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IPO Underpricing and the Location of Firms

Antonio Acconcia*, Alfredo Del Monte†, Luca Pennacchio‡ and Germana Scepi§

Abstract
We employ a sample of initial public offerings (IPOs) realized in Italy, France, and Germany over the period 1996-2019 to investigate the relationship between the degree of underpricing and the distance of the firms to financial centers. Italian and French IPOs of firms headquartered outside the reference financial center are associated with greater underpricing on average. In Italy, the greater the distance from a financial center the greater the underpricing. However, in the German case the effect of distance is statistically insignificant. Differences in the degree of local financial development across countries might explain the different relevance of firms' locations.

Keywords: IPO Underpricing, Distance, Financial Center, Financial Development.

JEL Classification: C58, D82, E44, G14, R1.

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1 Introduction

Recent work on China suggests that the location of initial public offer (IPO) issuing companies matters for the degree of IPO underpricing. It has been shown that issuers headquartered closer to a financial center are associated with less underpriced IPOs, compared to more distant issuers (Berns et al., 2014; Huang et al., 2019).[1] It seems that a shorter physical distance allows institutional investors to obtain firm-specific soft information at lower cost.[2] In this paper, we investigate whether this result is generalizable to other countries characterized by different levels of financial development.

If the advantage of proximity reduces as financial institution efficiency and the supply of financial services increases, then the relevance of distance may differ across markets. To investigate this, we examine three European countries—France, Germany, and Italy—which geographically are quite proximate but show very different levels of financial development. The degrees of investor protection, public enforcement, and transparency in the national legal structures—required for the evolution of the equity market (La Porta et al., 1998)—differ among these three countries. The anti-director rights index proposed by Djankov et al. (2008) which ranges from 1 for the lowest level of protection to 5 for the highest level, ranks Italy as 2.5 and France and Germany as 3.5.[3] In turn, the opacity index by Kurtzman et al. (2004) which tries to capture the real costs of doing business based on level of legal and regulatory complexity, suggests that the most opaque country is Italy while Germany is the least opaque. The local financial institutional structure also varies across these countries. The financial market is regionalized in Germany whereas in France and especially in Italy it is concentrated in certain centers (Wójcik, 2002; Papi et al., 2017). In Germany, Frankfurt is the leading stock trading center and hosts the corporate headquarters of many German financial institutions but Munich is also an important financial hub. However, in France and Italy the stock exchange and headquarters of most of the major credit institutions are located respectively in Paris and Milan. Previous evidence for Italy suggests that operating in different areas of the country has a significant impact on firm productivity since financial services differ greatly from region to region (Bellucci et al., 2013). Therefore, if geographical proximity matters because financing depends more on personal relationships than market criteria, the effect of distance should be strongest for Italy and weakest for Germany.

We constructed an original data set containing information on the location of 1,709 issuing firms since 1996 and the extent of the IPO underpricing. IPOs from companies headquartered in the financial centers of Milan and Paris are characterized by lower underpricing on average, compared to the IPOs of companies located elsewhere. However, for Germany the effect of location is statistically insignificant. In the case of Italy, the location penalty increases with the distance from the financial center: Companies headquartered 200 kilometers from Milan exhibit greater underpricing by roughly 9 percentage points. We also find that Italian entrepreneurs tend to locate their firms close to Milan.

The main findings are robust to controls for regional human capital, firm sector, and how the underpricing is measured; they are not driven by the dot-com bubble. Since underpricing

[1] For the U.S., Nielsson and Wójcik (2016) find lower underpricing associated with issuers located close to financial professionals while Karahan (2017) shows that geographically more dispersed firms experience greater IPOs underpricing.

[2] In line with this conjecture, Berns et al. (2014) find that if firms are able to signal their good quality underpricing is reduced, while Huang et al. (2019) show that the opening of a new bullet train route mitigates the impact of geographical location.

[3] The index is based on the idea that better investor protection is associated with laws that explicitly mandate, or set as a default rule, provisions that are favorable to minority shareholders. The authors show that a 2 standard-deviation increase in the index is associated with an increase of 1.5 percentage points in the IPO-to-GDP ratio.

represents an indirect cost of equity finance (Ritter, 1987), our evidence for Italy and France is in line with the relative inability of some firms to access public equity markets rather than their ability to find other, more efficient funding channels (Pagano et al., 1998). More generally, our findings suggest that the advantages of proximity and the local bias depend on the degree of local financial development.[4]

The remainder of the paper is organized as follows. Section 2 describes the data and the empirical model, section 3 presents the results, and section 4 concludes the paper.

2 Description of the data and the empirical model

A financial center is defined by the spatial concentration of financial institutions and services. It includes a stock exchange and commercial banking, investment banking, and insurance activities. According to the Global Financial Centres Index (GFCI), Paris is the only financial center in France and is ranked 20th worldwide, while in Italy both Milan and Rome are financial centers. The GFCI only ranks Rome since almost all Italian *state-run* enterprises are headquartered there. Milan hosts the Borsa Italiana—the Italian stock exchange—the most important banks, and almost all Italy's financial operators and institutional investors. In this paper, when we refer to the Italian financial center we thus refer to Milan. During the sample period, six German cities were home to stock exchanges; however, only Frankfurt and Munich are included in the GFCI. The Frankfurter Wertpapierbörse—the Frankfurt stock exchange—is the oldest stock exchange worldwide and was founded in the late 16th century; it is by far the largest stock exchange in Germany in terms of turnover. Therefore, when we refer to Germany's financial center we refer to Frankfurt.[5]

For Germany and Italy we consider IPOs undertaken on the Frankfurter Wertpapierbörse and Borsa Italiana, respectively, from 1996 to the first semester of 2019.[6] For France, we collected information on IPOs undertaken on the Bourse de Paris during 1996-2009 and 2013-2018. We excluded IPOs related to foreign firms and firms with headquarters in a foreign country resulting in a sample of 1,709 observations.

Underpricing is expressed as the natural logarithm of the ratio P/S, where P is the closing price on the first day of trading or the first day average traded price (depending on data availability) and S is the subscription price. This measure is used by Ellul and Pagano (2006) among others, and differs slightly from the percentage excess return from the subscription price, which also is used in the literature. We rely on the measure used by Ellul and Pagano since it implies skewness and kurtosis values that are much closer to those of a normally-distributed variable. However, our main conclusions hold also for the alternative measure. Moreover, following Coval and Moskowitz (2001) among others we identify firm location as location of its headquarters. Based on this definition, we observe that in France and Germany firms going public are present in all regions whereas in Italy this applies to only 13 out of 20 regions.

The equation to investigate the relationship between the degree of underpricing and the dis-

[4]Based on data for 32 countries, including the European Union, the USA and Japan, Wójcik (2009) provides evidence that companies close to financial centers are more likely to go public than their provincial counterparts; in particular, the financial center bias is quite strong in countries with underdeveloped stock markets. Acconcia et al. (2008) find lower listing probability for Italian companies headquartered distant from Milan.

[5]The regional stock exchanges of Berlin, Hamburg, Dusseldorf, and Stuttgart pursue niche strategies in market segments neglected by the Frankfurt Stock Exchange. For instance, the Berlin Stock Exchange focuses on secondary listings of foreign companies.

[6]The Borsa Italiana is divided into three markets: the Borsa Italiana main market (MTA) and two subsidiary markets including, respectively, cooperative banks and local utility firms, and small firms with high growth potential. Since the regulatory procedures for the main market are different from those of other two markets, we focus on the main market.

tance of the firms to financial centers is

$$\textit{Underpricing}_{i,t} = \alpha + \beta\ \textit{Proximity}_i + \gamma_t + \delta\ X_i + \varepsilon_{i,t} \tag{1}$$

where i denotes the firm, t is the year when the firm goes public, γ_t is a time-specific fixed effect to control for unobserved aggregate cyclical stock market variations, and X is a vector of the remaining controls (hence δ is a vector of the parameters). Clustered standard errors account for the possibility of spatial correlation within regions for any year.

Proximity is measured by the variables *Far* or *Distance*. The former is a dummy which equals 1 for firms headquartered outside the financial center and 0 otherwise; the latter checks whether more distant firms are more heavily penalized and is the natural logarithm of the shortest geographical distance between the company's headquarters and the stock exchange. Firms are assumed to be outside the reference financial center if this distance exceeds a given threshold, determined by the square root of the respective land areas of Milan, Paris, and Frankfurt. Changing the threshold slightly does not affect the main conclusions.[7]

If geographical proximity to financial center facilitates the acquisition of information through informal means we expect $\beta > 0$, that is the greater the distance from a financial center the greater the underpricing. Moreover, if the relevance of proximity depends on the efficiency of financial institutions, the underpricing-proximity relation should be stronger for Italy, the country in the sample with the lowest level of investor protection, the highest level of legal and regulatory complexity, and strong concentration of financial institutions.

Listing firms headquartered in areas characterized by high levels of human capital might be managed by more experienced managerial teams. If regions close to financial centers are systematically characterized by high levels of human capital, then a positive correlation between *Underpricing* and *Distance* might emerge which however would be unrelated to the effect of physical proximity. To control for this, we add the ratio of ISCED levels 5 and 6 students in 2000 to the regional population. Levels 5 and 6 refer to students in first and second stages of tertiary education—Bachelor, Master and Ph.D. degrees. We call this variable *Human Capital*.

Our sample includes firms operating in the information and communication technology (ICT) sector and firms which during the years of the dot-com bubble were listed on the so-called *New Market*, that is the Nouveau Marchè in France, the Neuer Markt in Germany, and the Nuovo Mercato in Italy. Loughran and Ritter (2004) for the U.S. suggest that it is difficult to estimate correctly the value of these types of firms since they are generally high risk companies. We control for any potential systematic difference between these firms and the rest of the sample using the variable ICT-NM which takes the values 1 for ICT firms or firms listed on the *New Market*, 2 for ICT firms listed on the *New Market*, and 0 otherwise. We also include a dummy to control for the possibility that geographical clustering of financial firms is driving the results.

During periods of high market volatility underwriters and investors tend to be more conservative when valuing IPOs. Thus, ceteris paribus we can expect greater underpricing during relatively high market volatility. Since we analyze IPOs related to different years, if in years characterized by higher market volatility most issuing firms happen to be clustered far from (close to) the financial center we may find a spurious positive (negative) correlation between *Underpricing* and *Proximity*. Time-fixed effect allows us to control for this outcome.

The sample mean underpricing is roughly 12%; under the alternative measure of underpricing it becomes 19%—a value very similar to that found by Ritter (2018) for IPOs in the U.S. during

[7]The land area considered refers to the city proper, that is: Milan 181 km^2, Paris 105 km^2, Frankfurt 248 km^2. Assuming a circular shaped city and assuming that stock exchanges are located in the city center, our choice implies that to be part of the financial center firms must be located at no more than (roughly) 1.8 times the radius distance from the stock exchange. For robustness, we used 1.5 and 2 as multipliers but the results did not change.

1980-2018. Although the mean underpricing is positive, for some IPOs the first-day market price is lower than the subscription price. Figure 1 shows that this applies mainly to year 2012. Figure 1 shows also that very high values for underpricing were recorded in 1996-2000 due to the effect of the dot-com bubble.[8]

Table 1 reports the summary statistics of IPO underpricing. We observe that France and Italy have similar mean values although the corresponding skewness differs; the coefficient of variation, which is virtually the same for France and Italy, suggests less dispersed underpricing values for Germany. We observe also that the share of headquarters close to the French and Italian financial centers is much higher than the corresponding share in Germany.

3 Results

Table 2 provides the baseline results. Table 2 columns 1-3 report the estimates of the regression model with *Far* as the key regressor. For each country, it follows that the mean underpricing by issuing firms headquartered within the financial center (dummy *Far* equals 0) is about 4-5 percentage points lower than the mean underpricing of issuing firms headquartered elsewhere (dummy *Far* equals 1).[9] However, the difference is statistically significant only for France and Italy—*p*-value less than 0.05. Thus, location in the financial center matters for France and Italy but is irrelevant for Germany.

Table 2 columns 4-6 present the results for the variable *Distance*. The coefficient β is still estimated positive for all three countries; however, it is statistically significant only in the case of Italy, suggesting that for the set of Italian firms the farther the distance to the financial center the greater the underpricing. In particular, the point estimate implies that firms with headquarters around 200 kilometers distant from the Borsa Italiana exhibit 7 percentage points greater underpricing than more proximate firms.

Among the control variables, for Germany, the coefficient of *Human Capital* is estimated negative and statistically different from zero, supporting the view that the extent of the underpricing might also depend on the supply of experts and skilled managers who are able to more correctly ascertain the value of the issuing firms. In the case of France we notice that if *Human Capital* is excluded the coefficient of *Distance* increases to 1.07 and becomes statistically different from zero while if *Distance* is excluded the coefficient of *Human Capital* becomes negative and statistically significant. We observe also that in the case of Germany if we drop the variable ICT-NM, then the coefficient of the dummy *Far* becomes statistically different from zero. Taken together, these results suggest that misspecification bias might be driving some of the results in the literature for the relationship between IPO underpricing and issuing firm location.[10]

Table 3 investigates further properties of our empirical model. Panel A presents the estimates excluding the upper quartile of the distribution of *Distance*, to check whether the previous findings are driven by issuers headquartered at a distance from the financial center. Whatever the measure of proximity used the results for Italy and France remain virtually unchanged. The coefficient of Far is statistically significant for Germany but the coefficient of *Distance* remains insignificant. Panel B reports the estimates for those regions with at least 50 IPOs.[11] The results are similar to

[8]The cross country time-series variation is not very informative. Note only that the drop in the yearly mean underpricing in 2012 is driven mainly by Italy. In 2012, the Italian sovereign debt crisis resulted in severe financial and economic crises.

[9]The difference is greater for the alternative measure of underpricing (results not reported here).

[10]The alternative measure of underpricing implies an estimate of β for Italy of 1.74; thus, our preferred measure may be interpreted as delivering a *lower* bound for the effect of distance to Milan.

[11]It follows that in Italy IPOs come from Lombardia and Emilia Romagna, in France from Île-de-France and Rhône-

those in Panel A which is consistent with the idea that regions closer to financial centers host large shares of issuing firms. Therefore, overall the results in Table 3 support the results obtained for the entire sample.[12]

Our empirical model contains year dummies and the dummy *ICT-NM* to control for the dot-com bubble. As a final robustness check, we investigate whether the relevance of distance changes during the period of the dot-com bubble by including in the regression model the interaction between *Distance* and a dummy with values equal to 1 for 1996-2000 and 0 otherwise. The results (not reported here) show that the coefficient of this variable is always insignificantly different from zero. Hence, yearly underpricing fluctuations do not affect our main evidence.

3.1 Financial development and distance

According to our estimates, the effect of distance to the financial center is stronger for Italy and insignificant for Germany. This is consistent with the conjecture that the degree of financial development matters for the relevance of distance. The opacity index proposed by Kurtzman et al. (2004) measures the legal and regulatory complexity exacerbating asymmetric information problems in transactions, that is the degree to which countries lack clear, accurate, and widely accepted practices governing the relationships among businesses, investors, and governments. The index value—based on a range from 0, in case of lowest opacity, to 100—is 25 for Germany, 37 for France, and 43 for Italy. Similarly, the index proposed by Djankov et al. (2008) suggests that Italy is the country in our sample with the lowest investor protection.

To provide some formal evidence on this issue, we use the International Monetary Fund (IMF) index that captures the complex nature of financial development across three dimensions: depth (market size and liquidity), access (easily accessible financial services), and efficiency (ability of institutions to provide low cost financial services).[13] The IMF index is normalized between 0 and 1: higher values indicate greater financial development (Svirydzenka, 2016). Its interaction with *Distance* allows to investigate whether the relevance of proximity to financial centers varies with the degree of financial development. We expect a negative estimate for the coefficient of the interaction term, suggesting that the relevance of distance reduces with financial development.

Table 4 presents the results for the entire sample and by country. Since the IMF index is a yearly index, in the former case we exploit both the country- and time-variation in the index. It follows that the coefficient of the interaction term is negative and strongly significant (see column 1). Hence, differences in the effect of distance to the financial center among countries are associated with differences in the degree of financial development: greater financial development reduces the relevance of distance.

When only the time-variation of the index is exploited (columns 2-4), we find that the coefficient of the interaction term remains negative and significant for France. In particular, if the IMF index is evaluated at the median value the coefficient of distance becomes very similar to that estimated for Italy. Thus, the case of France would suggest that annual improvements to financial services have gradually eroded the advantage deriving from proximity to the financial center.

Alpes, and in Germany from Bayern, Hessen, Baden-Württemberg, and Nordrhein-Westfalen.

[12] Distant IPOs in Italy are from the South of Italy which is poorer than the North. Thus, a potential concern might be that in this case the model might be capturing a South-effect, that is the difference between richer and poorer areas of the country, rather than the effect of location distant from the financial center. The results in Table 3 confirm that this is not the case.

[13] Financial institutions include banks, insurance companies, mutual funds, pension funds, and other types of non-bank financial institutions.

3.2 Further evidence for the case of Italy

Previous evidence was based on a regression equation including a number of covariates to control for potential confounding effects. However, since firm location is a choice variable, it might still be the case that a positive correlation between underpricing and distance does not necessarily imply information frictions and advantages of physical proximity to financial center. For instance, the distribution of firms among regions might be such that low risk companies—more easily evaluable and thus characterized by less underpricing—end up to be located close to a financial center. A positive correlation between IPO underpricing and distance would result, which does not however signal the relevance of proximity.

We complete our analysis by examining Italy in more detail, as our estimates showed a stronger effect of distance for this country. We follow Huang et al. (2019) who argue that since an entrepreneur might be more likely to start up a new business in his or her hometown, firm founder's birthplace might be highly correlated with the firm's geographical location, and it should be exogenous with respect to the IPO underpricing. Thus, we use variability in entrepreneurs' birthplaces to check the significance of the endogeneity issue.

We constructed the variable *Birthplace* based on the distance between the founder's birthplace and the Borsa Italiana. As expected, the first stage results show that our instrumental variable explains much of the variability in firm locations: the coefficient attached to *Birthplace* is estimated positive and strongly statistically significant (see Table 5 column 1). The *t*-ratio greater than 5 suggests that we can rule out the weak IV problem.[14]

The results from the second stage regression reinforce previous evidence about the relevance of proximity for Italy. The coefficient attached to *Distance* is estimated positive, statistically significant at the 5% level, and larger than the OLS estimate (Table 5 column 2). According to the IV estimate, being headquartered 200 kilometers away from Milan determines greater underpricing by roughly 14 percentage points. This removes any doubts that the previous evidence was an artifact of the endogeneity of firm location.

4 Conclusions

This paper contributes to work on the effect of distance to a financial center on IPO underpricing. Relying on a sample of firms in France, Germany, and Italy during 1996-2019, we found a stronger effect for Italy—the country in the sample with the lowest level of investor protection and public enforcement—and an insignificant effect for Germany. Italian and French IPOs of firms headquartered outside the reference financial center are associated with greater underpricing, respectively, by 5 and 4 percentage points on average. In Italy, the effect increases with distance: Being headquartered at about 200 kilometers distance from the Italian financial center implies greater underpricing by more than 10 percentage points, according to the IV estimate. In the case of France, we provided some evidence that the advantage of proximity to the financial center has reduced over time arguably due to improvements in the efficiency of financial institutions. Finally, we suggested that some of the findings in the literature may be affected by misspecification bias.

A well-performing financial system can help potential entrepreneurs to raise capital from the market to finance activities with relatively high expected returns. Potential investors are usually uncertain about the fair values of issuing firms; acquiring information about such values is crucial for funding from financiers to entrepreneurs. Therefore, differences in the observed size of underpricing might be due to the way the uncertainty is resolved. Geographical proximity may

[14] We note also that the size of the coefficient is less than 1 suggesting that to start their business some entrepreneurs move closer to the Italian financial center.

facilitate the acquisition of information through informal means. Face-to-face interactions (for instance, conferences, site visits, dinners and informal meetings) and conversations with employees and customers may help to collect information about the morale of the workers and prospects of the firms (Loughran, 2007). Sometimes informal criteria imply that capital allocation is biased towards friends and relatives (Banerjee and Munshi, 2004). The different relevance of firms' locations among the three countries considered suggests that the degree of financial development determines the relevance of financing channels based on informal relationships.

Our evidence is consistent with the lack of *within-country* convergence. Differences in formal and informal institutional arrangements contribute to yield very different economic outcomes (Rodríguez-Pose, 2013). IPO underpricing is an indirect cost of going public (Ritter, 1987). Therefore, a clear implication of our results is that in countries characterized by the concentration of financial services in a single area growth of peripheral firms may be restrained because of higher cost of equity financing. Since financial centers are usually located in rich areas, spatial difference in the cost of equity financing may contribute to the persistence, or even the widening, of local disparities.

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Table 1: Summary Statistics of IPO Underpricing

Country	**Mean**	**Coef. Var.**	**Skewness**	**Obs.**
Italy	6.13	3.0	3.3	367 (0.31)
France	7.38	3.2	6.2	768 (0.38)
Germany	21.64	1.6	2.0	574 (0.07)
All	11.90	2.3	3.5	1,709

Note: Summary statistics are relative to IPO underpricing measured as the logarithm ($\times 100$) of P/S, where P is the (average or closing) price of the first trading day and S is the subscription price. The number in parentheses is the share of IPOs relative to firms located within the financial center.

Table 2: IPO Underpricing and Proximity to Financial Center

	(1) Italy	(2) France	(3) Germany	(4) Italy	(5) France	(6) Germany
Far	4.97**	3.95**	5.14			
	(2.59)	(2.27)	(1.54)			
Distance				1.37***	0.81	0.38
				(2.84)	(1.18)	(0.46)
Human Capital	0.97	-4.24	-10.30***	-2.04	-3.27	-10.26***
	(0.23)	(-0.85)	(-2.85)	(-0.46)	(-0.46)	(-2.84)
ICT-NM	6.36**	7.79***	11.80***	6.47**	7.66***	11.86***
	(1.99)	(2.65)	(5.08)	(2.02)	(2.61)	(5.13)
Finance	2.17	0.05	9.04**	2.59	0.11	8.28**
	(0.95)	(0.03)	(2.10)	(1.13)	(0.06)	(1.99)
Observations	367	768	574	367	768	574

Note: This table presents results for the regression model (1); the left-hand side variable is Underpricing. The estimated specifications also contain dummies for time-specific fixed effect. Statistical significance is based on region×year clusters. The t-statistic is reported in parentheses: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table 3: Further Evidence on the Proximity-Underpricing Relation

	(1) Italy	(2) France	(3) Germany	(4) Italy	(5) France	(6) Germany
Panel A: Companies below the 75th Percentile of the Distance Distribution						
Far	4.49**	3.97**	7.46**			
	(2.26)	(2.34)	(2.25)			
Distance				1.06**	0.91	0.95
				(2.27)	(1.20)	(1.08)
Human Capital	1.23	-1.09	-10.80*	0.43	-0.17	-10.39*
	(0.24)	(-0.21)	(-1.97)	(0.08)	(-0.02)	(-1.98)
ICT-NM	2.99	6.07**	14.00***	3.07	5.89**	14.07***
	(1.53)	(2.07)	(4.82)	(1.59)	(2.03)	(4.87)
Finance	0.96	0.53	14.83***	1.15	0.64	13.58**
	(0.34)	(0.28)	(2.65)	(0.40)	(0.32)	(2.50)
Observations	276	575	427	276	575	427
Panel B: Regions with more than 50 IPOs						
Far	6.23**	4.67**	8.01**			
	(2.42)	(2.44)	(2.25)			
Distance				1.95***	2.00*	1.18
				(2.72)	(1.72)	(1.34)
Human Capital	-7.48	8.27	-11.88***	-12.52*	27.19	-10.97***
	(-1.29)	(0.93)	(-3.14)	(-1.80)	(1.34)	(-2.99)
ICT-NM	2.52	3.82	12.94***	2.52	3.74	13.03***
	(1.60)	(1.13)	(4.26)	(1.66)	(1.11)	(4.32)
Finance	-1.37	-0.47	15.25***	-0.63	0.31	14.08***
	(-0.48)	(-0.26)	(2.91)	(-0.22)	(0.17)	(2.81)
Observations	221	515	386	221	515	386

Note: This table presents results for the regression model (1) without companies in the upper quartile of the Distance distribution (Panel A) or restricting to regions with more than 50 IPOs (Panel B). The estimated specifications also contain dummies for time-specific fixed effect. Statistical significance is based on region×year clusters. The *t*-statistic is reported in parentheses: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table 4: IPO Underpricing and Financial Development

	(1) All	(2) Italy	(3) France	(4) Germany
Distance	1.40***	1.53***	1.63**	-0.11
	(4.92)	(2.68)	(2.33)	(-0.07)
Fin-Dev×Distance	-15.12***	7.75	-12.49**	-27.44
	(-4.75)	(0.79)	(-2.25)	(-0.73)
Human Capital	-10.83***	-2.63	-1.36	-10.33***
	(-4.76)	(-0.54)	(-0.19)	(-3.10)
ICT-NM	10.12***	4.22	7.12**	10.58***
	(6.28)	(1.61)	(2.52)	(4.83)
Finance	5.15***	3.78	0.56	9.03**
	(2.65)	(1.64)	(0.38)	(2.18)
Fin-Dev	153.51***	45.35	56.21**	198.56
	(7.16)	(0.84)	(2.51)	(0.88)
Observations	1640	331	753	556

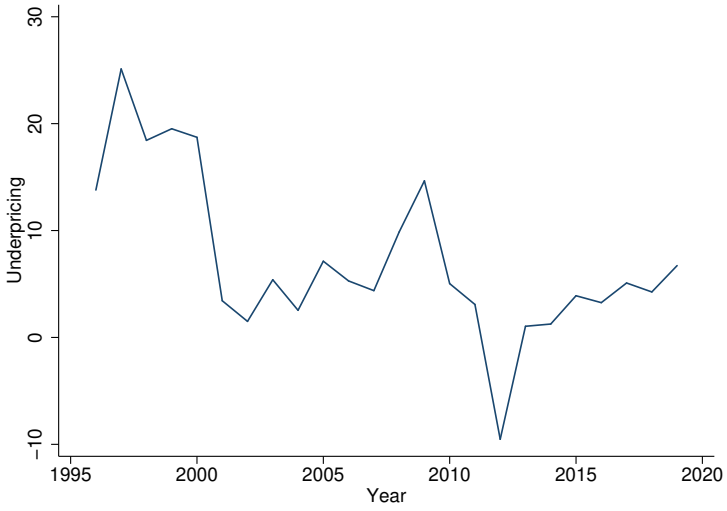
Note: This table presents results for the regression model also includes the variable Fin-Dev×Distance, that is the interaction between (the median-deviation of) the IMF index of financial development and Distance. Statistical significance is based on region×year clusters. The t-statistic is reported in parentheses: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table 5: IV Regression for Italy

	(1) First Stage	(2) Second Stage
Distance		2.71**
		(2.29)
Birthplace	0.37***	
	(5.21)	
Human Capital	4.21***	-8.96
	(6.59)	(-1.22)
ICT-NM	-0.31**	6.87**
	(-2.35)	(2.09)
Finance	-1.30***	4.81*
	(-4.24)	(1.74)
Observations	367	367

Note: This table presents results for the IV regression relative to Italian IPOs. We use the distance between the company founder's hometown and the Italian financial center as instrument for the distance between the firm and the Italian financial center. The estimated specifications also contain dummies for time-specific fixed effect. Statistical significance is based on region×year clusters. The *t*-statistic is reported in parentheses: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Figure 1: Evolution of IPO Underpricing



For each year, it is shown the mean of IPO underpricing measured as the ratio P/S, where P is the first day closing or average price and S is the subscription price.

A Data Appendix

For each country considered, our sample includes IPOs of domestic firms that take place on the main stock exchange; the latter is assumed to be the Borsa Italiana (Milan) for Italy, the Paris Bourse for France, and the Frankfurter Wertpapierbörse for Germany. On 22 September 2000, the bourses in Paris, Amsterdam, and Brussels merged to create Euronext, the first pan-European stock exchange. We assigned to France the flotations of French companies that selected Paris as their point of access to Euronext—this determines the applicable legislation and regulatory jurisdiction. IPOs related to foreign firms as well as to national firms with their 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. The sample period is from 1996 up to the first semester of 2019; however, for France we do not have information about IPOs during the period 2010-12. For French and German IPOs, the source of the data is the EurIPO database. For Italian IPOs, the sources are Yearbooks and website of Borsa Italiana.

The three financial centers we refer to are identified as follows. Firms are assumed to be outside the reference financial center if the geographical distance between the company's headquarters and the stock exchange exceeds a given threshold, determined by the square root of the respective land areas of Milan, Paris, and Frankfurt. The land area considered refers to the city proper, that is: Milan 181 km^2, Paris 105 km^2, Frankfurt 248 km^2. Assuming a circular shaped city and assuming that stock exchanges are located in the city center, our choice implies that to be part of the financial center firms must be located at no more than (roughly) 1.8 times the radius distance from the stock exchange. For robustness, we used 1.5 and 2 as multipliers but the results did not change. *ViaMichelin Maps & Route Planner* allowed to calculate the shortest geographical distance in kilometers between the street address of the company' headquarters and the street address of the stock exchange of reference.

Table A1: VARIABLES OF THE EMPIRICAL ANALYSIS

Underpricing	Logarithm of the ratio P/S, where P is the first day closing or average price and S is the subscription price.
Far	Dummy with values equal to 1 for companies headquartered outside the financial center of reference and 0 otherwise.
Distance	Logarithm of the physical distance in kilometers between the headquarters of the listing firm and the reference stock exchange.
ICT-NM	Indicator variable: 2 for companies operating in the ICT sector and listed in the *New Market*; 1 for companies either listed in the *New Market* or operating in the ICT sector; 0 otherwise.
Finance	Dummy with values equal to 1 for companies operating in the financial sector and 0 otherwise.
Human Capital	Logarithm of the ratio of ISCED levels 5 and 6 students in 2000 to the regional population. Levels 5 and 6 refer to students in first and second stages of tertiary education.
Birthplace	Logarithm of one plus the physical distance in kilometers between the founder's hometown and Milan.