exchanges. On average, the largest IPOs in the sample are those offered jointly on European and US exchanges (average proceeds US$1,076 million). These IPOs contain a significant number of large European privatisations. By way of contrast, the EASDAQ and US only offerings, which include disproportionate amounts of small technology-oriented companies, have average sizes of only US$45 and 81 million, respectively.

Next, the IPOs are grouped into three categories according to the nature of the lead underwriter. This division is justified by the results of Ljungqvist *et al.* (2000), who conclude that issuing firms are willing to pay a premium in terms of gross spreads to include a US bank. IPOs lead managed by European banks (354 observations) have the lowest average gross spreads of 4.02% (equally weighted). IPOs underwritten by non-bulge bracket US banks (42 observations) have the highest spreads at 5.61%,

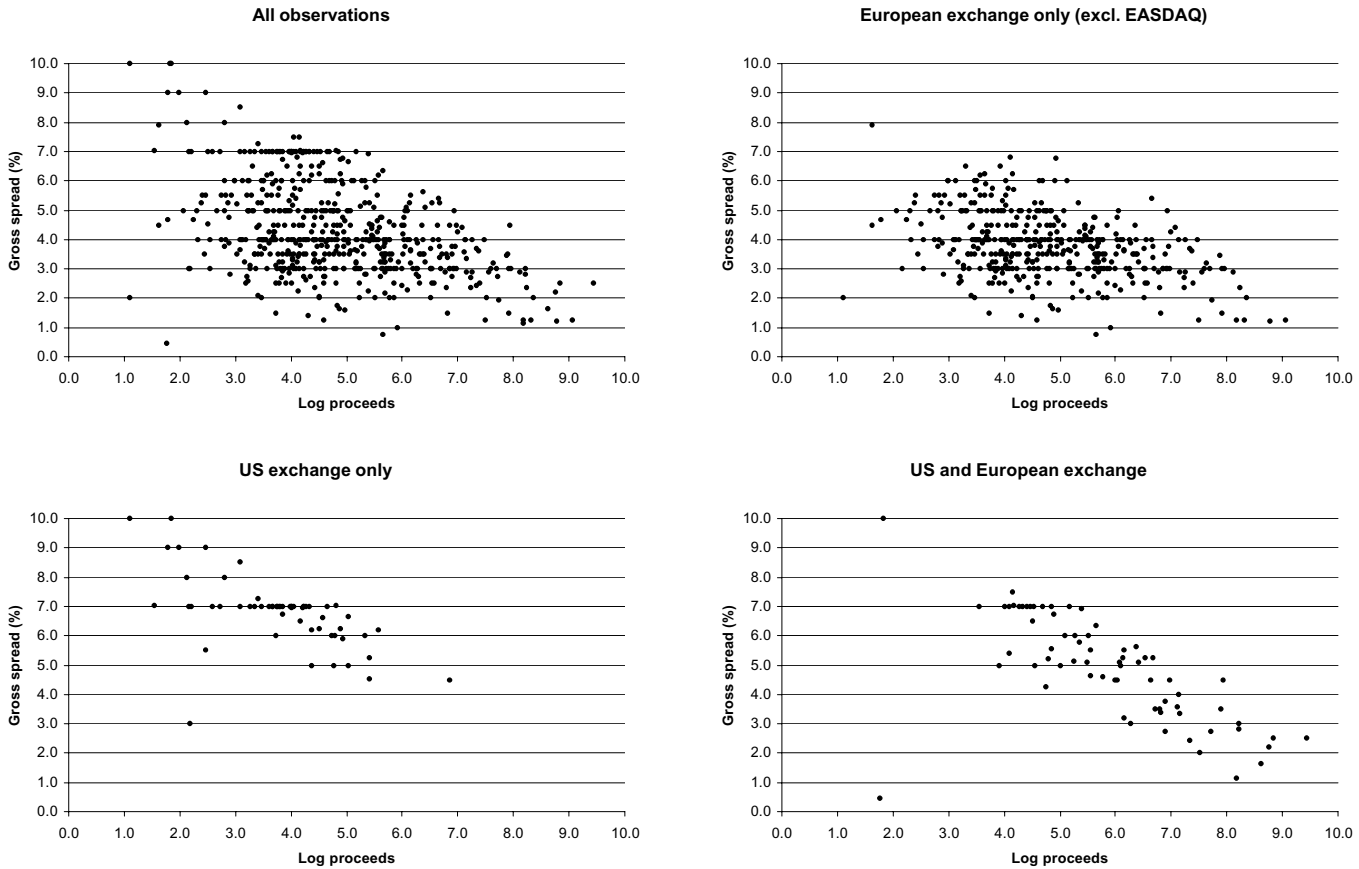

Fig. 1. Proceeds and gross spreads of IPOs by European issuers.

Notes: Figure 1 shows the relationship between IPO proceeds and the gross spread (%) for IPOs by European issuers between 1986 and August 1999. The proceeds are shown as the natural logarithm of the US$ proceeds (expressed in millions of 4Q 1999 dollars), i.e. a US$20 million offering has as a log value of approximately 3 and a US$400 million offering a log value of approximately 6. The figure on the top left shows all 565 observations. The figure on the top right shows all IPOs initially listed only on a European stock exchange (excluding EASDAQ), a total of 422 observations. The figure on the bottom left shows IPOs initially listed only on a US exchange, a total of 59 observations. Finally, the figure on the bottom right shows IPOs initially listed simultaneously on a US and European exchange, a total of 69 observations.

Table 3

Descriptive statistics for privatisation and non-privatisation sub-samples.

Table 3 presents descriptive statistics for the gross spreads in privatisation and non-privatisation sub-samples. The sub-samples have been classified by sizes in a manner similar to Chen and Ritter (2000), so that moderate size IPOs (199 observations) are ones with gross proceeds between $20 and $80 million. Large IPOs (319 observations) are ones with gross proceeds of at least $80 million. An additional 47 small IPOs have gross proceeds below $20 million. Average gross proceeds are expressed in terms of millions of 4Q 1999 dollars. The sample contains 565 IPOs by European issuers from 1986 to August 1999.

	Moderate size IPOs		Large IPOs		All IPOs	
	Privatis-ations	Non-Privatis-ations	Privatis-ations	Non-Privatis-ations	Privatis-ations	Non-Privatis ations
Average gross proceeds	56.0	46.4	1436.2	386.6	1318.0	211.2
Equally weighted gross spread	3.31	4.79	2.95	4.16	3.06	4.56
Value weighted gross spread	3.33	4.83	2.35	3.81	2.35	3.91
Median gross spread	3.36	4.50	3.00	4.00	3.00	4.14
N	4	195	87	232	95	470

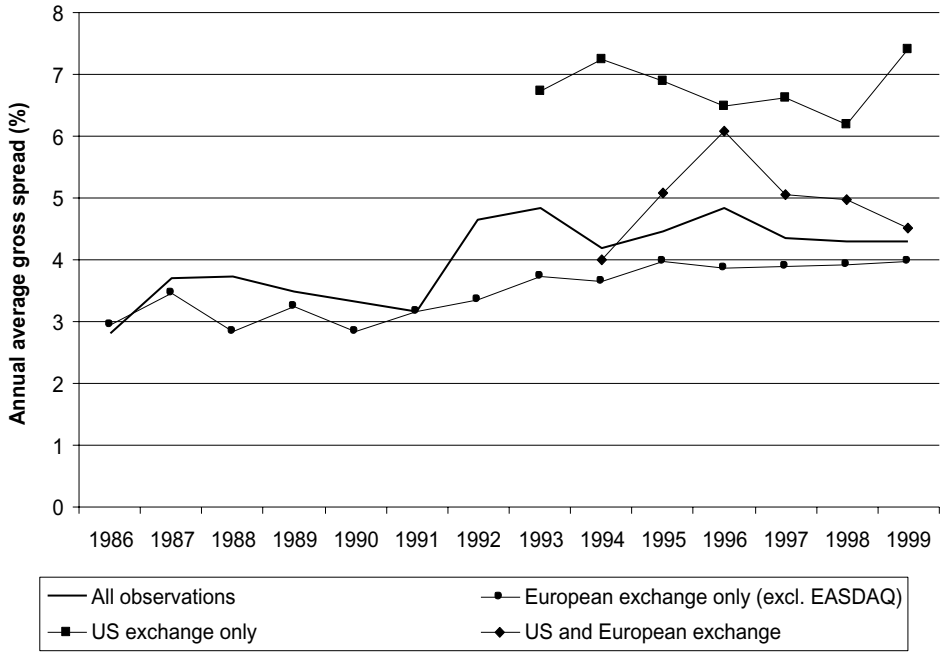

Fig. 2. Development of gross spread levels over time.

Notes: Figure 2 presents annual average gross spreads for the IPOs in the sample. From top to bottom, the groups of IPOs shown are as follows: IPOs on US exchanges only; IPOs jointly issued on US and European exchange; all observations; and IPOs on European exchanges only (excluding EASDAQ). Averages are equally weighted. Averages are not shown for years with less than 5 observations for a particular group.

while IPOs by the global US bulge bracket banks (169 observations) have an average gross spread of 4.58%. These bulge bracket banks underwrite on average the largest IPOs, which have average gross proceeds of US$635 million. For the purposes of this paper, the division into 'bulge bracket' and 'non-bulge bracket' underwriters is based on the Carter–Manaster (1990) measure, as calculated by Carter *et al.* (1998). The bulge bracket underwriters are defined as having a Carter–Manaster measure of 8.88 and over, which gives a group of seven banks.

Table 3 presents descriptive statistics for the privatisation and non-privatisation sub-samples. The 95 privatisation observations come from all countries in the sample (except Greece). Countries where a particularly large proportion of IPOs in the sample are privatisations include Hungary (60%), Austria (43%), and France (35%). The average size of the privatisation IPOs is US$1,318 million, with a value-weighted gross spread of 2.4%, versus US$211 million and 3.9% for non-privatisations (470 observations). These observations raise the question whether the privatisations have lower spreads just because of their size, or whether there is a privatisation-specific element at play. To facilitate comparison with the results of Chen and Ritter (2000), the sub-samples are further divided into moderate size IPOs (gross proceeds $20 to $80 million) and large IPOs (gross proceeds over $80 million) and descriptive statistics are presented.

Figure 2 shows the historical development of gross spreads as year-by-year averages. The figure may suggest a slight increase in gross spreads over time, but

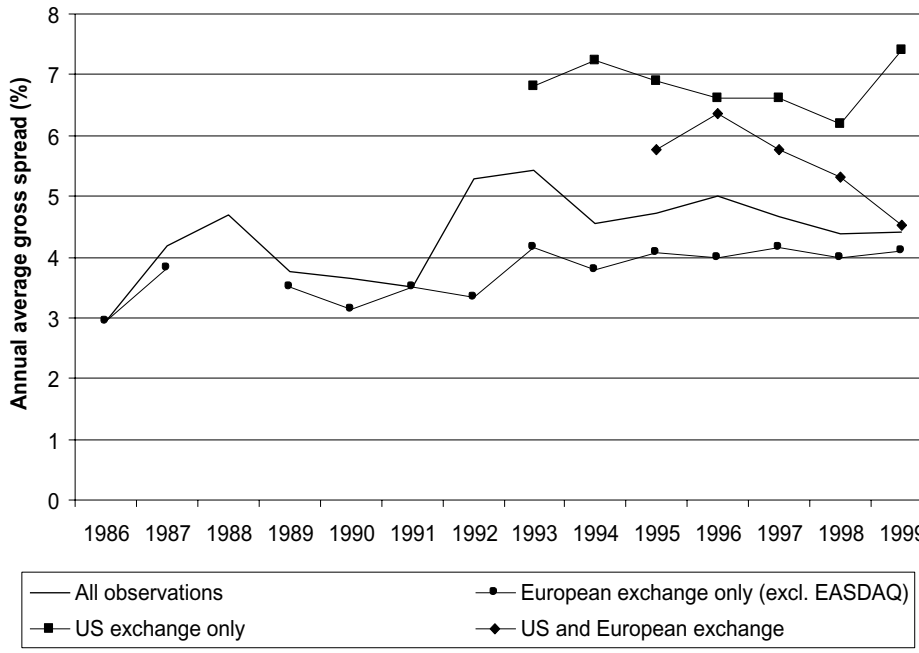

Fig. 3. Gross spread levels over time for the non-privatisation sub-samples.

Notes: Figure 3 presents annual average gross spreads for the non-privatisation sub-sample. From top to bottom, the groups of IPOs shown are as follows: IPOs on US exchanges only; IPOs jointly issued on US and European exchange; all observations; and IPOs on European exchanges only (excluding EASDAQ). Averages are equally weighted. Averages are not shown for years with less than 3 observations for a particular group.

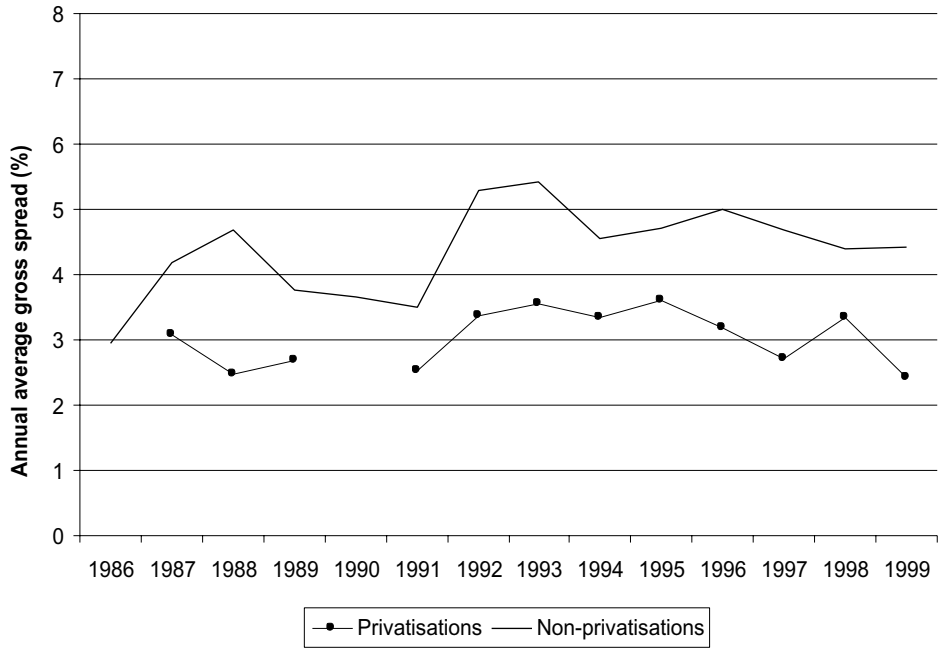

Fig. 4. Privatisation and non-privatisation gross spreads over time.

Notes: Figure 4 presents annual average gross spreads for the 95 privatisation IPOs and 470 non-privatisation IPOs in the sample. Averages are equally weighted. Averages are not shown for years with less than 3 observations for a particular group.

the trend is not significant after controlling for other variables. It is, however, of interest to note that the differences between the various markets have been quite stable over time. On an equally weighted basis, the US only offerings have consistently been the most expensive, followed by the joint US and Europe offerings and the European offerings. Figure 3 presents the same breakdown by market and year for the non-privatisation sub-sample. The pattern is very similar to that of the whole sample in Figure 2. Figure 4 compares the privatisation and non-privatisation sub-samples on a year-by-year basis, showing that the lower spread level on privatisation offerings has been consistent over time.

3. The determinants of gross spreads

The European data studied permits several extensions to earlier US research on the determinants of gross spreads. This section discusses the theoretical justification of including certain explanatory variables in OLS regressions of the gross spread (in percentage terms) and describes the results obtained. Detailed results are reported in Table 4. The regression was conducted using two alternative specifications. Specification 1 includes an index of the level of competition in the market, and dummies for the type of legal system among the independent variables, while specification 2 replaces these with country-specific dummies. As a Breusch–Pagan (1979) test indicates the presence of heteroskedasticity in the data, White's (1980) heteroskedasticity consistent covariance matrix is applied. In all cases, the regression

Table 4

Determinants of gross spreads in Europe.

Table 4 presents the results from a regression of IPO underwriting gross spreads on a number of independent variables using two alternative specifications. The sample size is 565 observations from 1986 to August 1999. The dependent variable is defined as the percentage gross spread of the IPO. Log proceeds have been calculated from millions of 4Q 1999 dollars. The bulge bracket is defined similarly as in Table 2. The interaction dummies are obtained by multiplying underwriter dummies with market dummies. Industry dummies are included for industries with more than 5 observations. In specification 1, the classification of legal systems follows La Porta *et al*. (1998). The Herfindahl–Hirschman index for each country has been calculated as the sum of the squared market shares (in percentage terms, as calculated from the number of IPOs). In specification 2, the group 'others' is defined as in Table 1, and the Austrian dummy has been left out to avoid perfect multicollinearity. Both specifications use White's (1980) correction for heteroskedasticity. * indicates significance at the 5% level, ** indicates significance at the 1% level. Significance tests are two-sided.

Dependent variable: gross spread	Specification 1		Specification 2			Specification 1		Specification 2	
Independent variables	Coefficient	*t*-values	Coefficient	*t*-values		Coefficient	*t*-values	Coefficient	*t*-values
Constant	8.03**	16.94	7.98**	17.45	Industry dummies:				
					Airlines	0.37	0.88	0.05	0.13
Offering characteristics:					Automotive	−0.08	−0.28	−0.15	−0.69
Log proceeds	−0.36**	−7.18	−0.34**	−7.15	Banking & financial services	−0.02	−0.09	−0.15	−0.74
Privatisation dummy	−0.56**	−4.32	−0.57**	−4.32	Biotechnology	1.07**	3.21	−0.06	−0.17
Bookbuilding dummy	0.43**	3.40	0.26*	2.24	Chemicals	0.17	0.65	0.16	0.61
					Computers/software	0.38	1.84	−0.03	−0.17
Market characteristics:					Construction	−0.17	−0.59	−0.08	−0.25
European listing only dummy	−2.39**	−5.80	−2.75**	−7.19	Consultancies/services	−0.32	−1.10	−0.33	−1.26
US & European listing dummy	−1.74**	−4.36	−1.94**	−4.70	Electronics	0.30	1.34	0.08	0.42
French-origin legal system dummy	−0.21	−0.92			Energy/utility	−0.33	−1.65	−0.40*	−2.06
German-origin legal system dummy	0.39	1.68			Engineering	−0.13	−0.63	−0.25	−1.29
Scandinavian-origin legal system dummy	0.26	1.07			Food & drink	−0.40*	−2.02	−0.27	−1.55
Legal system of other, non-English origin dummy	0.51	1.60			Forest products	−0.05	−0.18	0.14	0.72
Herfindahl–Hirschman index	−0.0002*	−2.04			Healthcare & pharmaceuticals	0.40	1.59	0.28	1.27
					Hotels & leisure	0.15	0.44	0.20	0.60

Underwriter characteristics:				
US bulge bracket underwriter dummy	−0.15	−0.48	−0.12	−0.39
US non-bulge bracket underwriter dummy	−0.01	−0.01	−0.02	−0.04
Number of bookrunners	−0.31**	−2.90	−0.26**	−2.73
Interaction dummies (underwriter & market):				
US bulge bracket/European offering	0.60	1.87	0.69*	2.17
US non-bulge bracket/European offering	0.56	1.02	0.53	1.09
US bulge bracket/US & European offering	1.29**	3.30	1.29**	3.44
US non-bulge bracket/US & European offering	0.77	0.97	0.86	1.06
Country dummies:				
Belgium			−0.88**	−3.16
Denmark			0.01	0.03
EASDAQ			2.40**	8.31
Finland			0.07	0.30
France			−0.04	−0.21
Germany (excl. Neuer Markt)			0.16	0.65
Germany (Neuer Markt)			1.30**	5.25
Greece			−0.30	−0.79
Hungary			0.26	0.85
Ireland			0.15	0.40
Italy			0.19	0.88
Netherlands			−0.16	−0.69
Norway			0.54	1.84
Poland			0.33	0.84
Portugal			−0.13	−0.45
Spain			−0.44*	−2.24
Sweden			0.41	1.83
Switzerland			−0.04	−0.14
UK			0.04	0.16
Others			1.45*	2.14
Industrial & conglomerates	−0.27	−1.14	−0.04	−0.14
Insurance	0.22	0.80	0.08	0.26
Iron & steel	0.05	0.22	0.07	0.29
Manufacturing	0.03	0.19	0.06	0.39
Media & publishing	0.17	0.83	−0.02	−0.11
Oil, coal & gas	0.31	1.40	0.13	0.57
Retailing & consumer products	−0.41*	−2.47	−0.32	−1.90
Telecommunications	−0.06	−0.31	−0.23	−1.10
Textiles & clothing	−0.003	−0.01	−0.08	−0.42
Transport & shipping	0.48	1.44	0.36	1.02
Year dummies:				
1986	−0.70*	−2.17	−0.77*	−2.14
1987	0.51	1.46	0.64*	2.03
1988	−0.80**	−2.61	−0.51	−1.49
1989	−0.12	−0.33	−0.002	−0.01
1990	−0.72*	−2.41	−0.64*	−2.30
1991	−0.03	−0.11	−0.07	−0.25
1992	0.26	0.81	0.54	1.86
1993	0.03	0.10	0.18	0.68
1994	0.29	1.48	0.41*	2.21
1995	0.37*	2.11	0.55**	3.15
1996	0.24	1.47	0.35*	2.30
1997	0.23	1.49	0.31*	2.09
1998	0.06	0.41	0.07	0.47
Number of observations	565		565	
Adjusted R^2	0.60		0.67	

coefficients have a straightforward economic interpretation: the coefficient is simply the effect of that variable on the gross spread in percentage point terms, all other things remaining equal.

3.1. *The size of the IPO*

The size of the IPO is an essential determinant of gross spreads. A negative relationship between IPO size and the gross spread has been previously reported on US data by, among others, Ritter (1987), James (1992), and Lee *et al*. (1996).

Three main explanations have been advanced to account for this negative relationship. Firstly, IPOs have significant fixed costs linked to prospectus preparation, investor marketing, legal advice and so on. As the offering grows larger, these fixed costs become less significant, which lowers the gross spread measured in percentage terms. Secondly, the size of the IPO serves as a risk proxy: larger companies are typically less risky. Thirdly, the largest IPOs are the most sought after by investment banks, and the higher level of competition may drive fees lower. The bulge bracket investment banks typically concentrate their resources on obtaining the largest transactions, as the costs (including employee time) to the bank vary relatively little with the size of the IPO.

The size of the IPO is measured here as the natural logarithm of gross proceeds in millions of 4Q 1999 US dollars. As expected, this study finds a significant negative relationship between size and gross spreads, regardless of specification.

3.2. *Other offering characteristics*

The importance of privatisation IPOs is one of the key differences between Europe and the USA. Privatisations typically have particularly low levels of gross spreads in percentage terms, as their average size is very large. It is of interest to see, however, whether privatisations are priced even lower than what their size would imply. There seems to be no prior research on the relationship between privatisations and underwriter compensation, as most studies of gross spreads have used US data.

Perotti (1995) reports data on a wide number of privatisation programmes in the world, and draws the conclusion that transfers of ownership from the state to private investors tend to take place very gradually (see also Megginson and Netter, 1999, Jones *et al*., 1999). This implies that for most European markets, the national government controls a substantial portion of the investments banks' future deal flow. The result could be a substantially increased bargaining power for the government issuer in comparison to private sector issuers, resulting in smaller gross spreads. This trend has been voiced frequently in trade magazines (see Lee, 1998; Currie 1999).

A privatisation dummy is included as an independent variable in the regressions. There are privatisations from all countries in the sample (except Greece), for a total of 95 observations. The results show a significant negative relationship at the 1% level between the privatisation dummy and gross spreads. In other words, privatisations have even lower levels of underwriter compensation than their large size implies. This result is robust across the specifications tried in this study. In addition, regressions are performed separately on the privatisation and non-privatisation sub-samples. This robustness check is necessitated by the great size difference across the sub-samples, as well as potential multicollinearity problems between the privatisation dummy and

industry and country dummies. As Table 5 shows, the regression results are very similar for the two sub-samples.

Another dummy variable included in the regression takes a value of 1 when the IPO uses a bookbuilding mechanism to gauge investor demand prior to pricing (see Benveniste and Wilhelm (1997) for details of the bookbuilding process). The bookbuilding mechanism reduces the uncertainty associated with pricing, making it rather unlikely that shares will remain unsold. In this sample, however, bookbuilding offers are associated with significantly higher gross spreads. This result is similar to those of Ljungqvist *et al.* (2000). The result could be due to what Benveniste and Wilhelm (1997), based on Benveniste and Spindt (1989), refer to as 'an expectation

Table 5

Regressions for privatisation and non-privatisation sub-samples.

Table 5 presents the results from a regression of IPO underwriting gross spreads in privatisation and non-privatisation sub-samples. The sample contains 565 IPOs by European issuers from 1986 to August 1999. The dependent variable is defined as the percentage gross spread of the IPO. Log proceeds have been calculated from millions of 4Q 1999 dollars. All variables are defined similarly as in Table 4. White's (1980) correction for heteroskedasticity is used.* indicates significance at the 5% level,** indicates significance at the 1% level. Significance tests are two-sided.

Dependent variable: gross spread	Privatisation sub-sample		Non-privatisation sub-sample	
Independent variables	Coefficient	*t*-values	Coefficient	*t*-values
Constant	7.25**	12.27	8.14**	28.50
Offering characteristics:				
Log proceeds	−0.37**	−3.51	−0.42**	−7.25
Bookbuilding dummy	−0.09**	−0.56	0.60**	4.89
Market characteristics:				
European listing only dummy	−2.77**	−5.38	−2.01**	−6.27
US & European listing dummy	−1.40**	−3.21	−0.71*	−2.52
French-origin legal system dummy	1.18**	4.47	−0.57*	−2.09
German-origin legal system dummy	1.09**	2.70	0.15	0.53
Scandinavian-origin legal system dummy	0.98**	3.05	0.09	0.33
Legal system of other, non-English origin dummy	1.37**	2.65	0.25	0.65
Herfindahl–Hirschman index	−0.0003	−0.74	−0.0002	−1.41
Underwriter characteristics:				
US bulge bracket underwriter dummy	0.67**	4.39	0.39**	3.78
US non-bulge bracket underwriter dummy	0.34	1.39	0.20	0.74
Number of bookrunners	−0.15	−0.85	−0.27*	−2.28
Number of observations	95		470	
Adjusted R^2	0.48		0.54	

among issuing firms that this underwriting strategy will generate greater proceeds than existing alternatives'. The expectation of a higher quality underwriting service could lead to a higher gross spread.

Accordingly, the relationship between short-term returns, bookbuilding, and the gross spread is investigated using the data available (see Table 6). Out of 565 sample IPOs, the Bondware data used includes first day returns only in 31 cases. Seven-day returns, however, are available in 296 cases. Correlations between the gross spread, 7-day returns, and bookbuilding variables are insignificant at conventional levels. In particular, the correlation between gross spreads and 7-day returns is only − 0.03. The correlation between the limited data on 1-day returns and gross spreads is 0.05 and also insignificant. These results are in line with those reported by Chen and Ritter (2000) but in contradiction with the more extensive analysis of Ljungqvist *et al*. (2000). Excluding 11 outliers with returns worse than −30% or better than 200% does not alter the results substantially.

3.3. *Market characteristics*

A dummy variable is created for IPOs listed on European exchanges only. As is strongly suggested by a casual analysis of the data, the European offerings have a significantly lower level of underwriter compensation than other offerings in the

Table 6

Underpricing and gross spreads.

Table 6 presents Pearson correlation coefficients for gross spreads, bookbuilding, and measures of underpricing. The sample size is 296 in Panel A, where initial returns are measured as the percentage increase or decrease from the issue price to the close of trading 7 days later. In Panel B, the sample size is 31 and initial returns are measured as the percentage increase or decrease from the issue price to the close of the first day of trading.* indicates significance at the 5% level,** indicates significance at the 1% level. Significance tests are two-sided.

Panel A: 7-day returns

Pearson correlations	Gross spread (%)	7-day return	Bookbuilding dummy
Gross spread (%)	1.00		
7-day return	−0.03	1.00	
Bookbuilding dummy	0.18**	−0.09	1.00
(N = 296)			

Panel B: 1-day returns

Pearson correlations	Gross spread (%)	1-day return	Bookbuilding dummy
Gross spread (%)	1.00		
1-day return	0.05	1.00	
Bookbuilding dummy	−0.03	0.11	1.00
(N = 31)			

sample. Offerings jointly listed on US and European exchanges also have significantly lower gross spreads than offerings on US exchanges only.

The European market has been characterised by a diversity of institutional arrangements for IPO underwriting. In 1994, Loughran *et al*. classified several of the sample countries as follows:

- **System A:**
  Setting of offer price before information acquisition with discretionary allocation. Belgium, Finland, Germany, Italy, Sweden, Switzerland
- **System B:**
  Setting of offer price after information acquisition with discretionary allocation. UK (placing)
- **System C:**
  Setting of offer price before information acquisition with non-discretionary allocation. Finland [listed twice, larger sample in A], Netherlands, Portugal, UK (offer for sale)
- **System D:**
  Setting of offer price after information acquisition with non-discretionary allocation Belgium (tender), France, Netherlands (tender), Portugal (auctions), UK (offer by tender)

Around the mid-1990s, however, the popularity of fixed price-type arrangements started to dramatically decrease in Europe. US style bookbuilding (which would be under system B above) became widely accepted as the method of choice for European issuers, and is now used in most offerings throughout the continent (for further details of this change, see Sherman (2000) or Ljungqvist *et al*. (2000)). Due to this profound change in European underwriting practices during the sample period, it would be very difficult to correctly assign underwriting system dummies to the markets. The use of an offer-by-offer bookbuilding dummy, as described in the previous subsection, is able to catch better the institutional change.

Some alternative market category dummies are introduced in specification 1. Legal system dummies, which follow the classification of La Porta *et al*. (1998), attempt to proxy for the risk of legal liability in the market. A higher level of investor protection could increase the underwriters' legal liability risks, leading to higher spreads. Common law countries (Ireland, UK and USA) are used as a benchmark and do not have a dummy of their own. The results, however, are not significant at conventional levels.

Additionally, a measure of the market concentration is introduced in specification 1. Market concentration is widely measured using the Herfindahl–Hirschman index, (HHI) which is calculated as the sum total of the market shares squared. For this study, the market shares are calculated based on the number of IPOs for each underwriter (in each national market). One could, perhaps, expect a higher market concentration to translate into less competition and higher spreads. The coefficient obtained, however, is negative and significant at the 5% level. An alternative approach to calculating market shares would be to do it on the basis of the underwritten volume. Using this measure does not change the results.

3.4. *Underwriter characteristics*

Since the US underwriters seem able to charge relatively high fees in their home market, it is interesting to see if they are able to charge more in the European markets

as well. In particular, it must be noted that the 'bulge bracket' global leaders of the IPO underwriting business are essentially US-based banks. If they are in fact able to charge higher fees than European underwriters, this could simply be due a higher level of services provided, such as post-IPO coverage by more renowned analysts (see Rajan and Servaes (1997) for results on analyst following of IPOs). Ljungqvist *et al.* (2000) find that the US banks do charge higher fees in the international markets, but that this result is linked to less underpricing in IPOs lead managed by them.

To study these effects, two underwriter dummies are created: one for US bulge bracket banks and one for other US underwriters. This classification of US banks into two groups differs from Ljungqvist *et al.* (2000). For the purposes of this study, the bulge bracket is defined on the basis of Carter–Manaster (1990) rankings of IPO league tables, as calculated by Carter *et al.* (1997). Banks having a Carter–Manaster ranking of 8.88 (a total of seven banks) are used as the bulge bracket. In addition to these two dummies, four interaction dummies are created by multiplying the underwriter dummies with the 'European offering' and 'European and US offering' dummies. In other words, the interaction dummy 'US bulge bracket underwriter and European offering' takes a value of 1 when both component dummies take a value of 1.

Two of the interaction dummies seem to catch the bulk of any underwriter related effects. The interaction dummies of US bulge bracket underwriters with European offerings and European and US listings are positive (although the former is significant only in specification 2). This result suggests that bulge bracket underwriters are able to charge more for their services in European offerings, particularly for offerings jointly listed in the USA, but that US non-bulge bracket underwriters are not.

Another variable used is the number of bookrunners in the IPO. Chen and Ritter (2000) link the current increase in the use of several bookrunners to the extent of post-IPO analyst coverage. Researchers have traditionally emphasised the risk-sharing function of syndicates. Another explanation of syndicate size is provided by Pichler and Wilhelm (2000), who argue that restricted entry in the underwriting industry and the use of a lead banker both motivate larger syndicate sizes. In this sample, the relationship between gross spreads and the number of bookrunners is significant at the 5% level and negative. It could be that this variable catches some of the attributes of the pre-IPO competitive situation: apart from decreasing the gross spread, intense competition for the IPO may increase the likelihood of several lead underwriters being retained.

According to practitioner sources at major European investment banks, European underwriting syndicates function to a large extent like US ones (see description in Table V of Chen and Ritter, 2000). There is, however, one interesting difference in the sharing of fees, namely the use of the *praecipium*. The praecipium, widely used in European markets, is a fraction of the management fee component of the gross spread allocated directly to the lead manager. For example, a relatively typical European IPO might divide the gross spread into a 10% praecipium, a 10% management fee, a 20% underwriting fee, and a 60% selling concession. The calculation is demonstrated through an example in Table 7. The net effect of the praecipium is to skew the distribution of syndicate fees somewhat more towards the lead manager.

3.5. *Control variables: country, industry, and timing effects*

To examine whether there are real differences in general gross spread levels between European countries, a simple comparison of averages is not sufficient. For this reason,

Table 7

Syndicate structure and the praecipium.

Table 7 presents a simple hypothetical example of the split of fees in a syndicate structure including a praecipium. The praecipium indicates a fraction, typically half, of the management fee that is allocated directly to the lead manager.

Offering information:		*Total fees:*	
Number of shares	750 000	Gross spread (%)	4
Share price (euros)	8.5	Gross spread (euros)	255 000
Gross proceeds (euros)	6 375 000		

Fee split:

Fee component	% of gross spread	Euros	Recipient
Praecipium	10	25 500	Lead manager only
Management fee	10	25 500	Divided between managers
Underwriting fee	20	51 000	Divided between underwriters
Selling concession	60	153 000	Divided according to sales credits

the countries are given individual dummies in specification 2. The dummy for Austria is left out to avoid perfect multicollinearity. The dummies for Belgium and Spain have negative and significant coefficients. The IPOs on the new, technology oriented exchanges, the Neuer Markt and the EASDAQ, both have coefficients that are significant and positive at the 1% level. The group 'others', which includes IPOs from Estonia, Luxembourg, Romania and Russia, also has a significant positive sign.

Individual industry dummies are introduced as risk proxies for industries with more than five observations. The industry dummies are mostly not significant. The dummy for biotechnology takes a significant positive value in specification 1, but this significance disappears once dummies for the Neuer Markt and EASDAQ are introduced. The industry groups energy/utility, food and drink, and retailing and consumer products have negative and significant coefficients in one of the two specifications.

Dummies for the offering year are also introduced to control for hot (and cold) issue markets and because trade magazines have speculated about a general fall in fee levels due to increasing competition. '... fierce competition is already visible in the new-issues market, where arranger fees, never as generous as in the U.S., are being squeezed, especially in emerging-market privatisations from the fringe of Europe' (Lee, 1998). Some of the year dummies are significant (4 in specification 1, 7 in specification 2), but time series tests reveal no significant trend in the data. This result does not change when year dummies are replaced by decade dummies for the 1990s and 1980s in unreported regressions.

4. Conclusions

The results of this paper show that the level of gross spreads for IPOs by European issuers in Europe is significantly lower than for IPOs by European issuers in the USA, even after a number of controlling variables are taken into account. The highest level

of spreads is observed on EASDAQ and the lowest in Belgium. Only on the EASDAQ and the Frankfurt Neuer Markt do the spreads approach those of the US markets. This holds even for IPOs underwritten by European banks. When the IPOs are grouped by type, the data show that IPOs listed in the USA have higher gross spreads than IPOs listed jointly in Europe and the USA, which themselves have higher spreads than simple European listings. European lead managers have the lowest average spreads. In some European markets, particularly Germany (excluding the Neuer Markt), there appears to exist some clustering such as analysed in Chen and Ritter (2000). This phenomenon is examined in more detail in Torstila (2000).

Many of the determinants of gross spreads found in the European data are similar to those found by earlier studies of US data. In addition, however, the European data allows for several variables to be studied for the first time. In particular, the result relating to privatisations is interesting from an international perspective. The data show that privatisation IPOs have significantly lower gross spreads than other IPOs, other things being equal. This result could be due to the great bargaining power of governments in the IPO process.

Among the other determinants, the effects related to US listings and bookbuilding hold even with the addition of numerous control variables. Some of these control variables add interesting descriptive facts. The industry dummies, country dummies, and other variables of the model allow, for example, practitioners to calculate an expected spread based on the regression model. Contrary to some practitioner beliefs, there was no evidence of a falling trend in gross spreads.

The results obtained raise further research questions, such as the evolution of gross spreads as a country's privatisation programme gradually unfolds. Do underwriters, for example, achieve higher spreads in situations where the privatisation programme is in its final phases? Other potential research directions are linked to the high gross spreads observed on stock exchanges concentrating on 'new economy' companies. Are the high spreads a reflection of fundamentally higher underwriting risks, or more difficult sales efforts—or are they a hot issue market phenomenon, related to the unusually high interest recently linked to technology companies?

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