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IPO underpricing and firm location

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Antonio Acconcia^{*}, Alfredo Del Monte^{} and Luca Pennacchio^{***}**

Abstract

This paper provides new evidence consistent with the relevance of informal relations in finance. We show that issuing firms distance from financial centre matters for the size of IPOs underpricing: the lower is the distance, the lower is the size of underpricing. In particular, firms distant 100 kilometers from the corresponding financial centre face about 5% higher underpricing than firms within close proximity to it. Under the maintained assumption that underwriters are clustered within financial centres, evidence suggests that informal mechanisms ameliorate asymmetric information problems behind IPOs underpricing.

JEL Classification: G24, O16, O18

Keywords: IPOs Underpricing, Asymmetric Information, Geography, Distance

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1 Introduction

This paper investigates whether proximity to financial institutions that can manage IPOs affects the firm’s IPO underpricing. Many theorists claim that when firms go public the market and the firm are asymmetrically informed about the true value of the firm, and that this asymmetry induces the underpricing of IPOs (see, for instance Rock 1986; Benveniste and Spindt 1989; Benveniste and Wilhelm 1990; Welch 1992). Another strand of the finance literature points out the use of soft criteria and the effectiveness of informal relationships enabled by proximity: The choices of different types of financial operators are often driven by local bias, the common explanation being the informational advantage they may exploit (see, for instance, French and Porterba 1991; Coval and Moskowitz 1999, 2001). Thus, proximity between a firm and its underwriter might reduce asymmetric information problems. This paper investigates such hypothesis by asking whether the geographical distance between issuing firms and underwriters can help the latter to extract information on the formers, thus mitigating the asymmetric information problem and consequently reducing IPO underpricing.

In general, informal relationships may be due to geographical proximity or social ties. In this paper we rely on the former. Geographical proximity appears to facilitate the dissemination of important information through informal means. Ample evidence is indeed available suggesting that most economic agents exhibit a strong preference for proximity, since the informational advantage of nearness implies that local choices are rewarded with better outcomes (e.g. Coval and Moskowitz 2001). For instance, conversations with employees and customers may help to gain important information about the morale of the workers and prospects of the firms (Loughran 2007). The identifying assumption used in the present paper is that underwriters—who need information on the issuers to price share issues—are clustered within the financial centre of a country. This allowed us to build a new data set containing among others the distance between underwriters and issuing firms. The data set is used to test whether firms close to underwriters indeed suffer less of an asymmetric information problem when going public, and consequently face a lower IPO underpricing. Other things being equal, if soft information and informal relationships matter—or equivalently if the cost of information acquisition depends on distance—then a positive relationship between the level of underpricing and the firm’s distance from the underwriter emerges.

Numerous studies have found that on average IPOs are underpriced: the share of an issuing company is often offered to investors at a lower price than that which will prevail shortly after public trading starts. Jenkinson and Ljungqvist (2001), for instance, report evidence that underpricing occurs extensively in every country: on average it amounts to more than 15% in countries with a developed financial system

and around 60% in emerging markets. Many theoretical explanations rely on the asymmetric information problem regarding the issuing firm’s value as the cause of this empirical regularity. These explanations usually differ in the assumed information structure.¹ Asymmetric information among better informed investors and other investors—as well as the issuing firm or its underwriting bank—imposes a winner’s curse on uninformed investors (Rock 1986). In this case underpricing compensates the uninformed investors that tend to purchase a larger share of lower value firms equities. The same assumption regarding the information structure may imply that underpricing compensates informed investors for revealing their private information to the underwriter (Benveniste and Spindt 1989). When the issuing firm is the only informed party in the IPO, then high-quality firms may choose to be underpriced if underpricing is perceived as a signal to separate themselves from low-quality firms (Welch 1992). At the same time, if the firm hires a prestigious underwriter that usually refrains to underwrite low-quality firms, this may reduce investors’ incentives to produce their own information, which in turn will mitigate the winner’s curse (see, among others, Carter and Manaster 1990 and Megginson and Weiss 1991). Since underpricing is due to lack information on some party involved in an IPO transaction, information extraction should alleviate the problem. Schenone (2004) shows indeed that banking relationships between the underwriter and the firm ameliorate the asymmetric information problem and reduce the underpricing. Evidence we provide is consistent with this conclusion.

As the ex ante uncertainty increases, the winner’s curse problem faced by uninformed investors increases, and thus the degree of underpricing has to increase too.² Jenkinson and Ljungqvist (2001) summarize many of the studies that have looked at the relationship between ex ante uncertainty and underpricing by grouping the proxies of uncertainty into four main categories: company characteristics, offering characteristics, prospectus disclosure, and aftermarket variables. Popular proxies for company characteristics relate to the age and the size of the company; in general, evidence supports the theoretical prediction (Megginson and Weiss 1991; Ljungqvist and Wilhelm 2003; Ellul and Pagano 2006). Benveniste et al (2003) also shows that underpricing is higher when the firm value depends more greatly on growth opportunities and other intangible assets. Variability of offering characteristics is instead exploited by Habib and Ljungqvist (2001) who proxy uncertainty with the underwriting fee: insofar as

¹Alternative explanations rely on institutional factors (Ibbotson 1975; Ruud, 1993; Schultz and Zaman 1994), the separation between ownership and control (Brennan and Franks 1997; Stoughton and Zechner 1998), the aftermarket illiquidity that may result from asymmetric information after the IPO (Ellul and Pagano 2006).

²Although underpricing is a common feature of IPOs, some issues decline in price once they start being traded. Thus a potential investor submitting a purchase order is uncertain about the value of the firm that goes public, and in turn about the price that will prevail once the stocks start publicly trading. Beatty and Ritter (1986) argue that the greater this ex ante uncertainty, or the less is known about the share value, the greater is the expected underpricing. Thus, the latter reflects the strength of asymmetric information and may be interpreted as an indirect cost of raising equity finance.

the risk borne by the underwriter increases with the level of uncertainty, then the level of fee, which at least in part is due to compensate such risk, provides a measure of uncertainty.

Regarding geographic proximity in finance, empirical evidence suggests that the choices of different types of financial operators are driven by local bias due to easier access to value-relevant information. French and Porterba (1991) state that most investors hold nearly all of their wealth in domestic assets because they know less about foreign markets, institutions and firms. Coval and Moskowitz (1999, 2001) find evidence of local bias in investors' choices also within the national financial market. Proximity is expressed in terms of physical distance between investors and the legal headquarters of the firms. The information advantage is in part related to access to private information on local companies. Malloy (2005) and Bae et al (2008) show that the accuracy of forecasts and recommendations provided by analysts geographically proximate to the firms are more accurate than those of distant analysts. According to Loughran and Schultz (2005) and Loughran (2008), since geographical distance from a company reduces familiarity and relatively few investors are located near rural firms, trading costs for Nasdaq stocks are higher for companies located in rural areas and rural firms are less likely than urban ones to raise equity financing through public offerings. Pirinsky and Wang (2006) argue that the physical proximity of investors also enables social interaction that promotes the transmission of investment sentiment and information among members of a community. Since physical proximity to a firm allows to extract better information, Klagge and Martin (2005) argue that a single financial centre could result in funds being biased towards those firms within close proximity to the financial centre, relative to more distant firms. Consistent with such prediction, Wojcik (2009) shows that provincial firms are less likely to go public than firms located in financial centres. Finally, Knyazeva and Knyazeva (2012) finds that loan spreads are increasing in the distance between borrowers and lenders.³

Arguably, proximity of underwriters to issuing companies should facilitate the dissemination of important information also through informal means. In particular, if physical proximity reduces asymmetric information between the underwriter and the firm, and if asymmetric information between key parties to an IPO transaction explains underpricing, then firms closer to the underwriters might face less of an asymmetric information problem than an otherwise equal firm would face. Similarly, the easier is the information extraction about the value of the IPO firm, more homogeneously is information distributed among the key parties to an IPO transaction, the lower the underpricing should be. Since a spatially centralized financial system implies that underwriters are part of the financial centre of a country, the shares of firms more distant from the financial centre should be more underpriced. To a large extent, the value of proximity does not seem to be affected by recent technological advances in the process of information transmission: distance still inhibits soft information and tacit knowledge flows since, by their nature, such kinds of information

³Further evidence is provided by Huberman (2001), Grinblatt and Keloharju (2001), Ivkovic and Weisbenner (2005).

are not easily transferable across space.⁴

Looking at a large number of IPOs in France, Germany and Italy we provide evidence consistent with the idea that soft information and informal relationships help to resolve the asymmetric information problem between underwriter and issuing firm. Specifically, we show that the lower is the distance of an issuing firm headquarter from the financial centre of its country, the higher is the difference between the offer price and the first day average traded price. Thus, our evidence suggests that differences in the observed size of underpricing are due at least in part to the way the uncertainty is resolved rather than to differences in the uncertainty itself or the fundamental risk of issuing firms. More in general, evidence in the present paper is consistent with the idea that there exist very effective, non-standard financing channels based on relationships, and that they can substitute for and do better than standard channels and mechanisms based on hard market criteria (Allen et al 2005).

If the underpricing is interpreted as an indirect cost of raising equity finance (as in Ritter 1987 and Eckbo 2008), our main evidence highlights the handicap mainly faced by younger and smaller firms that cannot benefit of proximity to a financial centre. In this respect, our results accord with the relative inability of such firms to access public equity markets, rather than their ability to find other, more efficient channels to finance their investments (Pagano et al 1998). More in general, as financial centres are usually located in the richest areas of the countries concerned, spatial difference in the cost of equity financing may contribute to the persistence of local disparities.

The results are robust to a series of checks, including controls for ex ante uncertainty, sector of firms, country characteristics. Also, we show that the results are not driven by some subsets of firms very close to, or far away from the financial centres of the countries concerned. Further, we provide some evidence supporting the idea that informal relations affecting underpricing are indeed used to extract information rather than to favour relatives and friends.

The paper is organized as follows. In section 2 we present the data and the empirical model. Section 3 shows the results for the three European countries considered, while section 4 concludes.

⁴Stein (2002) uses the term *soft* to describe the type of information that cannot be directly verified by anyone other than the agent who produces it. Gertler (2003) uses the term *tacit* for knowledge that cannot be created successfully through exchange of information at distance, but necessitates frequent face-to-face contact. Regarding IPOs, beyond financial statements and plans available in a codified form of spreadsheets or reports, the underwriter needs to know the integrity and reputation of the issuer's executives. Agnes (2000) found that the financial sector requires face-to-face interaction (for instance, conferences, site visits, dinners and informal meetings) obviously facilitated by spatial proximity.

2 Data description and empirical model

Our goal is to investigate whether proximity to financial centre matters for IPO underpricing. Main evidence comes from the geographical distribution of IPOs within three European countries, that is France, Germany and Italy. In particular, to investigate our main hypothesis we have assembled an original data set containing information on IPOs underpricing and the issuing firms' distance from the financial centre of the countries concerned, as well as on other factors whose role in affecting underpricing has already been tested in the literature.

A financial centre is usually identified with a city or a localized area within city boundaries in which high financial level functions and services are concentrated. It includes activities of commercial banking, investment banking, insurance and a stock exchange. In this paper, we identify the financial centre of each country considered as the city where the main stock exchange of the country is located and measure the distance from the financial centre as the distance from the stock exchange.

Our criteria point to the cities of Milan and Paris as the two financial centres of, respectively, Italy and France. The headquarters of the most important banks and almost all financial operators and institutional investors are headquartered in Milan, where the only Italian stock exchange is located. The case of France is similar. Our choice proves consistent with the Global Financial Centres Classification (GFCC), which reports Paris as the only financial centre in France, ranked 20th worldwide, and Milan and Rome as the two Italian financial centres. Rome, however, enters the GFCC only because almost all *state-run* enterprises are headquartered there.

Unlike from France and Italy, six cities in Germany have stock exchanges; just two of them are however indicated as financial centres by the GFCC, that is Frankfurt and Munich. For the purpose of our investigation we identify the German financial centre with the city of Frankfurt: the Frankfurt Stock Exchange is by far the largest of Germany's six stock exchanges in terms of turnover—roughly 90% of total turnover is concentrated in the Frankfurt Stock Exchange—and it is one of the largest stock exchange in the world. Hence, our choice seems consistent with the idea of a national financial centre.⁵

Following Coval and Moskowitz (2001), we define a firm's location as the location of its headquarter. Corporate headquarters are usually close to corporate core business activity, especially for small firms. Moreover, and more important, this is the place where corporate decisions are made and it is the centre of information exchange and information production.

⁵There are four more cities with their own stock exchange and a number of regional banks, that is Berlin, Hamburg, Dusseldorf and Stuttgart. In recent years, however, the German financial system has witnessed a concentration of activities in the Frankfurt Stock Exchange. In reaction to this process the regional stock exchanges have pursued niche strategies in market segments neglected by Frankfurt. For instance, the Berlin Stock Exchange has a strong focus on secondary listing of foreign companies, such as US or Chinese companies.

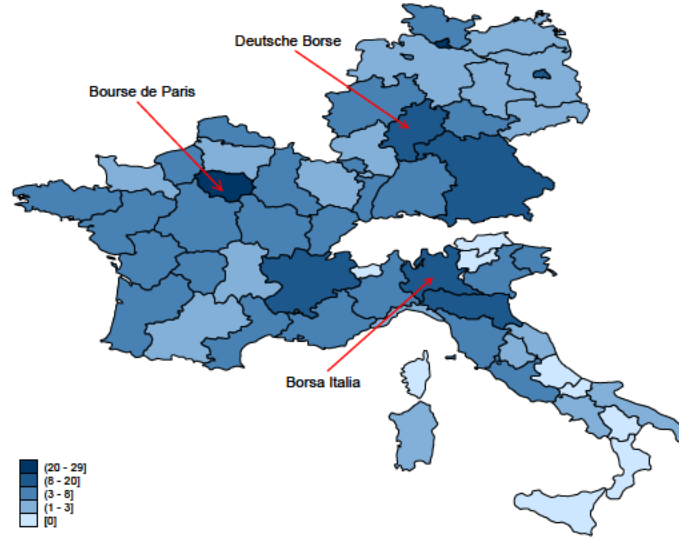


Figure 1: Regional Distribution of IPOs in France, Germany and Italy

We analyze all the IPOs undertaken on the Frankfurter Wertpapierbörse, the Bourse de Paris, and the Borsa Italia from 1996 for France and Italy, or from 1997 for Germany, up to 2009. IPOs related to foreign firms as well as national firms with their own headquarters in a foreign country are excluded from the sample.⁶ This leaves us with 1349 IPOs. Figure 1 shows their regional distribution (per million inhabitants) and also indicates where the three financial centres are located. We note that in France and Germany firms going public are present in all regions, even though about 50% of all French IPOs are relative to firms headquartered in Paris. In Italy instead issuing firms are concentrated in 13 out of 20 regions.

When the baseline specification is estimated, we measure underpricing as the natural logarithm of the ratio of the after-market price to the offer price, that is $\ln(P/S)$ where P is the closing price of the first trading day—in line with the existing IPOs literature—and S is the subscription price.⁷ This measure, previously adopted by Ellul and Pagano (2006) among others, differs slightly from the percent return from the offer price to the after-market price, $(P/S) - 1$, which is more often used in the literature. As Ellul and Pagano, we rely on the former as it implies values of skewness and kurtosis much closer to those of a normally-distributed variable. However, we also test our main empirical hypothesis by using the latter and find that, as expected,

⁶The Borsa Italia is divided into three markets, that is the main board (MTA) and two markets for, respectively, small caps — mainly cooperative banks and local utility firms — and small firms with high growth potential. In general, however, different regulatory procedures apply in the last two markets and shares of listed firms are scarcely traded. Hence, we do not include them in our sample.

⁷The sources of the data are Nyse-Euronext, Deutsche Börse Group and Borsa Italia. See the appendix for further details.

results are qualitatively the same.

The baseline estimated equation is

$$Underpricing_{i,t} = a + bDistance_{i,t} + \delta \mathbf{X}_{i,t} + \gamma_{c,t} + \varepsilon_{i,t} \quad (1)$$

where i denotes the firm, t denotes the year when the firm goes public, $\gamma_{c,t}$ refers to time-specific and country-specific fixed effects as well as their interactions to control for unobservable aggregate cyclical variations of the stock markets of the three countries analyzed, while \mathbf{X} is a vector of control variables (hence δ is a vector of parameters).

The key explanatory variable of the empirical investigation, namely *Distance*, is measured as the (natural logarithm of the) physical distance expressed in kilometers between the legal headquarter of an issuing firm and the stock exchange of the country where the firm is located. Hence, we expect $b > 0$: the greater is the distance the higher is the level of underpricing. To investigate this hypothesis we rely on OLS estimators and standard errors robust to heteroskedasticity as well as spatial correlation within regions.

In our sample issuing firms are distributed among Industry, Non-Financial Services, and Financial Services sectors. Industrial firms account for about 65% of the total, while financial firms are roughly 10% of all firms in the sample. To control for the possibility that the geographical clustering of sectors drives the results (and to take into account that the size of underpricing may be sector-specific) we add two dummies identifying firms operating in the Non-Financial Services and Industry sectors.⁸ Moreover, we also add the dummy *New Market* to identify firms listed, respectively, in the “Nouveau Marché” (France), “Neuer Markt” (Germany) and “Nuovo Mercato” (Italy).

We control for fundamental risk (also) by predetermined variables such as *Size* (measured by the logarithm of total assets in the year before the IPO) and *Age* (measured by the difference between the year of listing and the year of establishment). Firm’s size and age have previously been interpreted as proxies for investors’ ex-ante uncertainty. For instance, Leland and Pyle (1977) and Ritter (1986) argue that it is a difficult task to estimate correctly the value of younger and smaller firms, which generally feature more risk. Thus the valuation of their shares is affected by high uncertainty. A similar argument might be true of IPOs undertaken by companies in the information and communication technology (ICT) sector, as shown by Loughran and Ritter (2004) on U.S. data. This is important for our sample, which includes the dot-com bubble. Hence, we would expect the coefficient of an *ICT* dummy to be positive, and those of *Size* and *Age* to be negative.

It may be argued that listing firms headquartered in areas characterized by high degree of human capital may be managed by directors with high domain expertise

⁸For Italian IPOs the source is Borsa Italia, while for French and German IPOs the source is Universoft.

that facilitate the information flows between the firm and the capital market, reducing the uncertainty about the evaluation of their company (Knyazeva et al 2013). If regions close to financial centres are systematically characterized by an higher level of human capital than the average, then a positive correlation between *Underpricing* and *Distance* would emerge. To control for this channel, we add to the set of regressors the ratio between the number of students at the level 5 and 6 of the ISCED classification in 2000 and the regional population. Level 5 and 6 include students of first and second stages of tertiary education—Bachelor, Master and Ph.D. degrees. In the following we refer to this variable as *Human Capital*.

During periods of high market volatility underwriters and investors tend to be more careful in valuing the IPOs. Thus, coeteris paribus we may expect higher underpricing when the volatility is relatively high. Since we analyze IPOs relative to different years, a spurious positive (negative) correlation between *Underpricing* and *Distance* may arise if, incidentally, in years characterized by higher market volatility most issuing firms happen to be clustered far from (or near to) the financial centre. The time-fixed effect provides a way to control for this outcome, mainly if the impact on underpricing tends to be exhausted within a calendar year. However, to more properly handle with such a possibility we expand the set of regressors with the variable *Volatility*, defined as the logarithm of the standard deviation of each country market index during the 60 working days before the listing day. Moreover, we also consider the variable *Return*, that is the percentage change of each market index through the 20 working days before the listing day. If, for instance, the days before the listing one are characterized by a bullish market phase then we may forecast relatively high equity values also during the listing day. Thus also in this case we expect a positive correlation with the size of underpricing.⁹

Pagano et al (1998) note significant differences in those factors underlying the decision to go public taken by privatization IPOs (PIPOs), equity carve-outs (ECOs)—a case arising when the issuing firm belongs to a group the holding company of which is already listed—and independent IPOs. As concerns the present paper, the most relevant difference is that PIPOs and ECOs are less risky than independent IPOs (see, for instance, Jenkinson and Ljungqvist 2001) and thus they should be characterized by a lower level of underpricing. Two dummies identifying such IPOs control for this potential systematic difference.

While all Italian IPOs and most of IPOs in Germany use the bookbuilding procedure, about one third of French IPOs in our sample follow different procedures. Previous empirical work has shown that, other things being equal, the floating mechanism may affect the level of underpricing.¹⁰ In order to control for such a possibility, we introduce a dummy which identifies IPOs characterized by bookbuilding procedure.

⁹The market indices used for constructing the two variables are the CAC40 for France, the DAX30 for Germany and the Mib30 for Italy.

¹⁰Derrien and Womack (2003), for instance, find that in France the auction mechanism is associated with lower underpricing than the bookbuilding one. See also Cornelli and Goldreich (2003).

3 Results

In this section we report results of our empirical investigation. In particular, after a simple statistical comparison between IPOs underpricing of firms relatively close or distant from the corresponding financial centres, we report estimates of the baseline specification, that is equation 1. We conclude that the level of IPOs underpricing is affected by how close underwriters and listing firms are. Then, we show the robustness of the main conclusion by investigating whether it is driven by a particular subset of IPOs related to firms located very close or very far from the financial centres. Given that, we recognize two distinct explanations for our conclusion: information acquisition and favoritism. Evidence relative to the interaction between *Distance* and proxies for ex ante uncertainty tends to favour the information theory. Finally, we report some further sensitivity results.

Baseline evidence

As a simple preliminary evidence Table 1 shows the mean difference of IPOs underpricing when the total sample is splitted into two groups according to the median of *Distance*. For both measures of underpricing considered, it follows that the mean underpricing of IPOs related to firms closer to the financial centres is lower than the corresponding value related to more distant firms. In particular, the difference is economically and statistically highly significant (p -value less than 0.001). The difference is about 7% when the logarithmic transformation is adopted and about 11% otherwise. If such values are interpreted in a causal way they imply that firms located relatively far from a financial centre could be quite disadvantaged by their higher cost of equity capital.

Controlling for a number of factors that might affect underpricing does not alter the main conclusion of the preliminary evidence: we find a clear positive relationship between *Underpricing* measured as $\ln(P/S)$ and *Distance*, when versions of equation 1 are estimated (see Table 2). In all specifications considered the coefficient b is estimated positive and statistically significant at the usual confidence level. In particular, the inclusion of control variables mainly tend to reduce the standard error attached to the estimator of b while the point estimate of such coefficient is only slightly altered. This suggests that our main regressor is poorly correlated with the controls considered.¹¹ Overall, our evidence fully supports the hypothesis that the level of underpricing tends to increase with the firm's distance from the financial centre. To provide some quantification of the additional costs incurred by peripheral firms, we note that according to the estimated difference firms located 100 kilometers away from the financial centre of their country are characterized on average by 5% more underpricing than firms within the financial centre.

All estimated coefficients attached to controls have the expected sign and many of them are statistically significant. That measuring the impact of *Age* is estimated

¹¹Note that since adding the controls to equation 1 reduces the sample, we have also checked that results without the controls, but with the reduced sample, are virtually the same.

negative and statistically significant, while those attached to *Return* and *Volatility* are estimated positive. Also for the latter two variables the relationship with underpricing is statistically significant at the usual confidence level. It follows that younger firms face a higher level of underpricing than older ones, arguably due to the uncertainty about their true values. Our index of human capital is negatively correlated with the level underpricing suggesting that more human capital may help in determining correctly the value of an issuing firm or more in general in alleviating information asymmetries. The larger underpricing when the market is bullish is consistent with the evidence found by Coakley et al (2009) looking at the IPOs issued on the London Stock Exchange between 1985 and 2003. Finally, we note a positive coefficient for the dummy *New Market* and for that identifying the bookbuilding IPOs procedures.

Sensitivity Analysis

Some areas may drive a disproportionate influence on our estimates if a relatively large number of issuing firms are headquartered in such areas. For instance, this may be the case for regions where the stock exchange are located as well as for other regions much richer than the country average. We address this issue by analyzing the extent to which our main evidence is sensitive to the exclusion of any particular region from the analysis. In Table 3, we report results excluding the following regions in turn: Assia, Ile de France, Lombardia, Baviera and Nord Reno Westfalia. These are the regions characterized by the most episodes of IPOs in our sample; the first three regions are also those where the stock exchanges are located. In our check, no single region appears to be a crucial driver of our estimates. Estimates of b are always statistically significant at the 5 percent level.

The geography of Italy is very specific: It has to be the case that long-distance IPOs come from the South. Since many authors have argued that Southern Italy is culturally very different from Northern Italy, it would not be distance but the South-effect that we might be capturing. A similar argument, of course, may apply to peripheral areas in Germany and France, too. In order to check the relevance of this argument for our conclusion, as a first instance, we re-estimate the baseline specification dropping all IPOs related to the upper quartile of the distribution of *Distance* (Periphery 1). Again, the coefficient b is estimated economically and statistically significant, the point estimate being higher than that recovered for the entire sample.¹² A different exercise is reported under the heading Periphery 2. Now the baseline model is estimated considering the following definition for *Distance*: $\frac{D}{1+D}$, where D is the physical distance expressed in kilometers between the legal headquarter of an issuing firm and the stock exchange of the country. Since this measure is characterized by an upper bound as D tends to infinite, it implies less weight of long-distance IPOs in estimating b than the logarithm of D used previously. Also in this case our main conclusion applies: the more the distance of listing firms from the underwriters the less the underpricing.

Information Acquisition Vs. Favoritism

¹²A similar result applies by dropping IPOs characterized by values of *Distance* above the median.

A well performing financial system should help potential entrepreneurs to raise capital from the market to finance activities characterized by relatively high expected returns. Information acquisition about potential entrepreneurs should be crucial to efficiently convey funds from financiers to entrepreneurs. A recent strand of literature on finance questions the relevance of the standard mechanisms of financial intermediation based on information acquisition through hard market criteria. Capital allocation as well as the allocation of credit by banks and financial institutions seem to be also based on soft terms and informal relations. Evidence by Allen et al (2005) on China, for instance, suggests that mechanisms based on reputation and relationships can do better than standard channels and mechanisms. Sometimes, however, soft criteria implies that capital allocation is biased towards friends and relatives (Charumilind et al 2006) or by social ties (Banerjee and Munshi 2004).¹³

Evidence that IPOs underpricing is affected by how close listing firms are to underwriters may be rationalized in two different ways: as evidence of information acquisition or favoritism. In order to shed light on this issue we note that in pricing an IPO the relevance of the acquisition of information should be stronger the larger is the ex ante uncertainty regarding the true value of the listing firm. In other words, if the underpricing is due to information asymmetry between underwriters and listing firms *and* distance matters for alleviating such asymmetry, then distance should be more relevant when the asymmetry is relatively strong, that is when the uncertainty regarding the value of the firm is high. To investigate the validity of this conclusion, we add to the set of regressors the interaction between *Distance* and *Age* (taken as difference from the median) and that between the former and *Size* (taken as difference from the median). Under the maintained assumption usually considered in the literature that younger and smaller firms are characterized by higher uncertainty regarding their values, the coefficients attached to the two interactions should be both estimated negative. Table 4 in the first two columns shows that this is exactly the case in our sample: both coefficients are estimated negative and strongly statistically different from zero—the *t*-statistics are, respectively, $\square 4.20$ and $\square 3.42$.

In the third column of Table 4 we consider as additional regressor the interaction between *Distance* and *Volatility* (taken as difference from the median). If during periods of high market volatility underwriters tend to be more cautious, then in these periods being close to the underwriters may be more relevant than when volatility is low. The coefficient of the interaction is indeed estimated positive although not statistically different from zero. When all three interactions are allowed in the empirical model than, as before, those constructed with *Age* and *Size* have a negative impact. That due to *Volatility* has a positive impact with a *t*-statistic that becomes 1.70. Thus, overall our evidence favours the information theory of underpricing and tends to suggest that informal relationships are used for better information extraction.

¹³Giannetti and Yu (2013) formalize the idea that investment behavior and capital allocation are often driven more by prior connections rather than by information on future expected returns. Their model proposes that informal mechanisms to allocate capital may be preferable to formal finance in emerging economies and that only at later stages of development formal finance is welfare enhancing.

Further results

We close the empirical investigation by further investigating the properties of our empirical model. Specifically, we analyze whether the main conclusion is robust to alternative definitions of underpricing.

The first column of Table 5 reports estimates when underpricing is measured in the more traditional way, as return from the offer price to the after-market price. If any, now the effect of the distance on underpricing is amplified: the coefficient of interest is estimated higher than before—and statistically significant at 5 percent. Thus, our preferred specification discussed previously may be interpreted as delivering a lower bound for the effect of distance on underpricing. In the second column we report estimate of b adopting the alternative definition of distance. Result is consistent with the main conclusion.

The last two columns refer to measure of underpricing as the natural logarithm of $\frac{U+U_{low}}{U_{low}}$ where $U = \frac{P-S}{S} \times 100$ and U_{low} is the absolute value of the lowest U in the sample. In this case the values of skewness and kurtosis of underpricing are even closer to those of a normally-distributed variable. Results are qualitatively the same, the main difference being that now the coefficient of interest is more precisely estimated.

4 Conclusions

A well performing financial system should help potential entrepreneurs to raise capital from the market to finance their investments. Standard theory suggests that to achieve the goal of efficiently conveying funds from financiers to entrepreneurs, information acquisition about expected return of potential entrepreneur activities should be based on hard market criteria. A recent strand of literature on finance suggests, however, that capital allocation as well as the allocation of credit by banks and financial institutions are also based on soft terms and informal relations that help information extraction. In this paper we provide evidence consistent with the relevance of informal relations in finance and supporting the view that local bias is driven by the informational advantage of nearness.

By looking at IPOs in France, Germany and Italy, we show that the distance of firms going public from the corresponding financial centre affects the size of underpricing. Point estimate implies that firms distant 100 kilometers from the corresponding financial centre face about 5% higher underpricing than firms within close proximity to it. Under the maintained assumption that underwriters are clustered within financial centres, evidence suggests that informal mechanisms ameliorate asymmetric information problems behind IPO underpricing. Sensitivity analysis supports our interpretation in terms of information acquisition when compared to the alternative of favoritism. Thus, our results support the notion that local information advantage, shown in previous work for investors and banks, is equally relevant in analyzing firms that go public.

If we consider the size of underpricing as the main indirect flotation cost, our evidence implies that peripheral firms share a larger cost of equity financing than others. This seems to be particularly true for younger and smaller firms, that is those characterized by higher ex ante uncertainty about profitability of their activities. Thus, distance from the financial centre may be an obstacle to the growth of such firms.

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Data appendix

For each country considered, our sample includes IPOs of domestic firms that take place on the Italian Stock Exchange (Borsa Italia), the French Stock Exchange (Paris Bourse), and Frankfurt Stock Exchange. IPOs related to foreign firms as well as to national firms with their own headquarters in a foreign country do not enter our sample. Splits from already listed companies, transfers between market segments and direct listings are not considered IPOs. On 22 September 2000, the bourses in Paris, Amsterdam and Brussels merged to create Euronext, the first pan-European stock exchange. Since then we assigned to France the flotations of French companies that select Paris as their point of access to Euronext—this determines the applicable legislation and regulatory jurisdiction. The sample period starts in 1996 for French and Italian IPOs, one year later for German ones.

For French and German IPOs the source of data is the EurIPO database, which provides information about IPOs related to European stock exchanges. For Italian IPOs instead the sources are the Yearbooks of Borsa Italia, the prospectus of listing firms and information available on the web site of “Borsa Italia”. The main variables considered are computed as follows.

Underpricing is computed as $\ln(P/S)$ where P is the closing price for the first day of trading and S is the subscription price.

Distance is the natural logarithm of the physical distance in kilometers between the headquarter of the listing firm and the stock exchange of either Paris, Frankfurt or Milan depending upon the country where the headquarter of the firm is located.

Size is the total asset (expressed as MLD Euro) in the year before the IPO. The sources of data are the prospectus of listing firms for Italian IPOs and Universoft for French and German IPOs.

Age is the difference between the year of IPO and the year of establishment. The sources of data are the prospectus of listing firms for Italian IPOs and Universoft for French and German IPOs.

Return is the percentage change of the market index (either CAC40, DAX30 or MIB30) in the 20 working days before the first day of trading. The source of data is Freestocks, an official provider of stock market data.

Volatility is the logarithm of the market index standard deviation (either CAC40, DAX30 or MIB30) in the 60 working days before the first day of trading. The source of data is Freestocks.

Human Capital measures the degree of human capital available in a region and is computed as the number of students at level 5 and 6 of the International Standard Classification of Education (ISCED 97) in 2000 divided by the regional population. Level 5 and 6 include students of first and second stage of tertiary education (Bachelor, Master and Ph.D. degrees).

Table 1: Underpricing and Distance
Mean Difference Test

	Short	Long	Difference
Underpricing 1	0.106 (0.000)	0.174 (0.000)	0.0672 ^{***} (0.0001)
Underpricing 2	0.174 (0.000)	0.288 (0.000)	0.1141 ^{***} (0.0031)
Observations	674	675	1349

Note: The table shows results of mean difference tests relative to IPOs underpricing. We divide the total sample of observations into two groups: those below the median of the distance from financial centres (Short) and those above the median (Long). "Difference" reports variations in mean underpricing between the two groups. As measure of underpricing, we consider the $\ln(P/S)$, where P is the closing price of the first trading day and S is the subscription price, in the row labelled with "Underpricing 1" and $(P/S)-1$ otherwise. The p-value of the mean difference test is reported in brackets: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2: IPOs Underpricing and Nearness to Financial Centre

	(1)	(2)	(3)	(4)	(5)
Distance	0.0078*	0.0090**	0.0086**	0.0084**	0.0095**
	[2.37]	[3.05]	[3.33]	[3.26]	[3.45]
Non-Financial Sector		-0.0376	-0.0112	-0.0153	-0.0173
		[-1.24]	[-0.38]	[-0.52]	[-0.61]
Industry		-0.0497	-0.0223	-0.0237	-0.0294
		[-1.69]	[-1.21]	[-1.21]	[-1.76]
Human Capital		-0.0690**	-0.0687**	-0.0700**	-0.0555**
		[-2.76]	[-2.84]	[-2.91]	[-2.68]
New Market		0.1590***	0.1442***	0.1443***	0.1431***
		[5.19]	[6.13]	[6.18]	[6.31]
ICT		0.0457*	0.0564**	0.0584**	0.0617**
		[2.39]	[2.76]	[2.80]	[3.13]
Bookbuilding			0.0250	0.0245	0.0239
			[1.67]	[1.62]	[1.60]
Age			-0.0004*	-0.0004*	-0.0004*
			[-2.39]	[-2.43]	[-2.32]
Size			-0.0003	-0.0005	-0.0003
			[-0.92]	[-1.32]	[-0.70]
PIPOs				0.0380	0.0183
				[1.39]	[0.66]
ECOs				-0.0153	-0.0159
				[-0.52]	[-0.53]
Volatility					0.1037*
					[2.25]
Return					0.0069**
					[3.15]
Observations	1349	1349	1211	1211	1211

Note: The table shows results of estimating the empirical model reported in the main text. All specifications estimated contain dummies for time-specific and country-specific fixed effects as well as for their interaction. The t-statistic is reported in brackets: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 3: IPOs and Distance, Sensitivity Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Assia	Ile de France	Lombardia	Baviera	Westfalia	Periphery 1	Periphery 2
Distance	0.0082** [3.17]	0.0146** [3.40]	0.0083* [2.54]	0.0089** [3.50]	0.0097** [3.43]	0.0159** [3.60]	
Distance (Alternative)							0.1463*** [3.75]
Observations	1160	879	1133	1103	1131	911	1211

Note: All specifications estimated contain the full set of controls as in the last column of Table 2. The t-statistic is reported in brackets: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4: Information Vs. Favoritism

	(1)	(2)	(3)	(4)	(5)
Distance	0.0110*** [3.71]	0.0097** [3.50]	0.0076* [2.59]	0.0093** [3.09]	0.0111*** [3.71]
Distance*Age	-0.0002*** [-4.20]			-0.0002*** [-4.07]	-0.0002*** [-3.85]
Distance*Size		-0.0004** [-3.42]		-0.0003* [-2.62]	-0.0003** [-2.83]
Distance*Volatility			0.0065 [1.49]	0.0073 [1.70]	
Observations	1211	1211	1211	1211	1211

Note: All specifications estimated also contain the full set of controls as in the last column of Table 2. The t-statistic is reported in brackets: * p<0.05, ** p<0.01, *** p<0.001.

Table 5: Further Results

	(P/S)-1	(P/S)-1	Relative	Relative
Distance	0.0152* [2.21]		0.0243*** [5.46]	
Distance (Alternative)		0.2959*** [3.94]		0.2713* [2.53]
Observations	1211	1211	1211	1211

Note: All specifications estimated also contain the full set of controls as in the last column of Table 2. Results under the heading “Relative” are obtained with the following measure of underpricing: $\frac{U+U_{low}}{U_{low}}$ where $U = \frac{P \square S}{S}$ and U_{low} is the absolute value of the lowest U in the sample. The t-statistic is reported in brackets: * p<0.05, ** p<0.01, *** p<0.001.