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Explaining the diversity in shareholder lockup agreements

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Summary

This paper investigates whether shareholder lockup agreements in France and Germany mitigate problems of agency and asymmetric information. Despite minimum requirements in terms of the length and percentage of shares locked up, lockup agreements are not only highly diverse across firms but also across the different shareholders of a single firm as most firms have different agreements in place for executives, non-executives and venture capitalists. The diversity across firms and types of shareholders can be explained by firm characteristics – such as the level of uncertainty – as well as the type and importance of each shareholder within the firm.

Journal of Economic Literature Classification number: G24, G34

Key words: Initial public offerings, lockup agreements, underpricing, asymmetric information, agency costs, valuation

Contents

Table of Figures and Graphs

1. Introduction[1]

Lockup contracts[2] are agreements that prevent the initial shareholders of IPO firms from selling a specific percentage of their shares over a certain period following the admission of their firm to the stock exchange. Thus, at the IPO, pre-IPO shareholders can not only signal their commitment via the percentage of ownership retention after the IPO ('*putting* their money where their mouth is') but also by locking up their share stakes for a specific period ('*keeping* their money where their mouth is') (Brau, Lambson and McQueen 2004). One of the interesting features of lockup contracts is that they are frequently voluntary arrangements. For example, although the UK and US[3] stock markets do not impose any generally applicable minimum lockups, most firms that go public have lockups in place. Even for the markets that require minimum lockups, such as the Euro New Markets (EuroNM) of Continental Europe, the original shareholders often agree to a larger proportion of their shares being locked up and to lockup periods that exceed the minimum requirement.

Another interesting feature is the diversity of lockup contracts across countries and across firms in terms of their contractual characteristics. The US is at one extreme of the spectrum with very short lockup periods. Over the last decade, there has been an increasing trend in the US towards standardization in terms of the lockup duration which tends to be 180 days for most firms (see Bradley et al. 2000). Whereas the (voluntary) US lockup contracts are mostly standardized, the lockup contracts on the Continental European markets are frequently mandatory and the lockup periods are also more varied and longer. At the other end of the spectrum are the lockup contracts of UK firms with an average duration of about 600 days and with an even greater diversity of expiry dates (Espenlaub et al. 2001).

The third interesting feature of lockup agreements is that the US studies have found evidence of a negative share price reaction on the day of their expiry (e.g., Bradley et al. 2000, Field and Hanka 2001, and Brav and Gompers 2003). This evidence contradicts the efficient market hypothesis (EMH) as the IPO prospectus contains all the details of the lockup agreement (including the expiry date) and there should therefore be no significant price change at the expiry. Contrary to the studies on US data, Espenlaub et al. (2001) do not find significant abnormal returns around the expiry for a sample of UK IPOs. Since there appear to be price differences across countries, it would be interesting to examine price reactions to lockup expiries in other countries, such as Germany and France.

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[2] A lockup agreement is called *engagement de conservation* in French and *Veräußerungsverbot* or *Marktschutzvereinbarung* in German.

[3] Certain shareholders of US issuing firms may still be subject to restrictions concerning the sale of their shares (see Table 1). However, Field and Hanka (2001) find that 91% of the shares owned by the initial shareholders are locked up after the IPO via lockup contracts and another 4% are prohibited from selling by SEC Rule 144.

This leads us to the following three research questions. *Do firm and shareholder characteristics influence the choice of the lockup contract, and if so, in what way?* This paper is the first one that can discern the lockup length and the percentage of shares locked up by shareholder type for a sample of IPOs on the German *Neuer Markt* and the French *Nouveau Marché*. In the US, such detailed data are typically not available as the prospectuses usually only state the number of shares which will be available for trade after a certain date.[4] By examining the lockup length and the percentage of shares locked up for different types of shareholders, this paper makes an innovative contribution to the existing literature as it is able to study more refined hypotheses about the differences in lockup contracts across shareholders, across firms and also across countries. *How does regulation influence the choice of the lockup duration and the percentage of equity locked up?* Lockup agreements may be one way to reduce agency problems and asymmetric information on firm quality, both of which are particularly pronounced in the high-technology firms the EuroNM stock exchanges have attracted since the second half of the 1990s. The fact that the major markets of the EuroNM alliance of Continental European stock markets, the German *Neuer Markt* and the French *Nouveau Marché,* have adopted different lockup regulation allows us to study the choice between different types of mandatory as well as voluntary contracts. *Are there significant abnormal returns around the expiry of lockup agreements on the French* Nouveau Marché *and the German* Neuer Markt*?* Indeed, price pressure and/or agency problems may arise as soon as insiders are allowed to sell off their holdings.

Our main findings can be summarized as follows. First, we can confirm that firm and shareholder characteristics influence the choice of contract. For both countries, shareholders of firms subject to more uncertainty (smaller and younger firms) are locked up for longer periods. Venture capitalists (VCs) have shorter lockup agreements, which suggests that they prefer to exit the firm at the earliest opportunity. In contrast, executives who retain equity stakes after the flotation are locked up for longer periods in Germany and face the more stringent of the two minimum requirements in France. We also examine whether the presence of a VC has a negative impact on the lockup duration given the possible certification role of VCs. While for France, the probability of being locked up is higher for firms with venture-capital backing (hence rejecting the certification role), we find no such effect for Germany. In both German and French IPOs, a high free-float induces more stringent lockup agreements. So, it seems that lockup contracts are used as a pre-commitment device by the pre-IPO shareholders who have sold substantial share stakes at the flotation. For France, we find some evidence that firms, which signal their superior quality via more stringent lockups, are able to revise their offer price upwards. However, for Germany we do not find that this is the case. Finally, high quality underwriters in Germany protect their reputational capital by imposing more stringent lockup contracts.

Second, we find that regulation in France influences the choice of the lockup agreement. In contrast to the German regulation, the French one provides firms with a choice between locking up 100% of the shares for 6 months and locking up only 80% of the shares but for 1 year. As expected, the market is not indifferent between the two minimum requirements. Overall, the former is perceived to be less stringent than the latter as it is chosen by firms with less uncertainty about their value. We find that the shareholders of older and larger firms are locked up for 6 months and with 100% of their shares. There is some evidence that VCs

[4] The only other studies on French and German lockup contracts are Ducros (2001) and Nowak and Gropp (2000), both unpublished, which use data aggregated at the firm level. Neither study clearly states how firms with more than one lockup agreement are treated. As we will see later, the vast majority of firms have more than one contract in place specifying a different expiry date and/or percentage of shares locked up.

choose the 6-month lockup covering 100% of their shares whereas executives are subject to the more stringent minimum requirement locking up 80% of their shares for 1 year.

Finally, using an event study methodology identical to that of Espenlaub et al. (2001), we report the absence of significant abnormal returns at the expiry for France and Germany, regardless of the type of lockup contract and the category of shareholder locked up. Our results are contrary to those from US studies, but confirm the results of Espenlaub et al. (2001) who do not find significantly negative abnormal returns at the expiry of UK lockup contracts.

The rest of the paper is structured as follows. The next section reviews the regulation on lockups for the two markets and compares it with that for other markets. Section 3 discusses the theoretical reasons for the existence of voluntary and compulsory lockup agreements and develops the hypotheses to be tested. Section 4 gives information on the data and reviews the characteristics of the lockup contracts on the French and German new markets. In section 5, we first explain the methodology and then discuss the results from the multinomial logit models explaining the type of lockup contract. Section 6 concludes.

2. Regulatory Provisions and their Enforceability

Although US regulation imposes compulsory lockup periods only in certain limited cases (see Table 1), most firms have voluntary lockup contracts in place. The UK is similar in the sense that, although there is no such requirement, most firms have lockup agreements in place. More precisely, prior to January 2000, lockup contracts were only mandatory for firms with a trading history of less than 3 years. Since January 2000, there have been no compulsory lockups. However, certain types of firms are now required to display in their IPO prospectuses a prominent statement whether they have a lockup agreement, and if not, the reasons for its absence.[5]

Conversely, as Table 1 shows, the French and German EuroNM markets as well as the other partners of the EuroNM alliance, the Brussels EuroNM, the Dutch *Nieuwe Markt* and the Italian *Nuovo Mercato*, all impose minimum lockups. A major difference between France and Germany is that in France only the insiders – typically the directors and founders – are subject to compulsory lockups whereas in Germany *all* the pre-IPO shareholders who still hold shares immediately after the IPO are locked up. Further, for France, up to 1 December 1998, 80% of the shares of directors and founders were locked up for 3 years after the IPO. From this date onwards, directors and founders had to be locked up with all of their shares for 6 months or with 80% of their shares for a year. For Germany, the initial shareholders are locked up for 6 months with 100% of their shares. Hence, French firms have a choice both in terms of the lockup period and the percentage of shares locked up whereas German firms can only choose the length of the lockup period.

[Insert Table 1 about here]

There is one additional major difference between the French and German markets. In Germany, the minimum requirement also applies to the company itself. As a result the firm is not allowed to issue any new shares during the six-month regulatory lockup period. The lockup agreement in the IPO prospectus of Euromed AG Health Systems (p.12) illustrates this difference:

> Future disposals by the existing shareholders
> Once the placement of the shares is complete (including the exercising of

[5] See table 19.2 of Goergen et al. (2003) for a synopsis of the listing requirements on the UK stock exchange.

> the Greenshoe option), the existing shareholders will hold 50% of the Company's share capital. They have pledged not to offer for sale or dispose of any shares directly or indirectly within a period of six months from the start of trading in the Neuer Markt. Taking account of the relevant provisions of national stock corporation law, the Company has pledged, for a period of six months from the admission of the shares to the Regulated Market and to trading in the Neuer Markt of the Frankfurt Stock Exchange, not to offer for sale directly or indirectly, or dispose of any shares, nor to announce this or undertake any measures which would be equivalent in economic terms to an issue or a disposal (see also section "Risk factors – Concentration of share ownership").

3. Reasons for the Existence of Lockup Agreements

At the time of the flotation, outsiders usually have little information about the firm. In contrast, the incumbent shareholders, who are frequently involved in the management of the firm, tend to have a better picture about the firm's prospects. Consequently, one of the reasons for lockup agreements is to protect outside investors from being exploited by insiders acting on private information (Brav and Gompers 2003). Committing the incumbents to keep their holdings over a certain time after the IPO makes it more likely that any private information becomes public. Therefore, we hypothesize that:

> *Hypothesis 1:*
> *Shareholders of firms with more uncertainty about their value are subject to* more stringent lockups.

The incumbent shareholders in turn may opt for a more stringent agreement than that prescribed by the regulator to signal their superior quality to outsiders. This argument is in line with the Leland and Pyle (1977) model according to which the founder signals her firm's higher value by retaining a large stake after the IPO. The lockup agreement is then a legal device enabling the incumbent shareholder to precommit to retaining a high stake over a certain period after the flotation. In other words, the lockup agreement acts as a complement to the percentage of shares retained by the initial shareholders immediately after the IPO. Alternatively, it may make sense to impose stricter lockup contracts on the initial shareholders who sell a significant proportion of their stake in the IPO. As these large sales of secondary shares are a bad signal according to Leland and Pyle, firms may neutralize the bad signal by subjecting the remaining shares of the vendors to more stringent lockups. As such, strict lockup contracts may be substitute mechanisms to signal the commitment of the initial shareholders.

> *Hypothesis 2:*
> *a) Firms whose initial shareholders retain a large number of shares immediately after the IPO to signal their superior quality use more stringent lockups to add credibility to the signal.*
> *b) Alternatively, firms whose initial shareholders retain a large number of shares after the IPO have less rigorous lockups.*

Brav and Gompers (2003) argue that insiders can essentially signal the quality of the firm using three devices: underpricing, the percentage of shares locked up, and the length of the lockup period. In a separating equilibrium, a high-quality issuer will underprice more, lock up

for a longer period of time, or lock up a larger percentage of the shares outstanding.[6] Although US studies tend to reject the signaling role of IPO underpricing (e.g., Garfinkel 1993, and Michaely and Shaw 1994), some of the European studies have found evidence of such as role (e.g., Keloharju (1993) for Finland, and Levis (1995) for the UK). This leads to the following hypothesis:

> *Hypothesis 3:*
> *Underpricing is a substitute signal to the signal sent by the lockup length and the percentage of shares locked up. Hence, the shareholders of firms that use more underpricing face less stringent lockups.*

Brav and Gompers (2003) argue that firms signal their superior quality with the lockup length and the percentage of shares locked-up. Thus, high-quality firms will be able to revise their final offer price upwards just before the IPO and after the investors have observed the signal in the IPO prospectus.

> *Hypothesis 4:*
> *High-quality firms that use more stringent lockups will be able to revise their offer price upwards.*

Venture capitalists are important providers of finance to new firms. They not only provide the necessary capital but their presence also signals quality as they usually monitor the firm and are involved in the decision-making process (e.g., Barry 1994, Jain and Kini 2000). Barry et al. (1990) analyse a sample of VC-backed US companies. They report that VCs hold substantial stakes in these firms and provide intensive monitoring. They also find that, contrary to conventional wisdom, VCs frequently hold their shareholdings a long time after the IPO. Hence, VCs may reduce agency problems as well as more general problems arising from asymmetric information. The presence of a VC would then reduce the need for more stringent lockups for all shareholders. Conversely, Cao, Field and Hanka (2004) report that VCs who are also board members make up only 7% of the post-expiry insider sellers but account for 30% of the insider sales in value. This suggests that VCs sell out more quickly. Hence, the other initial shareholders may face more stringent lockups in order to signal the firm's quality to the market. A related argument is that, as VCs are repeat-investors in IPO firms, they are likely to influence the choice of the underwriter. Hence, underwriters may 'bribe' VCs to propose them as underwriters by promising them less stringent lockups (such as the minimum requirement). These arguments yield the following competing hypotheses:

> *Hypothesis 5:*
> *a) Venture capitalists, given their certification role of firm quality, decrease the need for more stringent lockups for all the shareholders.*
> *b) Venture capitalists are subject to less stringent lockups and the other shareholders consequently face more stringent lockups*

There is now a vast body of the finance literature on the role of underwriters in IPOs. Although this seems to have changed in recent years (Loughran and Ritter 2004), traditionally the underwriter market was segmented with high-quality underwriters backing less risky issues (Carter and Manaster 1990). Brav and Gompers (2003) suggest that underwriters write lockup agreements that buttress their reputations. The underwriter's reputation is at stake if shortly after the IPO there are adverse share-price movements or unfavorable information.

[6] Alternatively, Loughran and Ritter (2002) argue that underpricing is related to agency problems rather than to signaling. They also show that the degree of underpricing is correlated to stock market movements.

The underwriter's reputation will be damaged even further if these are accompanied by insider sales.

Further, underwriters may prevent the initial shareholders from selling their remaining holdings in order to avoid a sudden increase in the supply of shares (Rödl and Zinser 1999, and Förschle and Helmschrott 2001). If one assumes that the demand curve for shares is downward sloping, then an increase in the supply of shares will cause a permanent fall in their price. Jenkinson and Ljunqvist (2001) report that price support by the underwriter is legal in many countries, including France, Germany, the UK and the US. The way US lockup agreements are phrased speaks in favor of the price-support argument. Brau, Carter, Christophe and Key (2004) report that US lockup contracts normally start with a statement that a large sale of shares after the IPO could negatively affect the firm's share price and jeopardize future capital increases. Similarly, in Germany, firms have to refer to the expiry of lockup agreements in their IPO prospectuses under the Risk Factors section (*Risikofaktoren*). These arguments lead to two conflicting hypotheses:

> *Hypothesis 6:*
> *a) More reputable underwriters are associated with higher quality issues so that there is less need for more stringent lockup contracts.*
> *b) More reputable underwriters have more reputation capital at stake and are therefore more likely to impose more rigorous lockup agreements.*

Finally, Brav and Gompers (2003) argue that high-quality underwriters use lockups to extract further fees from the issuing company. They report that US lockups often only allow seasoned equity offerings (SEOs) before the lockup expiry if they are carried out via the lead underwriter. This will then generate additional income for the underwriter through the fees from underwriting the SEO.

> *Hypothesis 7:*
> *High-quality underwriters use the lockup contracts to extract further compensation from firms via SEOs.*

From the discussion in section 2, hypothesis 7 for France can be refuted as the regulation of the *Nouveau Marché* does not prohibit the issue of new shares during the compulsory lockup period. However, the hypothesis may still be valid for Germany because the firms may still be able to conduct an SEO during the lockup if it is done beyond the 6 month compulsory lockup period.

4. Data Sources and Description

4.1 Data sources

The data on the characteristics of the lockup contracts, ownership and control, and age are taken from the IPO prospectuses of the firms. We have set up a unique database covering the prospectuses of all the firms that have gone public on the French and German EuroNMs since their inception (1996/97). The prospectuses were obtained from the firms themselves, from Thomson One Banker, and from the French and German stock exchanges. The database contains detailed data on the ownership and control of each shareholder immediately before and after the IPO as well as information on the lockup contract the shareholder is subject to, if any. Accounting data, share prices and SIC codes were also obtained from Thomson One Banker.

Shareholders are classified into five different categories: executives, non-executives, founders, venture capitalists, and others. These categories are *not* mutually exclusive. For example, a shareholder may be both a founder of the firm and an executive. For the German firms, executives are defined as the members of the management board (*Vorstand)* whereas non-executives are defined as the members of the supervisory board (*Aufsichtsrat*). French firms have a choice between either an Anglo-American one-tier board, the *conseil d'administration*, or a two-tier board consisting of a supervisory board, the *conseil de surveillance*, and the management board, the *directoire*. For French firms adopting the latter we define non-executives as the members of the *conseil de surveillance* and executives as the members of the *directoire*. For firms which choose the one-tier board, executives are defined as the senior managers (*conseil de direction*) who sit on the single board, while all other members of the *conseil d'administration* are considered to be non-executives. The identity of the founders is mentioned in the IPO prospectus. Venture capitalists are defined as shareholders who are members of a national or international venture-capital association. We obtained lists of members of 31 national and international VC associations – among them the Belgian, Dutch, French, German, Italian, Swiss, UK, US and European VC associations – and checked whether each shareholder was part of one or more of these associations.

4.2 Data description

Descriptive statistics

Table 2 provides descriptive statistics on the characteristics of the firms that went public on the *Neuer Markt* and the *Nouveau Marché* since they started operating on 10 March 1997 and 14 February 1996, respectively. We only retain domestic firms that had an initial public offering and exclude all IPOs by foreign firms as well as transfers from other markets. We also ignore IPOs by banks and insurance firms. Through the end of 2000, there were 268 German IPOs and 138 French IPOs. The market capitalization is defined as the number of shares outstanding times the offer price and is adjusted for inflation using the IMF monthly consumer price indices for France and Germany (the base month is June 2000). The price revision is defined as in Brav and Gompers (2003). It is the offer price minus the midpoint of the bookbuilding range over the midpoint of the bookbuilding range. The ratio of intangible assets over all fixed assets is measured at the end of the year of the IPO or the following year if the ratio is not available for the year of the IPO. The primary shares and the secondary shares are expressed as percentages of the shares outstanding after the IPO. Both the number of primary shares and the number of secondary shares include any shares exercised under an over-allotment option. Almost all the German firms and slightly less than half of the French firms had such over-allotment options and, with just a few exceptions, these were always fully exercised. First-day (first-week) underpricing is defined as the difference between the closing price on the first day (first week) of trading and the offer price over the offer price.

Panel A of Table 2 shows that the *Neuer Markt* IPOs are on average significantly older (13 years) than the *Nouveau Marché* IPOs (11 years). The German IPOs are also substantially larger, have more intangibles and are significantly more underpriced than the French firms. German firms sell significantly more primary and secondary shares in the IPO as a percentage of the shares outstanding after the IPO. However, if primary and secondary shares are expressed as percentages of total shares sold in the IPO (not reported in the table), there is no significant difference between the two countries. This suggests that German IPOs raise more cash (both for the firm and the old shareholders), but that German IPOs do not consist of proportionately more primary shares than French IPOs. It is important to mention here that in both markets there is a requirement that the majority of shares offered in the IPO must be

primary shares. Panel B of Table 2 displays the distribution of IPOs across industries based on the SIC classification. The Z-test (not reported in the table) for the difference between two proportions (Kanji 1995) is not significant for any of the SIC industry categories. In both countries, the vast majority of IPOs is in the services industry. To summarize the results from Table 2, although there are significant differences in terms of firm characteristics between France and Germany, the industry distribution of the IPOs is fairly similar.

[Insert Table 2 about here]

Ownership and control

The proportion of firms with ownership by executives and founders is virtually identical for both countries: executives are among the pre-IPO shareholders in about 95% of both the French and German firms, and founders in about 83% of both the French and German firms. However, there is a major difference in ownership by VCs between the two countries. Panel A of Table 3 shows the incidence of VC-backing for the two countries. Sixty-one percent of French firms have at least one VC among their shareholders compared to only 47% of the German firms (the difference is significant at the 5% level). If VCs provide a certification role, then the higher incidence of VCs in the French IPOs may explain why French IPOs are significantly less underpriced. Indeed, several studies have found a negative relation between underpricing and VC backing (e.g., Megginson and Weiss 1991, and Lin and Smith 1998).

Panel B of Table 3 reports the ownership by the different categories of shareholders (non-executives,[7] executives, venture capitalists and founders) immediately before and after the IPO. Both before and after the IPO, ownership by any of the 4 categories is higher in France than in Germany. However, this difference is only statistically significant (at the 1% level) for VCs. Even after the IPO, French VC ownership is still significantly higher than in Germany. All the categories of shareholders substantially reduce their ownership in both the French and the German IPOs (the reduction in ownership concentration is significantly different from zero at the 5% level or better in both countries (not reported in the table)).

[Insert Table 3 about here]

Similar to ownership, control (before and after the IPO) held by any of the 4 categories (not reported in the table) is higher in France than in Germany. However, after the IPO, only VC and executive control in the French IPOs significantly exceeds that of the German ones. For France, executives as well as founders can exert significantly more control rights than cash flow rights after the IPO. The reason is that most French firms have a provision in their articles of association giving double voting rights to shareholders who have registered their shares with the company and have held them for a certain number of years (typically 2 years) since the date specified in the provision. Such provisions often come into effect retroactively. For example, the provision for double voting rights may be put in place just before the IPO, e.g., 1 July 2003, and give double votes to shares registered with the company and held by the same shareholder for at least 2 years since 1 July 2001. Consequently, although some of these shareholders reduce their ownership in the IPO, their control may still increase after the IPO. In the remainder of the paper, we will only refer to ownership as the regression results based on the ownership data were virtually identical to those based on the control data.

In about three quarters of both German and French firms, at least one of the founders is an executive director, while in about a fifth of the firms one or more founders perform the func-

[7] The non-executives may either own the shares themselves or act as a representative of a large shareholder (e.g., another company, or a venture capital firm).

tion of a non-executive director.[8] As mentioned above, Table 3 also shows that the percentage of firms with ownership by VCs is higher in France. In these firms, VCs also assume significantly more often the functions of non-executive and executive directors than VCs in German firms. This suggests that the VCs in France are not only more important providers of finance, but that they are also more actively involved in the management and/or monitoring of the management.

Frequency of lockup contracts

Table 4 reports the frequencies of different types of lockup contracts for all the shareholders. As most firms have more than one contract in place, the number of contracts is higher than that of the firms in the sample. Often, the different types of shareholders of a firm are subject to different contracts. This is similar to Espenlaub et al. (2001, 2003b) who find that UK IPOs tend to have more than one contract in place. For France, firms that went public before 1 December 1998 are excluded from the table as their shareholders were all subject to the same 36-month lockup covering 80% of their shares. Panel A contains the types of agreements which lock up 100% of the shares (e.g., 100% of the shares for 6 months). Panel B covers all the contracts that lock up only part of the shares owned by a given shareholder (e.g., 80% of the shares for 12 months). Given the differences in regulation, panel B only applies to French IPOs. Other types of contract are mostly so-called staggered agreements with a first period during which sales are completely prohibited,[9] followed by at least one additional period during which only part of the shares are locked up. For instance, all the executives' shares are locked up during the first year after the IPO, followed by 50% of the shares during the second year after the IPO.

Although the German regulation requires all the pre-IPO shareholders to be locked up, smaller shareholders may be exempted at the discretion of the stock market. Typically, their holdings tend to be less than one percent of the equity outstanding. Also, German investors who obtain their shares in the preferential allocation of the IPO (the so called *Friends & Family* program) are normally exempted from the compulsory lockup.[10] Nowak and Gropp (2000) argue that in certain cases Deutsche Börse AG can give an exemption from the compulsory lockup rule. They discuss the case of Senator Film AG which was successful in obtaining an exemption for its minority shareholders who held in aggregate 12% of the equity. Also, the shares that are subject to the Greenshoe option – these shares can be new shares issued by the firm or shares sold by the old shareholders – are not subject to the lockup agreement. There are, however, a few firms which voluntarily lock up any shares from the preferential allocation. For France, the stock market rules prescribe that directors and insiders should be locked up, although directors and insiders with small holdings (typically amounting to a fraction of a percent) are frequently exempt. As the French lockup regulation does not lock up all shareholders, the determinants of the decision to impose (or not) lockup agreements on shareholders other than directors may be a particularly important signal for French companies.

[Insert Table 4 about here]

Panels A and B show that, in both countries, the majority of lockup contracts go beyond the minimum requirements. In Germany, only 43% of the contracts follow the minimum require-

[8] A table with the percentage of founders and VCs being directors is available upon request.

[9] We did not come across any staggered agreements with the first lockup period covering only part rather than the entirety of the shares.

[10] This is similar to what Field and Hanka (2001) observe for the US.

ment of a 100% lockup for 6 months. For France, about 22% of lockup contracts follow the minimum requirement of 6 months with 100% of the shares locked up and about 26% of the contracts follow the other legal minimum of 1 year with 80% of the shares locked up.[11] Although there is much more diversity in terms of lockup contracts in France and Germany than in the US, the figures in Panels A and B suggest that there is some degree of standardization of lockup contracts as there is clustering of contracts around the lengths of 6,12, 18 and 24 months.[12]

In the light of the increasing trend towards uniform lockup contracts in the US, the diversity in terms of the characteristics of lockup agreements in both France and Germany is somewhat surprising. For example, Brau, Carter, Christophe and Key (2004) find that 70% of the lockup contracts of their US sample firms have durations of exactly 180 days, which is confirmed by Bradley et al. (2000), Field and Hanka (2001) and Mohan and Chen (2001). In addition, Field and Hanka (2001) report that for a sample of 1,948 US IPOs with lockups, managers, the selling shareholders in the IPO as well as shareholders owning in excess of 5% of the equity are almost always locked up. Given the high homogeneity of lockup agreements in the US, one could argue that US firms do not use the length of the lockup (as well as the proportion of shares locked up) as a signal of their value. Further, Brau, Carter, Christophe and Key (2004) doubt that lockup contracts are effective in mitigating asymmetries of information between insiders and outsiders given their short length. They argue that the average lockup duration of 180 days will at most cover two quarterly earnings announcements. The French and German lockup contracts, given their diversity and longer length, may therefore have a higher potential for signaling.

Percentage of shares locked up and lockup period

Table 5 reports the maximum percentage of shares locked up and the average minimum lockup period for each category of shareholders. For the few cases of staggered lockups, we report the percentage of shares locked up during the first lockup period (which is always the highest percentage).[13] Panel A shows the number of shares locked up for each category of shareholders divided by the number of shares they own immediately after the IPO. For Germany, the percentage is always 100%. However, the French firms have some choice as to the percentage of shares locked up. We find that non-executives and venture capitalists are locked up for a higher proportion of their shares. Panel B shows that in both countries executives and founders tend to be locked up for longer. Panel C reports that the pre-IPO shareholders of French firms, in particular non-executives and VCs, are locked up for shorter periods than those of German firms. Panel D gives the percentage of locked up shares by category of owner subject to the minimum requirement and that subject to more stringent lockups. In Germany, a higher percentage of the shares of the pre-IPO shareholders are locked up by more stringent contracts than those required by regulation. This is especially apparent for executives and founders, as two thirds of them are locked up for more than 6 months. At first sight, French lockup agreements seem to be more lenient. However, if one considers the

[11] Contrary to the UK, the lockup arrangements of French and German IPOs all specify absolute dates. An absolute expiry date is a specific calendar date such as 01 July 2000 whereas a relative expiry date is e.g., the date of the publication of the annual report for 2000.

[12] We are grateful to the referee for pointing out this pattern in the data.

[13] Given the relatively small number of staggered contracts in both countries (32 out of 477 contracts for Germany and 13 out of 297 contracts for France), the percentages locked-up do not change substantially if the simple average percentage of shares locked up for each contract or the weighted average percentage are considered.

minimum requirement of 12 months covering 80% of the shares to be more stringent than the other minimum requirement, a similar pattern to that observed for Germany emerges. In section 5, we discuss whether the 12-month minimum requirement is indeed more stringent than the 6-month requirement and the factors that determine the choice between the two minimum requirements. In Germany, two thirds of VCs are locked up for the required minimum period which confirms the pattern shown by Nowak and Gropp (2000), while a minority is locked up for more than 6 months. At first sight, the pattern in France is different in Table 5: the majority of VCs faces more stringent lockups than those imposed by the regulator and about a third are subject to the less severe of the two minimum requirements. However, the data in Table 5 do not reflect the fact that about a third of the VCs in France are not locked up. If one also takes into account those VCs then the French data reflect a picture similar to the German data. To summarize, Table 5 shows that most of the executive and non-executive directors in both countries are frequently locked up for longer periods than the minimum requirement whereas VCs are often subject to the minimum lockups or are not locked up at all.

[Insert Table 5 about here]

The findings from the above tables can be summarized as follows. First, there is a higher occurrence of VC financing on the *Nouveau Marché* than on the *Neuer Markt* whereas ownership by executives and founders is similar in the two countries. Second, ownership and control of the French firms is more concentrated both before and after the IPO. The executives and founders of French firms keep a high level of control by using provisions in the company articles of association which confer double voting rights to long-term shareholders. Third, French VCs are more likely to have board representation than their German counterparts. Fourth, French and German executives and founders are subject to more stringent lockups than other shareholders. Fifth, in Germany most VCs are locked up for the regulatory minimum lockup length. For France, the pattern is the reverse as a majority of VCs' lockup contracts are more stringent than the two required minimums. However, if one considers that a third of the French VCs are not locked up, the French figures resemble the German ones to a greater extent. Sixth, the pre-IPO shareholders of German firms are locked up for significantly longer periods than their French counterparts. Finally, as a consequence of differences in regulation, German shareholders can only signal via the duration of their lockup agreements whereas French shareholders can also use the percentage of shares locked up as a signal.

Market reaction to the expiry of lockup contracts

We also perform an event study on the French and German samples to see whether there are abnormal returns around the lockup expiry. For each sample firm, we estimate the characteristic line $(R_{it} - R_{ft}) = \alpha_i + \alpha_i(R_{mt} - R_{ft}) + u_{it}$, where R_{it} is the discrete daily total IPO-stock return at time t, R_{ft} is the daily return on the risk-free asset (proxied by the daily equivalent rate of return on the three-month French or German treasury bill), and R_{mt} is the daily return on the market portfolio. We also use several different estimation methods. First, we include one lag and one lead of the excess return on the market portfolio in addition to the current return in order to adjust for thin-trading (as suggested by Dimson (1979) for the market-model approach). Second, we include a dummy variable coded one for days –5 to +5, and zero otherwise, in order to pick up any abnormal returns occurring specifically in that narrower window around the expiry date. Third, we use a series of alternative proxies for the market portfolio. For France we use 4 different proxies: the MSCI French All Share Index, the France Datastream Small Share Index, the DJ Euro Stoxx All Share Index and the DJ Euro Stoxx Small Share Index. For Germany we use the latter two as well as the MSCI German All Share Index

(Datastream does not provide a small share index for Germany). We do not find any systematic evidence of significant negative abnormal returns around the expiry of the lockups for both France and Germany.[14]

5. The Reasons behind the Differences in the Characteristics of Lockup Agreements

5.1 Methodology

The aim of this section is to explain the differences in the lockup characteristics across firms and between France and Germany. Unlike the data employed by previous studies, our data are at the level of individual shareholders. We are therefore able to test whether the type of shareholder and her position within the firm has an effect on the lockup she is subject to. Given that there is no cross-sectional variation in the French sample before 1 December 1998 in terms of lockup agreements, firms that went public before that date are excluded from all the regressions.

The methodology we apply consists of multinomial logit regressions. As the discussion from Section 4 (especially Table 4) shows, the lockup length is highly clustered around multiples of 6 months with very few or no observations in between. Further, the French regulator has created a dependency between the lockup length and the percentage of shares locked up. Therefore, the lockup length and percentage of shares need to be explained jointly such that a multinomial logit is the appropriate methodology to deal with both issues affecting the data.

Given the differences in regulation, the dependent variable in the multinomial logits for each country can take on a different range of values. For Germany, the dependent variable is set to 0 if the shareholder is not locked up, 1 if she faces the minimum requirement, and 2 if she is subject to a lockup beyond the minimum requirement. We also experiment with a different base case, i.e., the base case being the minimum requirement of 6 months and 100% of the shares. Using this base case enables us to estimate the odds ratio for a specific shareholder to be locked up beyond the minimum requirement versus being subject to the minimum requirement directly.

For France, we run a slightly different multinomial logit reflecting the differences in regulation. The dependent variable is equal to 0 if the shareholder is not locked up, 1 if he faces a 6-month lockup covering 100% of his shares, 2 if he is subject to the other minimum requirement (12 months covering 80% shares), and 3 if he is locked up beyond the two minimum requirements. Similar to Germany, we experiment with different base cases to determine the odds ratios for prominent choices directly. The first alternative base case is the minimum requirement of 6 months and 100% of the shares which enables us to determine the odds ratio of the other minimum requirement against this one. Estimating this odds ratio is important as it will provide insights as to whether the market perceives the two minimum requirements as being equivalent. The other alternative approach requires a reclassification of the types of lockup agreements, consisting mainly of treating the two different minimum requirements as one single case, which becomes the new base case. This then allows us to determine the odds ratio of being locked up beyond the two minimum requirements against being locked up at one of the two minimums. All regressions contain time dummies and industry dummies (based on the SIC codes obtained from Thomson One Banker, see Table 2).

[14] The tables are available upon request.

To test the effect of uncertainty on lockup contracts (hypothesis 1) we use three different proxies for uncertainty: the ratio of intangible assets over all fixed assets, the age of the firm and the natural logarithm of the real market capitalization calculated at the offer price (in € million). We expect a negative coefficient on the last two variables and a positive coefficient on the first one.

In order to check the validity of hypothesis 2 (commitment versus agency problems), we use three variables: the free-float, the percentage of secondary shares sold in the IPO, and the ownership by the individual shareholder. The free-float measures how many primary and secondary shares have been sold in the IPO and gives us an idea about the firm's overall ownership dispersion after the IPO. The percentage of secondary shares sold in the IPO is a measure of the commitment of the pre-IPO shareholders towards their firm and possible agency problems which may emerge after the IPO. The third variable captures the share stake of the specific shareholder. This variable allows us to perform a slightly different test on the validity of hypothesis 2 by checking whether different shareholders of a firm are treated differently while controlling for the size of their post-IPO holdings. A negative coefficient on the free-float or percentage of secondary shares sold in the IPO would support hypothesis 2a (stricter lockups give credibility to the signal of ownership retention) whereas a positive coefficient would lend support to the competing hypothesis 2b (ownership concentration and strict lockups are substitutes).

Underpricing is measured in two ways, i.e., on the first day of trading and also after the first week of trading. If hypothesis 3 is correct and underpricing is a substitute signal, then the coefficient on underpricing will be negative. The price revision is defined, in line with Brav and Gompers (2003), as the ratio of the difference between the offer price and the midpoint of the bookbuilding range over the midpoint of the bookbuilding range. If hypothesis 4 is valid, the coefficient on the price revision will be positive.

Hypothesis 5 consists of a set of competing hypotheses. Hypothesis 5a assumes that VCs are a substitute device to lockups whereas hypothesis 5b assumes that VCs act as complements. In order to check the validity of hypothesis 5, we use two different variables. First, we use a dummy variable which is set to one if the firm is VC-backed, and zero otherwise. Second, we use a dummy variable which equals one if a particular shareholder is a VC, and zero otherwise. Thus, the first variable is firm specific whereas the second variable is shareholder specific. Hypothesis 5a predicts a negative coefficient on the first variable and has no prediction as to the sign of the second variable. Hypothesis 5b predicts a positive sign for the coefficient on the first variable and a negative one for the second variable.

We include three additional shareholder-specific dummy variables: the first equals one if the shareholder is a founder, the second equals one if the shareholder is an executive and the third equals one if the shareholder is a non-executive, and zero otherwise. We expect positive coefficients on the first two dummies and an insignificant coefficient on the last one. Although it is difficult to find a strong theoretical basis for the effect of the board membership and status of the shareholder on the lockup characteristics, the different types of shareholders may have different degrees of involvement with the company, which may lead to different degrees of agency costs. For instance, at the IPO it is likely that the executives and founders are indispensable to the company in terms of their leadership and expertise (e.g., technical or product knowledge). Therefore, they may be subject to more stringent lockups to signal their commitment to the firm.

According to hypothesis 6a, good underwriters take only high-quality firms public and therefore there is less need for a more stringent lockup. The competing hypothesis 6b states that

reputable underwriters will impose more stringent lockups on firms as they have more reputation capital at stake. For Germany, we use Franzke's (2004) measure of underwriters' reputation. For the IPOs in 1997, the measure of reputation for each underwriter is the percentage of IPOs on all the segments of the Frankfurt stock exchange from 1990 to 1996 for which it acted as the lead underwriter. For the years 1998 to 2000, the measure of reputation also includes the percentage of IPOs for which the underwriter acted as the lead underwriter on the *Neuer Markt* from 1997 until the end of the year preceding the IPO. Equal weighting is applied to the two percentages. In order to compute the reputational measure, all the segments of the stock exchange need to be considered, as some highly reputable underwriters, i.e., those with a substantial share of IPOs on the main segments, may have refrained from taking public what they considered to be lesser-quality IPOs, i.e., those on the *Neuer Markt.* Hence, by just considering an underwriter's market share on the *Neuer Markt*, one would under- or overestimate their reputation. An equivalent measure of underwriters' reputation for France is not available.

Hypothesis 7, which states that underwriters may use lockups to extract further fees from the firms via SEOs conducted during the lockup period, is refuted for France. The reason is that French lockup agreements do not prohibit the issue of new shares. For the German IPOs, we investigated how many firms had SEOs before the expiry of their lockup agreement. If a firm had more than one lockup contract in place, we used the first date of expiry. We find that firms wait until the expiry of their lockup to issue further shares. Similarly, for the US, Brav and Gompers (2003) report that the likelihood of having the SEO with the IPO underwriter is not affected by the fact whether the SEO is within the lockup period or not.

Table 6 summarizes the hypotheses, the variables, and the predicted signs of their coefficients. The correlation matrix of all the independent variables reveals that, for both countries, there is a high correlation between the free-float after the IPO and the dummy variable indicating whether the firm is VC-backed. There could be two reasons for this. First, VCs use the IPO as a partial exit route and sell off a significant proportion of their holding in the IPO while keeping a stake in the firm. Second, VC-backed firms are relatively more risky and, therefore, the diversification benefits for all the shareholders are higher. Hence, all the shareholders of VC-backed firms will sell relatively more shares in the IPO than those of firms without VC-backing. We find that both reasons hold. Analyzing the German data, we find that VCs sell on average 26% of their shares in the IPO whereas the other shareholders of the VC-backed firms sell only 9% of their shares. The difference in means is significantly different from zero at the 0.1% level. On average, any of the shareholders (i.e., VCs and non-VCs) of VC-backed firms sell about 11% of their shares through the IPO compared to only 8% for the shareholders of firms without VC-backing. The difference in means is statistically significant at the 5% level for the two-tailed test. For France, VCs sell 13% of their shares in the IPO compared to 8% for the other shareholders of VC-financed firms. However, the difference is not significantly different from zero. The shareholders of VC-backed firms sell 9% of their shares compared to 5% for the shareholders of firms that are not financed by VCs. The difference is significant at the 1% level.

[Insert Table 6 about here]

5.2 Regression results

The regressions results are reported in Tables 7 and 8. The tables are organized in the following way. First, we compare the base case of no lockup for each country to the minimum requirement(s). Second, we compare the base case of no lockup to lockup contracts that are more stringent than the minimum. Third, we compare the minimum requirement(s) to more

than the minimum. Finally, for the case of France, we also compare the base case of 6 months with 100% of the shares being locked up with the other minimum requirement of 1 year and 80% of the shares being locked up.

The results from the multinomial logit models on the determinants of the lockup contracts for Germany can be found in Table 7. For columns (1) to (4), the base case is no lockup. German regulation in principle locks up all the pre-IPO shareholders and few shareholders get an exemption. Virtually all of these exemptions are shares that are jointly held by a large number of individuals, often the employees, each having a small stake. In order to make the comparability with the multinomial logits for France easier, the results reported in Table 7 are those run on the entire sample including the shareholders who are exempt from the minimum requirement. The results do not change if these shareholders are dropped from the sample. Columns (1) and (2) contain the results for the multinomial logit including the ratio of intangibles over all fixed assets. As only about half of the German IPOs report the value of their intangibles, we also ran a multinomial logit excluding this ratio. The results can be found in columns (3) and (4). Finally, columns (5) and (6) contain the results for the multinomial logit that uses the minimum requirement as the base case. This multinomial logit is estimated in order to determine the odds ratio of being locked up beyond the minimum requirement against being subject to the minimum requirement.[15]

[Insert Table 7 about here]

Table 8 contains the results for France. Similar to Germany, we run multinomial logits, but given that there are two minimum requirements, the number of different cases is 4 rather than 3. The results including the intangibles ratio are reported in columns (1)-(5) and those excluding this ratio are reported in columns (6)-(10). Similar to what we did for Germany, we also run multinomial logits with different base cases in order to estimate directly the odds ratios of certain prominent choices against others. Again, we only report the equations for the interesting odds ratios in the table. For columns (1) to (3) and (6) to (8), the base case is no lockup. In columns (4) and (9) we compare the base case of the minimum requirement of 6 months covering 100% of the shares with the other minimum requirement. In columns (5) and (10), we compare the base case of being locked up at either minimum requirement to being locked up beyond the minimum requirements. In this case, the multinomial logit treats both minimum requirements as being equivalent, and its dependent variable can only take on 3 values.

[Insert Table 8 about here]

For both France and Germany, less uncertainty about the firm's future value – as measured by the firm's age and its market capitalization at the offer price – makes it more likely that the firm's shareholders will only be subject to the minimum requirement. This is in line with the findings by Brau, Lambson and McQueen (2004) who state that the lockup length of US contracts is positively correlated with their proxies for information asymmetries: small and young firms have longer lockups than their larger and older counterparts. Further, for France, the odds are higher for the shareholders of larger and older firms to be locked up at the minimum requirement of 6 months and 100% of the shares rather than the other minimum requirement. This suggests that the minimum requirement locking up 80% of the shares for 1 year is regarded as the more stringent of the two minimum requirements. For the intangibles ratio, the results are less clear. German firms with more intangibles have a lower likelihood to lock up their shareholders beyond the required minimum. Conversely, for France, we obtain a result

[15] The column for the odds of not being locked up versus being locked up at the minimum requirement is not reported in the table as this is the inverse of columns (1) or (3).

which is more in line with hypothesis 1, i.e., shareholders of firms with more intangibles (and thus with less collateral) tend to be locked up with the more stringent minimum requirement of 1 year and 80% of the shares.[16] All in all, the evidence of the impact of corporate uncertainty on the choice of lockup contracts provides strong support for hypothesis 1.

Hypothesis 2b has strong support for both Germany and France. The higher the free-float immediately after the IPO, the higher is the likelihood that the shareholders will be subject to a more stringent lockup. So, it seems that lockup contracts are used as a pre-commitment device by the pre-IPO shareholders who have sold substantial share stakes at the flotation. When focusing on the choice between the two minimum requirements in France, column (9) of Table 8 suggests that the shareholders of firms with more free-float are more likely to be locked up at the less stringent minimum requirement than the minimum requirement of 1 year and 80% of the shares. However, if an interactive term between the free-float and the dummy which equals one if the shareholder is an executive is included in the logit (not reported in the table), the free-float coefficient is no longer statistically significant. In addition, if one controls for intangibles (column (4)), the coefficient also loses its significance. This suggests that in firms with more free-float some shareholders may get away with a relatively less stringent lockup whereas the executive directors are subject to a more stringent lockup. Similarly, if the percentage of secondary shares sold in the IPO is used, we also get support for Hypothesis 2b for France (not reported in the tables). However, the coefficient on the variable is not significant for Germany.

The coefficient on first-day underpricing is not significant for Germany (Table 7). However, the logit regressions for France which exclude the intangibles ratio suggest that firms with a lot of underpricing are less likely to lock up their shareholders beyond the two minimum requirements (columns (8) and (10) of Table 8). This provides some support for hypothesis 3 that in France underpricing acts as a substitute signal for the lockup.

Overall, there is no consistent support for hypothesis 4 which states that firms using more stringent lockups as a signal of their superior quality are able to revise their offer price when the signal has been perceived by the market. Similarly, Brav and Gompers (2003) do not find any support for this signaling hypothesis. They report that firms that revise the final issue price upwards have shorter lockups, but the difference is not statistically different from zero.

Hypothesis 5 is on the role of VCs, i.e., whether they provide a certification role that acts as a substitute to the lockups (hypothesis 5a) or whether they are a complement to the lockups (hypothesis 5b). For both countries, we find that VC shareholders are less likely to be subject to more stringent lockup contracts. Specifically for France, VCs are also less likely to be locked up by means of the more stringent of the two minimum contracts. The coefficient on the dummy variable which indicates whether the shareholder's firm is VC-backed is consis-

[16] The coefficient on intangibles in column (1) is significant and negative whereas that in column (4) is significant but positive. At first sight, this seems to be a contradictory result suggesting that shareholders of firms with high intangibles are not locked up or tend to be subject to the more stringent of the two legal minimums. A visual inspection of the French data reveals that a significant proportion of VCs in firms with an above-median proportion of intangibles are not locked up whereas executives of such firms tend to be subject to the more stringent of the two minimums. Keeping intangibles fixed, the results from columns (1) and (4) confirm this pattern in the data as the VC dummy in column (1) is significant whereas in column (4) it is not. All in all, this suggests that, even for firms with high intangibles, French VCs are frequently not locked up whereas executives tend to be more likely to be locked up at the more stringent of the two minimum requirements. We also tried to include interactive variables in the multinomial logits (e.g., the interaction between the VC dummy and intangibles). However, we did not find that these interactive variables were significant. The reason for the lack of significance may be the high sensitivity of logits to multicollinearity.

tently negative for Germany but only weakly significant in only one model (column (5)). This implies that while VCs are locked up for shorter periods in Germany, the evidence that VC-backing exerts a certification role (and hence reduces the lockup length imposed on other shareholders) is weak. For France, there is evidence that shareholders of VC-backed firms are more likely to be locked up (columns (1)-(3) of Table 8) albeit the results do not suggest that they will be subject to more stringent lockups than the shareholders of firms without VC backing (columns (4) and (5)) This gives some support to hypothesis 5b for France. Hence, VCs seem to get away with less stringent lockups at the expense of other shareholders. Espenlaub et al. (2003b) also report that VCs in the UK seem to be complements to lockups rather than substitutes. They find that lockup periods are particularly long for VC-backed high-tech firms whereas for the other firms the presence of a venture capitalist reduces the lockup length. This contrasts with the results of Brau, Lambson and McQueen (2004) who document that the lockup length in the US decreases when a third party (a VC, auditor or investment bank) serves to certify the firm's quality.

Table 7 gives support to hypothesis 6b as the odds are higher that shareholders of a German firm taken public by a highly reputable underwriter will be locked up beyond the minimum requirement.[17] This suggests that high-quality underwriters impose longer lockups on the shareholders of the firms they take public in order to protect their reputational capital. Conversely, Espenlaub et al. (2001) do not find that underwriter reputation has an impact on the lockup characteristics of UK IPOs.

Concerning the three dummies measuring the status and board membership of the shareholder, only the coefficient on the executive dummy is significantly different from zero. The insignificance of the coefficient on the founder dummy may be due to the fact that most executives also happen to be founders. However, if the executive dummy is excluded from the regressions, the coefficient on the founder dummy is still not significant. For Germany, the results suggest that executives are more likely to be facing a lockup exceeding the minimum requirement. For France, the results are similar. First, as one would expect, the odds that an executive is exempted from the minimum requirement are relatively small. Second, executives are more likely to face the one-year lockup covering 80% of the shares rather than the other, less stringent minimum requirement.

To summarize, we find that firm as well as shareholder characteristics explain a significant part of the cross-sectional variation in the length of lockup arrangements for IPOs on both the *Neuer Markt* and the *Nouveau Marché*.

6. Conclusions

Whereas virtually all the published literature has focused on lockup contracts in UK and US IPOs, this paper contributes to the IPO-literature by analyzing these contracts for IPOs on the French *Nouveau Marché* and the German *Neuer Markt*. Contrary to UK IPOs and to most US IPOs, firms going public on the French and German new markets are subject to compulsory lockups. While the German market imposes a minimum lockup of 6 months on all the pre-IPO shareholders' shares retained immediately after the flotation, the French market requires insiders to be locked up with 100% of the shares for 6 months or 80% of the shares for 1 year. About 52% of the shares that are locked up and held by the pre-IPO shareholders of French firms are subject to lockups which exceed the minimum requirement. For Germany, the

[17] Comparable data on underwriter reputation are not available for France and therefore the validity of the hypothesis could not be tested for this country.

equivalent percentage is 59%. Whereas negative abnormal returns on the day of the expiry of lockup contracts have been reported for the US, UK research has not found a significant market reaction. This paper confirms the absence of significantly abnormal returns at the expiry for the main Continental European markets. We also provide an important contribution to the lockup literature as we examine lockup contracts at the shareholder level rather than at the firm level. Consequently, we are able to study more refined hypotheses about the differences in lockup contracts across shareholders, across firms and across countries. We demonstrate that lockup contracts are not only determined by firm characteristics but also depend on the shareholder type.

The paper uncovers some marked differences in terms of the role of venture capitalists in German and French IPOs. First, there is a significantly higher proportion of French firms that are VC-backed. Second, VCs in French firms are more likely to have board representation (via executive and non-executives) than their counterparts in German firms. Third, French VCs sell a smaller fraction of their holding at the flotation. We find that the shareholders of firms characterized by more uncertainty (small and young firms) are locked up for longer and for a higher proportion of their shares in both Germany and France. When the free-float at the IPO is high, more stringent lockup contracts are used (especially by the executive directors) to signal pre-commitment. Venture capitalists in German IPOs prefer a quick exit after the flotation as they have short lockups (usually identical to the legal minimum). In contrast, founders, and executive and non-executive directors who retain shares after the flotation are locked up for longer periods. In France, the situation is similar: VCs are unlikely to be subject to lockup contracts exceeding the minimum requirements. Furthermore, they tend be subject to the less stringent of the minimum requirements.

We have also examined whether the presence of a venture capitalist has a negative impact on the lockup duration as it is possible that VCs certify firm quality and thus reduce the need for long lockups on other types of shareholders. We find that this certification role is not supported by our analysis.

We also show that German IPOs with reputable underwriters are subject to more stringent lockup contracts. This implies that underwriters protect their reputational capital rather than provide a certification role. Also for Germany, we do not find any evidence that high-quality firms opt for more stringent lockup agreements and are thus able to revise their offer price upwards or reduce the degree of underpricing. In contrast, we find that, in France, the market perceives a more stringent lockup as a signal of firm quality as it is a substitute to the initial underpricing.

The paper shows that although the French regulator gives firms a choice of two minimum lockup specifications, firms are clearly not indifferent between the two options. Overall, the lockup agreement of 6 months covering all of the shares is perceived to be less stringent as it is chosen by firms with less uncertainty about their value. For VC-backed firms, all the shareholders tend to be locked up although the probability that VCs themselves are subject to lockup contracts stricter than the minimum requirements is small. Young and small firms tend to use more stringent lockup contracts. Finally, we do not find any evidence that firms that signal their superior quality by locking up their shareholders for longer or with a higher proportion of their shares are able to revise their offer price upwards.

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Table 1: Compulsory lockups on the EuroNM[a] and other markets

Nouveau Marché (Paris)	Neuer Markt (Frankfurt)	Nuovo Mercato (Milan)	Nieuwe Markt (Amsterdam)	Brussels EuroNM	LSE	EuroNext (since June 2000)	US market
For the directors:[b] the issuing firm has the choice between either 80% of the holdings for 1 year; or 100% of the holdings for 6 months.[c] Prior to 1 December 1998, directors were locked up for 3 years for 80% of their shares.	All initial shareholders and the company: 100% for 6 months and no issue of new shares is allowed during the same period	Directors, managers and founders are locked up with 80% of their holdings for one year. Shareholders (other than the above) who became shareholders (holding more than 2%) in the 12 months preceding the application for a stock exchange listing are also locked up with 80% of their shares for one year. The stock exchange may also lock up a shareholder who became a controlling shareholder before the 12 months preceding the application for a listing. [d]	All founding shareholders, all managing shareholders and shareholders sitting on the supervisory board are locked up for a minimum of 360 days and for 80% of their shares. Before 24 November 2000, all shareholders holding at least 5% of the shares outstanding were locked up depending on the firm's published results. 100% of their shares were locked up until the firm had reported positive operating income and net income. Then 50% of their shares remained locked up until the firm had reported 3 years of positive operating income and net income within a five-year period. If the firm had a record of at least three years of positive operating income and net income during the 5 years preceding the IPO, then there was no lockup.	All managing shareholders are locked up for at least one year and for 80% of their shares.	No minimum lockups since January 2000. Before that date, mineral companies and scientific research-based companies were subject to certain minimum lockup periods if they had less than 3 years of trading history.[e]	There is currently no harmonization of listing rules. Firms applying for a EuroNext listing will need to choose the Amsterdam, Brussels or Paris market as their entry to Euronext and will then have to satisfy the listing rules of that particular market.	SEC Rule 144 limits the sale of restricted securities, i.e., securities that have been directly purchased in a private placement from the issuing firm before the IPO. Such sales are not allowed during the first year of ownership.[f] After this year, during any three-month period, the sale cannot exceed 1% of the shares outstanding and the average weekly trading volume of the previous 4 weeks.[g] NASD rules also prevent venture capitalists who have a private investment in the issuing firm from selling their shares during a 90-day period and underwriters who have received shares as compensation are not allowed to sell for one year.

Notes : [a] The lockup rules are contained in *Instruction NM3-02* of 1 December 1998 for the Nouveau Marché, section 7.2.9 of *Regelwerk Neuer Markt* for the Neuer Markt, Article 2.2.3 of the *Rules of the Nuovo Mercato Organised and Managed by Borsa Italiana S.P.A.*

[b] Earlier documents issued by the *Nouveau Marché* talk about insiders. The meaning of insiders – typically the directors and the founders – was defined and agreed at the time of the filing of the IPO prospectus.

[c] For firms that are less than 2 years of age, the directors are not allowed to sell or transfer any of their shares for the first 2 years after the admission to the listing. Other shareholders who became shareholders of the firm during the year preceding the admission to the stock market can also be subject a compulsory lockup.

[d] All shareholders in firms which have been exempted by the stock exchange from providing financial accounts for at least one entire year, are locked up for 100% of their shares for the first year and at least 80% of their shares for the second year after the first date of trading. In addition, at least 10% of the equity of firms with less than 3 financial years has to be held by venture capital investors or by other shareholders actively involved in the firm's business.

[e] See Espenlaub et al. (2001) for details about the regulation before January 2000.

[f] Before February 1997, this period was two years.

[g] After their sale, these shares become registered shares *de facto* (see Field and Hanka 2001).

Table 2: Firm characteristics of the IPOs introduced on the *Neuer Markt* and the *Nouveau Marché*

Figures shown in Panel A are the average values. The first figure in parentheses is the median value, the second figure is the sample size and the third figure (if applicable) is the percentage of positive observations. The values in the last column of panel A are the p-values for the t-test on the difference in means between Germany and France. The market capitalization is adjusted for inflation using the monthly IMF consumer price indices (base month is June 2000). For Panel B, the figures are the numbers of firms for each SIC category. SIC codes were unavailable for 3 of the French IPOs. There were no IPOs in Agriculture, forestry, fishing (codes 01-09), Mining (codes 10-14), Construction (codes 15-17) and Public administration (codes 91-99) for either country. The figures in parentheses are the proportions of firms in each SIC category. The Z-test for the equality between two proportions (assuming a binomial distribution) was computed for the difference between the proportion of German firms and that of French firms in each SIC category. However, none of the differences was significantly different from zero at any of the conventional levels of confidence.

Panel A: Sample characteristics

	Germany	France	p-values for t-test
Age at IPO in years	13.4 (10.0, 268)	11.1 (9, 138)	0.053
Real market capitalization at offer price in m €	231.7 (125.8, 268)	74.5 (43.4, 138)	0.001
Price revision	4.3% (7.1%, 267, 81.3%)	2.7% (5.0%, 138, 72.3%)	0.000
Intangibles/fixed assets	59.9% (69.2%, 133)	49.1% (49.5%, 86)	0.012
Primary shares sold in the IPO as a percentage of shares outstanding after IPO	24.8% (25.0%,268)	23.4% (21.5%,138)	0.083
Secondary shares sold in the IPO as a percentage of shares outstanding after IPO	6.9% (5.0%,268)	5.3% (3.6%,137)	0.023
First-day underpricing	58.5% (29.0%, 268, 87.7%)	21.2% (3.3%, 135, 77.8%)	0.000
First-week underpricing	61.5% (33.2%, 268, 80.2%)	25.5% (9.8%, 134, 71.6%)	0.000

Panel B: Industry distribution (SIC codes)

	Germany	France
Manufacturing (codes 20-39)	51 (19.0%)	33 (24.4%)
Transportation & public utilities (codes 40-49)	18 (6.7%)	6 (4.4%)
Wholesale trade (codes 50-51)	13 (4.9%)	10 (7.4%)
Retail trade (codes 52-59)	5 (1.9%)	6 (4.4%)
Finance, insurance, real estate (codes 60-67)	7 (2.6%)	0 (0.0%)
Services (codes 70-89)	174 (64.9%)	80 (59.3%)

Table 3: Percentage of firms with VC-backing and percentage of ownership held by different shareholder categories

*Figures shown in Panel A are the percentages of firms with VC-backing. The figures in parentheses are the numbers of firms. The Z-test in Panel A is a two-tailed Z-test for the equality between two proportions from two samples, assuming a binomial distribution. Under the null hypothesis that the two proportions are identical, Z is approximately distributed as a standard normal deviate (Kanji 1995). Figures reported in Panel B refer to the percentages of ownership held by each category. The stars in Panel B report the significance of the t-test for the difference in ownership means between Germany and France with *** standing for statistical significance at the 1% level of confidence.*

Panel A: Percentage of firms with venture-capital backing

Germany	France	Z-test for difference in proportions
47.0% (126)	61.0% (75)	-2.565**

Panel B: Percentage of ownership before and after the IPO

	All pre-IPO shareholders		Non-executives		Executives		Venture capitalists		Founders	
	Germany	France	Germany	France	Germany	France	Germany	France	Germany	France
Before IPO	99. 6%	100.0%	26.5%	30.3%	53.2%	57.8%	11.8%***	26.8%	59.9%	60.4%
After IPO	72.0%	71.7%	18.1%	21.9%	39.0%	42.1%	7.1%***	18.1%	43.7%	43.9%

Table 4: Types of lockup contracts for all the shareholders

The table reports the frequency of different types of lockup contracts for all the shareholders excluding the free-float which is never locked up. As most firms have more than one type of contract in place the total number of contracts per country is higher than the number of firms for that country. The frequency is the number of contracts of a given type over the total number of contracts for that country. French IPOs before 1 December 1998 are excluded from the sample.

Type of lockup contract	**GERMANY**		**FRANCE**	
	No of contracts	*Frequency*	*No of contracts*	*Frequency*
Panel A: 100% of the shares are locked up				
6 months	163	43.0%	31	21.5%
7 months	0	0.0%	2	1.4%
9 months	1	0.2%	7	4.9%
12 months	145	38.3%	25	17.4%
13 months	1	0.2%	0	0.0%
18 months	16	4.2%	1	0.7%
24 months	9	2.4%	4	2.8%
30 months	5	1.3%	0	0.0%
36 months	2	0.5%	1	0.7%
Panel B: Less than 100% of the shares are locked up				
12 months for less than 50%	0	0.0%	2	1.4%
12 months for 80%	0	0.0%	38	26.4%
12 months for more than 80% but less than 100%	0	0.0%	5	3.5%
18 months for 50%	0	0.0%	1	0.7%
36 months for 80%	0	0.0%	0	0.0%
Others	37	9.8%	27	18.8%
Sum of different contracts	379	100.0%	144	100.0%

Table 5: Maximum percentage of shares locked up and percentage of shares subject to minimum requirement

Figures in Panel A are the sample average of the total number of shares locked up for each category expressed as a percentage of the total number of shares owned by that category for each firm. Information on the executives was not available for one of the French firms. Figures in Panel B are the sample means of the firms' average minimum lockup periods for all pre-IPO shareholders and for each shareholder category. For shareholders subject to staggered agreements, the lockup period will be the period up to the first day on which some of the shares stop being locked up. The stars in Panel B refer to the significance of the t-test on the difference between the average minimum lockup period for all pre-IPO shareholders and the average minimum lockup period for that particular category of shareholders. Figures shown in Panel C are the two t-tailed t-tests for the differences in means. Panel D shows the ratio of the total number of shares subject to the minimum requirement(s) over the total number of shares locked up for a given shareholder category and the equivalent ratio subject to more stringent lockups. French IPOs before 1 December 1998 are excluded from the sample.

Panel A: Shares locked up as a percentage of shares owned

All pre-IPO shareholders		Non-executives		Executives		Venture capitalists		Founders	
Germany	France	Germany	France	Germany	France	Germany	France	Germany	France
100%	88.8%	100.0%	93.6%	100.0%	87.7%	100.0%	94.7%	100.0%	87.7%

Panel B: Average minimum lockup periods (months) and statistical significance of the difference between lockup period by category and lockup period for all pre-IPO shareholders

All pre-IPO shareholders		Non-executives		Executives		Venture capitalists		Founders	
Germany	France	Germany	France	Germany	France	Germany	France	Germany	France
9.5	6.9	9.9	7.1	10.9***	10.9***	8.2***	6.1	10.5**	8.9*

Panel C: t-tests for the difference in means of lockup periods between Germany and France

All pre-IPO shareholders	Non-executives	Executives	Venture capitalists	Founders
4.826***	2.695***	0.097	2.592***	1.553

Panel D: Percentage of shares subject to the minimum requirement and beyond

	All pre-IPO shareholders		Non-executives		Executives		Venture capitalists		Founders	
	Minimum require-ment	Beyond minimum req.	Minimum require-ment	Beyond minimum req.	Minimum require-ment	Beyond minimum req.	Minimum require-ment	Beyond minimum req.	Minimum requirement	Beyond minimum req.
Germany – 6 months for 100%	41.0%	59.0%	47.3%	52.7%	32.9%	67.1%	67.3%	32.7%	37.1%	62.9%
France – 6 months for 100%	20.8%	51.9%	28.6%	59.4%	14.4%	54.3%	32.2%	58.8%	14.0%	54.8%
France – 12 months for 80%	27.3%		12.0%		31.0%		9.0%		30.9%	

Table 6: Variables used and hypotheses tested

Variable	Hypothesis number	Related hypothesis	Predicted lockup	Findings for Germany	Findings for France
Age at IPO	1	uncertainty	Less stringent	Less stringent	Less stringent (and more likely to be locked up for 6 months and 100% of the shares)
Log (market cap at offer price)	1	uncertainty	Less stringent	Less stringent	Less stringent (and more likely to be locked up for 6 months and 100% of the shares)
Intangibles/fixed assets	1	uncertainty	More stringent	Less stringent	More likely to be locked up for 1 year and 80% of the shares
Free–float after IPO	2a	commitment device	Less stringent	More stringent	More stringent (Beyond minimum requirements)
	2b	agency problem	More stringent		
Shareholder's ownership after IPO	2a	commitment device	More stringent	More stringent (Weak evidence)	More likely to be locked up
	2b	agency problem	Less stringent		
Percentage of secondary shares sold in the IPO	2a	commitment device	Less stringent	Not significant	Less likely to be locked up if not executive/ More stringent for executives
	2b	agency problem	More stringent		
First–day underpricing	3	substitute signal	Less stringent	Not significant	Less stringent
Price revision	4	firms signal higher quality via lockup and thus revise offer price upwards	More stringent	Not significant	More likely to be locked up
Venture–capital backed firm	5a	VCs as a substitute device	Less stringent	Less stringent (Weak evidence)	More likely to be locked up
	5b	VCs as a complement device	More stringent		
Shareholder is venture capitalist	5a	VCs as a substitute device	No prediction	Less stringent (Strong evidence)	More likely not to be locked up
	5b	VCs as a complement device	Less stringent		

Table 6 cont'd

Variable	Hypothesis number	Related hypothesis	Predicted sign	Findings for Germany	Findings for France
Underwriter's reputation	6a	underwriters as substitute device	Less stringent	More stringent	Not applicable
	6b	underwriters as complement device	More stringent		
Other variables:					
Founder			More stringent	Not significant	Not significant
Shareholder is non–executive			Less stringent	Not significant	Not significant
Shareholder is executive			More stringent	More stringent	More likely to be locked up for 1 year and 80% of the shares

Table 7: Germany – Multinomial logit regressions for the choice of lockup contract

The dependent variable in the logit regressions in columns (1)-(4) is set to zero if the shareholder is not locked up, one if s/he is subject to the minimum requirement and 2 if s/he is subject to a lockup exceeding the minimum requirement. The dependent variable in the logit regressions in columns (5)-(6) is zero if s/he is subject to the minimum requirement, 1 if s/he is not locked up, and 2 if s/he is subject to a lockup exceeding the minimum requirement. The odds ratio for the latter case is reported in columns (5) and (6). Figures between parentheses are the p–values of the t–statistics. The coefficients in bold are significantly different from zero at the 10% level or better.

	Base case = not locked up				***Base case = minimum requirement***	
	Minimum requirement	**Beyond minimum requirement**	**Minimum requirement**	**Beyond minimum requirement**	**Beyond minimum requirement**	**Beyond minimum requirement**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Constant	**-18.965 (0.005)**	-10.869 (0.103)	**-12.384 (0.000)**	**-11.485 (0.094)**	**8.359 (0.000)**	**5.755 (0.000)**
Free–float after IPO	2.784 (0.428)	**6.353 (0.068)**	2.169 (0.243)	**6.528 (0.060)**	**3.740 (0.003)**	**3.550 (0.000)**
Shareholder's ownership after IPO	5.746 (0.176)	5.445 (0.200)	**6.428 (0.041)**	5.847 (0.174)	-0.302 (0.605)	-0.437 (0.313)
Founder	32.176 (1.000)	32.099 (1.000)	32.135 (1.000)	31.812 (1.000)	-0.083 (0.645)	0.149 (0.202)
Shareholder is non–executive	32.752 (1.000)	33.081 (1.000)	32.557 (1.000)	33.046 (1.000)	0.301 (0.142)	0.121 (0.396)
Shareholder is executive	31.828 (1.000)	32.879 (1.000)	318148 (1.000)	32.756 (1.000)	**1.032 (0.000)**	**0.721 (0.000)**
Shareholder is venture capitalist	33.418 (1.000)	32.004 (1.000)	33.327 (1.000)	31.953 (1.000)	**-1.427 (0.000)**	**-1.144 (0.000)**
Venture–capital backed firm	-0.177 (0.739)	-0.549 (0.301)	0.238 (0.420)	-0.662 (0.218)	**-0.339 (0.068)**	-0.164 (0.162)
Age at IPO	-0.013 (0.381)	**-0.030 (0.047)**	-0.003 (0.768)	**-0.030 (0.045)**	**-0.020 (0.006)**	**-0.021 (0.000)**
Log(real market cap at offer price)	**1.039 (0.002)**	0.553 (0.104)	**0.688 (0.000)**	**0.577 (0.097)**	**-0.493 (0.000)**	**-.0.365 (0.000)**
Price revision	3.169 (0.299)	3.036 (0.326)	-1.862 (0.201)	3.304 (0.270)	-0.669 (0.601)	0.779 (0.226)
Intangibles/fixed assets	-0.481 (0.530)	**-1.403 (0.062)**	–	–	**-0.966 (0.001)**	–
First-day under-pricing	-0.035 (0.808)	-0.012 (0.933)	-0.062 (0.615)	-0.148 (0.321)	0.036 (0.587)	0.003 (0.951)
Underwriter's reputation	–	–	**-0.244 (0.054)**	-0.340 (0.102)	**0.179 (0.025)**	**0.229 (0.000)**
Chi-squared (p-value)	361.72		619.04		369.90	619.03
Percentage of correct predictions	51.6%		48.9%		66.5%	66.0%
Observations	1168		2361		1168	2361

Table 8: France – Multinomial logit regressions for the choice of lockup contract

Figures between parentheses are the p–values of the t–statistics. The coefficients in bold are significantly different from zero at the 10% level or better. French IPOs before 1 December were excluded from the sample.

	Base case = not locked up			***Base case = 100% lockup for 6 months***	***Base case = either minimum require-ment***	***Base case = not locked up***			***Base case = 100% lockup for 6 months***	***Base case = either minimum require-ment***
	100% lockup for 6 months	**80% lockup for 1 year**	**Beyond the 2 minimum require-ments**	**80% lockup for 1 year**	**Beyond the 2 minimum require-ments**	**100% lockup for 6 months**	**80% lockup for 1 year**	**Beyond the 2 minimum require-ments**	**80% lockup for 1 year**	**Beyond the 2 minimum require-ments**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
Constant	-70.217 (1.000)	-14.315 (1.000)	0.688 (0.892)	56.480 (1.000)	41.433 (1.000)	-32.815 (0.000)	6.059 (0.257)	2.837 (0.433)	**38.874** **(0.000)**	**19.689** **(0.000)**
Free–float after IPO	5.493 (0.166)	1.896 (0.610)	**16.192** **(0.000)**	-3.600 (0.446)	**11.647** **(0.000)**	**5.306** **(0.022)**	-1.882 (0.468)	**9.089** **(0.000)**	**-7.187** **(0.014)**	**6.500** **(0.000)**
Shareholder's ownership after IPO	**31.710** **(0.000)**	**29.017** **(0.000)**	**27.206** **(0.000)**	-2.694 (0.338)	-1.979 (0.209)	**18.170** **(0.000)**	**18.937** **(0.000)**	**17.440** **(0.000)**	0.767 (0.628)	-1.443 (0.188)
Founder	-0.932 (0.174)	0.047 (0.931)	-0.634 (0.185)	0.979 (0.187)	-0.211 (0.630)	**-1.121** **(0.011)**	-0.399 (0.306)	**-1.143** **(0.001)**	0.722 (0.132)	-0.475 (0.169)
Shareholder is non–executive	0.565 (0.324)	**1.321** **(0.046)**	-0.208 (0.687)	0.756 (0.323)	**-0.957** **(0.048)**	**0.736** **(0.055)**	0.668 (0.153)	0.282 (0.385)	-0.068 (0.288)	-0.399 (0.225)
Shareholder is executive	0.588 (0.430)	**2.601** **(0.000)**	**0.909** **(0.089)**	**2.013** **(0.011)**	**-1.026** **(0.031)**	**1.124** **(0.022)**	**2.772** **(0.000)**	**0.910** **(0.028)**	**1.648** **(0.001)**	**-1.158** **(0.002)**
Shareholder is venture capitalist	-0.445 (0.466)	-1.075 (0.130)	**-1.399** **(0.019)**	-0.631 (0.446)	-0.592 (0.277)	-0.022 (0.957)	**-1.214** **(0.036)**	-0.302 (0.378)	**-1.192** **(0.052)**	0.126 (0.722)
Venture–capital backed firm	**4.190** **(0.000)**	**2.833** **(0.000)**	**1.909** **(0.001)**	-1.357 (0.219)	-0.468 (0.373)	0.769 (0.110)	**0.810** **(0.047)**	0.147 (0.668)	0.041 (0.938)	-0.359 (0.311)
Age at IPO	0.027 (0.519)	**-0.089** **(0.010)**	**-0.149** **(0.000)**	**-0.116** **(0.017)**	**-0.103** **(0.000)**	-0.025 (0.246)	-0.020 (0.336)	**-0.039** **(0.006)**	0.006 (0.826)	**-0.032** **(0.025)**

Table 8 cont'd

	Base case = not locked up			*Base case = 100% lockup for 6 months*	*Base case = either minimum require-ment*	*Base case = not locked up*			*Base case = 100% lockup for 6 months*	*Base case = either minimum require-ment*
	100% lockup for 6 months	**80% lockup for 1 year**	**Beyond the 2 minimum require-ments**	**80% lockup for 1 year**	**Beyond the 2 minimum require-ments**	**100% lockup for 6 months**	**80% lockup for 1 year**	**Beyond the 2 minimum require-ments**	**80% lockup for 1 year**	**Beyond the 2 minimum require-ments**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
Log (real market cap at offer price)	**2.103 (0.000)**	**-1.372 (0.001)**	-0.448 (0.102)	**-3.475 (0.000)**	**-0.798 (0.001)**	**1.708 (0.000)**	**-0.619 (0.034)**	-0.284 (0.148)	**-2.326 (0.000)**	**-1.116 (0.000)**
Price revision	**11.097 (0.063)**	**9.626 (0.024)**	**5.637 (0.053)**	-1.471 (0.826)	-2.154 (0.504)	-1.288 (0.663)	2.659 (0.363)	-1.508 (0.465)	3.947 (0.265)	0.085 (0.968)
Intangibles/fixed assets	**-4.900 (0.000)**	1.248 (0.119)	0.169 (0.807)	**6.148 (0.000)**	0.937 (0.150)	–	–	–	–	–
First-day underpricing	-0.442 (0.701)	0.472 (0.578)	-0.932 (0.356)	0.914 (0.421)	-1.346 (0.191)	0.313 (0.400)	0.519 (0.170)	**-1.562 (0.006)**	0.206 (0.657)	**-1.911 (0.000)**
Chi-squared (p-value)		461.60 (0.000)		461.60 (0.000)	298.07 (0.000)		573.67 (0.000)		573.67 (0.000)	404.21 (0.000)
Percentage of correct predictions		77.2%		76.1%	72.3%		69.1%		69.1%	67.0%
Observations		372		372	372		619		619	619