IPO lockups and insider trading

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Abstract

We examine directors' and PE firms' sales and purchases before and after lockup expiry in a sample of 223 UK IPOs, during the period 1999-2014. Director and PE firms' purchases exhibit a positive and significant price impact. Overall, the price effect of director sales and purchases is stronger compared to the price effect of PE firm deals. Majority (75%) of PE firms sell their locked shares in instalments. When they sell for the first time, PE firms adopt contrarian strategy only for complete exits (i.e. sales). For subsequent sales, PE firms follow contrarian strategies only for partial sales. Among different types of directors, founders' purchases and CEOs' sales produce strongest price effects.

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1. Introduction

Evidence on UK director dealings in seasoned (Fidrmuc et al., 2006; Friedrich et al. 2002) and IPO firms (Hoque and Lasfer, 2013) shows that on the announcement date of buy (sell) trades, share prices tend to increases (decrease). Consistent with US literature, the directors follow contrarian strategy by selling (buying) after significant share price increase (decrease). Evidence on importance of director dealings on IPO long term performance is mixed. Chen et al. (2012), for example, report that long term returns of US IPOs tend to be negatively associated with abnormal selling by senior executives.[1] The sales by senior executives are in part motivated by private information whilst sales by other insiders are consistent with portfolio diversification. Hoque and Lasfer (2013) examine importance of directors' trades for the long-term performance of IPOs from the Main and Second boards of the London Stock Exchange (LSE) during 1999-2006.[2] Authors report evenly distributed directors' trades across 36-month period with median of around 18 months from IPOs to the trades. Contrary to US evidence, net sales are associated with positive long term IPO returns. Net purchases are associated with underperformance in the long run.

Lockups prevent firms' insiders from selling whole or some percentage of their equity during post-IPO periods. While most of the US studies report standardised lockups of 180 days (Field and Hanka, 2001; Mohan and Chen, 2001; Brau et al., 2004), evidence from the UK markets is rather different and suggest significant variations (Espenlaub et al., 2001; Hoque, 2011; Ahmed and Jelic, 2014). Prior studies on US lockups report a significant drop in prices, with average returns between 1 and 3%, at lockup expiry (Brav and Gompers, 2003; Field and Hanka, 2001; Brau et al. 2004). The evidence for UK is less conclusive. Whilst Espenlaub et al. (2001; 2014) report negative but not statistically significant change in price, Hock and Lasfer (2009) report highly significant change in price (-1.85%) during 4 day window around lockup expiry.[3]

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[1] US studies consider senior executives as: presidents, CEO, chair of the board, officer-directors, CFO, vice president, controlling persons (see e.g. Seyhun, 1990). Insiders are defined as officers, directors, key employees, and shareholders with more than 10% holdings in any equity class (Lakonishok and Lee, 2001).
[2] Their sample includes 691 IPOs from the Alternative Investment Market (i.e. Second Board) and 139 IPOs from the Main board.
[3] Espenlaub et al. (2001) examine 188 IPOs, with clear-cut expiry date lockups, from the Main LSE board during 1992-98. Espenlaub et al. (2014) examine 233 IPOs, with different types of lockups, from the Main LSE board during 1992-98. About one third of their sample IPOs had lockups with clear-cut expiry date. Hoque and Lasfer (2009) examine 831 IPOs, predominantly from AIM, with different types of lockups during 1999-2007.

Whilst prior UK studies focus on directors (e.g. Fidrmuc et al. 2006; Espenlaub et al. 2001; 2014; Hoque and Lasfer, 2009; Hoque and Lasfer, 2013) there is paucity of research on trades by other insiders. In this study, we analyze stock price behavior associated with the disclosure of trades of directors and other insiders such as, private equity (PE) firms. We hypothesise that insiders' trades around lockups' expires send credible signals to outsiders. For example, outsiders would see large directors' sales as potentially negative news. In line with information hierarchy hypothesis the information content would also depend on type of directors. Company founders and/or CEOs should trade on more valuable information compared to other directors and their trades should therefore be associated with higher price impact. In firms with PE backing, the negative announcement effect of directors' sales is expected to be weaker especially when the sales erode the directors' potential entrenchment.

Our results suggest an increasing popularity of lockups with clearly defined lockup periods in terms of a calendar date, rather than in relation to various corporate events. The average (mean) sample IPOs lock up period is 416 days. Lockups for PE firms tend to be shorter. In majority of cases (75%), PE firms sell their locked shares in instalments, over several months, after the lockup expires. Director and PE firms' purchases exhibit positive and significant price impact. Overall, the price effect of director sales and purchases is stronger compared to the price effect of PE firm deals. Majority (75%) of PE firms sell their locked shares in instalments. When they sell for the first time, PE firms adopt contrarian strategy only for complete exits (i.e. sales). For subsequent sales, PE firms follow contrarian strategies only for partial sales. Among different types of directors, founder purchases and CEO sales produce strongest price effects.

Recent reports expressed concerns about the state of the UK IPO market (Kay, 2012). One important concern was related to alleged short-termism of the market and whether it gives sufficient encouragement to long term performance improvements. Our results contribute to the above debate by shedding more light on changes in ownership after the lockup expires. An important issue is also whether the UK premium listing standard, require some changes especially in relation to insider dealings around lockup expires. Finally, the examination of insider trading in UK companies is timely and it contributes to the debate about the recently proposed changes of the Market Abuse Directive and its replacement with the Market Abuse Regulations (MAR; No.596/2014).

2. Literature and hypotheses

2.1. Market reaction to expiry of director and PE firms' lockups

At the time of the lockup expiry, abnormal returns should on average be equal to zero since market should be able to predict how many shares directors will sell (Allen and Postlewaite, 1984). Alternatively, negative average abnormal returns would be in line with a view that directors' sales normally convey bad news (Field and Hanka 2001; Brau et al. 2004). The downward pressure is also helped by the fact that venture capitalists (VCs) distribute shares of VC backed companies to their investors which than sell them at the lockup expiry (Brav and Gompers, 2003). Costly arbitrage is another reason why abnormal returns may be different from zero even though investors can accurately predict the number of shares coming to the market (Pontiff, 1996; Hoque and Lasfer, 2009).[4]

Espenlaub et al. (2014) report negative but not statistically significant CARs during 2, 3, 4, and 7 days windows after lockup expiry. The results remain unchanged in subsamples with different types of lockups (e.g. with clear-cut expiry dates, with dates relative to earnings announcements, etc.). Likelihood of directors' sales after expiry of lockups is unrelated to the features of the lockup agreements. Field and Hanka (2001) report that abnormal returns at lockup expiry and permanent increase in trading volume after the expiry tend to be three times larger in US IPOs with VC backing. This was echoed in Hoque and Lasfer (2009) who report higher abnormal returns on the lockup expiry dates in UK IPOs with VC backing, institutional holding, and higher percentage of locked shares. Overall, the UK evidence is inconclusive. We add to the literature by examining market reaction to expiry of both directors' and lockups of PE firms. Given that PE firms are expected to exit, by the very nature of their business model, the expiry of their lockups should produce weaker price impact.

2.2. Insider dealings and lockups

2.2.1 Director and PE firms' dealings prior to lockup expiry

Espenlaub et al. (2014) and Hoque and Lasfer (2009) report that in some cases directors sell shares before lockup expiry. Hoque and Lasfer (2009) for example report 'early' sales in 14%

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[4] Brav and Gompers (2003) for example report high transaction costs of 6.3% on average (in terms of bid-ask spread) for the transactions in the US market. Creation of short positions is also hampered by relatively small number of floated shares in IPO firms.

of their sample IPOs.[5] Directors buy shares before lockup expiry in 31% of their sample IPOs. The early sales and purchases normally occur in lockups with length of one year or more and usually half way the lockup period.[6] IPOs with early purchases and sales are more likely to be VC backed and to have larger proportion of locked up shares. Authors also report that early sells occur after positive abnormal returns in the 40 days preceding the trade. Sales however generate negative abnormal returns on the event and post-sell trade period. In contrast, early buy IPOs occur after significant negative returns and generate positive and significant event date returns. The information content of the buy trades is short lived resulting with insignificant returns in the post-event period. The results are in line with the insider trading literature reporting that insiders tend to be contrarians. The authors however suggest that early directors' trades could be encouraged by underwriters in order to extract rent.

2.2.2. Director and PE firms' dealings at and post lockup expiry

Prior literature on insider dealings report that sales (non-lockup related sales in IPOs and in seasoned firms) are mostly associated with diversification reasons (Lakonishok and Lee 2001; Friederich et al 2002). However, IPOs with lockups are different since the lockup expiry dates are in public domain and directors may decide whether to sell or not. For example, directors are more likely to sell, at and after lockup expiry, in IPOs with higher underpricing, longer lockups, and larger percentage of locked shares (Brav and Gompers, 2003).

If directors decide not to sell on the lockup expiry, market may interpret this as a signal that their decision not to trade is based on superior information. Similarly, in some cases directors and PE firms may not sell all of locked shares at lockup expiry. Lasfer and Matanova (2015) for example, report that US financial sponsors (PE and VC) maintain just above fifty percent of equity up to three years after the lockups. The decision to stagger sales of locked shares and thus retain some ownership for a longer period may be a valuable signal. We therefore expect difference in CARs for completed (i.e. one off) and partial sales at lockup expiry.[7]

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[5] Field and Hanka (2001) and Brav and Gompers (2003) report early sales in 17% and 15% of their US sample IPOs respectively.
[6] 80% of their sample with early purchases and sales is during the period 2004 to 2006.
[7] The above hypothesis is to some extent related to the size of transaction. For example, partial sales tend to be smaller than complete one-off sales.

With purchases however situation is less clear. For example, directors purchases at or post lockup expiry could signal that directors expect a better performance which would lead to a positive price effect.[8] Purchases however could be motivated by directors' desire to achieve more control and benefit from non-transferable private benefits of control such as perquisites (see Dyck and Zingales 2004) or immunity to any disciplinary actions (see Morck et al. 1988). In the above scenario, a negative price impact of directors' purchases is expected. It is plausible that outside investors may be less concerned about the entrenchment in firms with active investors who perform monitoring (e.g. PE). However, if CEO purchases at the same time when PE sells then market could be concerned. Similarly, in firms with PE backing, the negative announcement effect of directors' sales is weaker when the sales erode the directors' entrenchment. This may not be the case if CEO sells at the same time as PE. The negative price effect may dominate the otherwise positive signal about the firm's prospects and vice-verse (Fidrmuc et al., 2006). Overall, we expect that directors' purchases send credible signals to outsiders. The direction of the price effect however will be determined empirically.

Given that PE firms are expected to exit, by the very nature of their business model, the dealings of PE firms should produce weaker price impact. For multiple lockups, when PE lockup is shorter than directors' lockup, directors' dealings should have stronger effect. Market would be more eager to hear from directors after PE firm exited. For example, if directors are selling shortly after PE firm sold market may be concerned. If directors' purchasing after PE firm sold than two scenarios are possible: (i) If directors already have high percentage ownership, investors may be worried about entrenchment after PE firms exit and the overall effect maybe weaker; ii) If directors have a low percentage ownership, market may see their purchases as a signal of their commitment and the overall effect maybe stronger.

2.2.3. Hierarchy hypothesis

Prior studies on insider dealings highlight differences in information content of different type of directors (see Seyhen, 1986). CEOs for example should trade on more credible information compared to other insiders (e.g. executive chairman, non-executive directors). We also

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[8] The price effect of purchases would also depend on whether directors made purchases before lockup expiry or not. Finally it is plausible that directors are purchasing at lockup expiry in order to support price in the short term. This particularly can be the case if lockup expiry is related to announcement of company's results.

hypothesise that dealings of companies' founders would send more credible signal to the market compared to dealings of any other insider. Finally, we examine deals of PE directors trading their own IPO shares.

3. Data and sample characteristics

3.1. Regulation on data sources

For the companies listed on the main board of London Stock Exchange (LSE), lockups are completely voluntary.[9] Further to restrictions stipulated in lockup agreements, published in IPO prospectuses, insider trades are also restricted by insider trading regulation. The regulation on insider trading existed in the U.K. since 1976. As a member of the European Community (EC), UK adopted the Insider Dealing and Money Laundering Directive (89/592/EEC) in 1989. European Market Abuse Directive (MAD) (2003/6/EC) replaced the old (1989) directive in 2003.[10] The Financial Conduct Authority (FCA) is UK regulatory and supervisory authority covering implementation of the MAD. Importantly, corporate insiders are required to disclose their trades within 5 trading days. The company must also notify the London Stock Exchange (LSE) of the transaction and an entry should be made into Company register within 3 working days.

Our sample consists of all IPOs on London Stock Exchange (LSE) Main market between 1999 and 2014. The information on IPO date, Issue price, market capitalisation, industry and money raised is from LSE website. We exclude IPOs from companies incorporated outside UK. We obtain IPO prospectuses from Perfect Filings database and hand collect information on lockup agreements (expiry type[11], expiry date), insider names (CEO, company founder, PE and other directors), insiders' ownership, PE firm(s), underwriters, primary and secondary shares offered and percentage shares locked up.[12] Daily stock prices are obtained from

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[9] In the LSE's Alternative Investment Market (AIM), 1-year lockups are compulsory for directors, substantial shareholders and their associates, and employees in IPO firms which have not been independent and/or have not reported revenues for at least 2 year (AIM Rule 7).

[10] The Transparency Directive (TD) focusing on transparency and enforcement of the existing requirements was approved in 2004 (2004/109/EG) and implemented in March 2007 (2007/14/EG).

[11] We use Perfect filings database to find event dates in case of relative expiry lockups which are usually linked with announcements like preliminary results, publication of accounts etc.

[12] We consider only transactions of PE firms with more than 3% shareholdings in sample companies.

DataStream. We manually check all the filings of each PE backed IPO and extract the share sale announcements by all PE firms.

Data on IPO firms was matched with data for insiders' transactions from the Directors Deals (DD) database.[13] The Directors Deals database covers trades of: full time executive directors and board members; former executives and former board members, members of supervisory boards; person dispensing managerial responsibilities; non-executive directors (members of boards and/or in advisory capacity on part time basis). We exclude trades on all securities other than ordinary (common) and preferred shares. Transfers, option exercise, and dividend related transactions are also excluded. Our data therefore contain only pure purchase and sale transactions which are then aggregated for the same security traded on the same day. IPOs with missing data on ownership and lockup in prospectus and not matched with Directors Deals database were excluded. The above procedure resulted in 223 UK IPOs with complete data on IPO firms, lockups, PE firm transactions and director's dealings during the period 1999-2014.

3.2. Sample characteristics

We present sample descriptive statistics in Table 1. Our sample consists of 223 IPOs with lockups. Out of 223 sample IPOs, 102 received PE backing with an agreed lockup for PE firms. Average (mean) size of our sample IPO is around £836 million. On average, our sample IPOs raises around £228 million. Our sample IPOs come from 10 industries. The most represented are Consumer services and Technology sectors with 40 IPOs respectively.

*** Insert Table 1 about here***

Average (mean) length of lockups is 416 days. The minimum and maximum length of lockups is 180 and 508 days respectively. PE backed sample IPOs tend to have shorter lockups compared to their non-PE backed counterparts. Majority (72%) of the sample lockups are absolute lockups with clear cut expiry date. Around 20% of the lockups are relative lockups with expiry dates associated with announcement of disclosure of company's results. Finally, around 8% of the lockups are combination of absolute and relative lockups.

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[13] See http://www.directorsdeals.com.

The overall number of the sample director sales (1,093) is lower than the number of purchases (1,979). This is in line with evidence reported in prior studies on (non-lockup related trades) UK (Fidrmuc et al., 2006; Hoque and Lasfer, 2013), US (Lakonishok and Lee, 2001), and European (Aussenegg et al., 2016) markets.

4. Methodology

The empirical approach of our paper is similar to Friedrich et al. (2006) and Fidrmuc et al. (2013) in that we implicitly assumes some degree of market efficiency. We, therefore, analyze rapid, short-term, effects of insider trades before and after lockup expiry. Using a standard event-study methodology we examine the price effect of insider trades during the period of twenty trading days before and after lockups expiry.[14] An estimation window of 60 trading days before the event window is used to estimate the Market model parameters. We exclude first thirty calendar days after IPOs from analysis. In this way we exclude effects of underpricing and (normally) highly volatile prices immediately following IPOs. We perform both parametric (time series, cross-section, Boehmer et al., (1991) T-tests) and non-parametric (Patel, 1976; Corrado, 1989; Cowan, 1992) tests to examine the significance of cumulative abnormal returns.

5. Results

5.1. Market reaction to expiry of lockups

Results on market reaction to expiry of directors' and PE firms' lockups are presented in Table 2. The results suggest negative and insignificant abnormal returns for both directors' and PE firms' lockup expiries. Unreported results suggest that CARs remain negative and insignificant until the end of 20 day event window. The results are therefore in line with prior literature suggesting absence of a significant market reaction to expiry of lockups (e.g. Espenlaub et al., 2014).

*** Insert Table 2 about here ***

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[14] Brown and Warner (1980); Campbell et al. (1997); MacKinlay (1997).

5.2. Director and PE firms' dealings prior to lockup expiry

We present results for directors' and PE firms' dealings prior to lockup expiry in Tables 3 (Panel A) and 4 (Panel A), respectively. The number of directors' sales is surprisingly high. For example, early sales occurred in 35% sample IPOs. This is higher than 14% reported in Hoque and Lasfer (2009). The percentage for directors' early purchases is 68% which is again higher than 31% reported in Hoque and Lasfer (2009). Early sales of PE firms occurred in 19% of cases (Table 4 – Panel A).

Directors tend to purchase after positive and statistically significant CARs thus confirming their contrarian behaviour. Abnormal returns on the purchase announcement days are positive (1.5%) and statistically significant. CARs remain positive (7.4%) and statistically significant until the end of the twenty day event window (Table 3 – Panel A).

Insert Table 3 about here

CARs before directors' sale announcements are positive and statistically significant suggesting that directors tend to sell after increase in prices. On the announcement day of sales, abnormal returns are positive (0.02%) but not statistically significant. Prices continue to increase after the announcements but CARs turn negative (-1.43%) by the end of the event window. PE firms also tend to sell after significantly positive CARs. On the announcement days of PE firm sales, abnormal returns tend to be positive (0.053%) but not statistically significant (Table 4-Panel A).

Insert Table 4 about here

5.3. Director and PE firms' dealings at and post lockup expiry

Directors tend to buy additional shares in their companies after a significant drop in prices (Table 3 – Panel B). For example, CARs during the 20-day period prior to announcements are negative (4.16%) and statistically significant. Directors' purchases, post lockup expiry, also generate positive (1%) and statistically significant abnormal returns on the announcement day (Table 3- Panel B). The abnormal returns remain positive and statistically

significant throughout next 20 days. Our results are in line with Chen et al. (2012) who report positive CARs for directors' purchases after lockup expiry.

Directors tend to sell their locked shares after a significant increase in prices. Abnormal returns for directors' sales, on the announcement dates, are also positive (0.36%) but not statistically significant (Table 3 – Panel B). The CARs become negative (-0.86%) and statistically significant during next ten days. At the end of the event window, CARs are positive but not statistically significant. Overall, our results are in line with the results reported in in Chen et al. (2012).

PE firms also tend to sell their shares after a significant increase in prices (Table 4 - Panel B). On the announcement date, abnormal returns are negative (-0.02%) but not statistically significant. The prices temporarily increase after the announcements only to drop again resulting in negative (-1.14%) CARs at the end of the event window.

We are able to compare our results for all directors trades (Table 3 – panel C) with the results on directors dealing in UK IPOs and seasoned companies. For example, Hoque and Lasfer (2013) examine directors' trades in UK IPOs. They report that on the announcement date of buy trades, share prices increase resulting in positive and statistically significant CARs of 3.59% (during -1 to +1 window). The effect seems to be much stronger compared to the 1.16% reported for seasoned UK firms by Fidrmuc et al. (2006). By the end of the 40-day window, CARs become negative and statistically significant. For director sales, Hoque and Lasfer (2013) report negative and statistically significant CARs by the end of 40-day window.[15] As expected, for directors' purchases abnormal returns are positive and statistically significant (Table 3 – Panel C). Interestingly, the returns increase from 0.89% on the announcement date to 5.19% at the end of 20-day event window. Directors purchases produce negative (but not significant) abnormal returns at the announcement date. The returns however become negative (-2.57%) and significant at the end of the event window (Table 3 – Panel C). Overall, the effect on the announcement date seems to be lower than reported by Hoque and Lasfer (2013). However, they report negative and significant CARs by the end of their 40 days event window. In our case the positive price impact tend to persist. Our results for sales are in line with Hoque and Lasfer (2013) who report negative

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[15] Hoque and Lasfer (2013) report negative but not statistically significant abnormal returns on the sales announcements.

and statistically significant CARs by the end of 40-day window.[16] We also compare price effects of first and subsequent PE firms' sales in Table 5.

*** Insert Table 5 about here ***

PE firms prefer partial to complete sales. For example, when they sell for the first time after the lockups they tend to retain some shareholdings in 47 out of 63 cases (Table 5 - Panel A). Similarly, in subsequent sales PE firms prefer to remain some shareholding in 75% of cases (Table 5 - Panel B). When they sell for the first time, sales follow a significant price increase only when PE firms sell all shares (i.e. complete exit). It is opposite with subsequent sales where contrarian behaviour is evident only for partial sales. Notably, subsequent partial sales tend to have strongest price impact. For example, they produce positive (0.52%) and statistically significant abnormal returns on the announcement dates (Table 5 - Panel B). The CARs remain positive until the end of the event window (but significant only until 10 days after the announcements).

5.4. Hierarchy hypothesis

Results for dealings stratified by different types of directors (founders, CEOs, and PE directors) are presented in Table 6. Founders and CEOs follow contrarian strategy thus selling (buying) after significant share price increase (decrease). The contrarian behaviour is also present with PE directors but only for purchases. In terms of price impact of purchases, founders' dealings produce the strongest impact. For example, founders' purchases produce positive and statistically significant CARs on the announcement day (1.46%). The CARs increase and remain positive (8.81%) at the end of the event window (Panel A). This is followed by CEO purchases that also produce positive (1.18%) CARs at the announcement date, which remain positive and significant until the end of the event window (7.43%). As expected, purchases of PE directors produce lower price impact with positive (0.89%) but not statistically significant CARs during the event window.

Insert Table 6 about here

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[16] Hoque and Lasfer (2013) report negative but not statistically significant abnormal returns on the sales announcements.

With sales, investors consider CEOs' sales more important than founders' sales. For example, CEO sales exhibit negative (-0.68%) and statistically significant CARs on the announcement dates (Panel B). The CARs remain negative and highly significant until the end of the event window (-4.32%). This compares with -1.74% CARs at the of the event window for founder' sales (Panel A). PE directors' sales trigger positive (0.06%) but insignificant abnormal returns on the announcements (Panel C). The returns become negative and insignificant by the end of the event window (-1.44%).

7. Conclusion

We examine director sales and purchases before and after lockup expiry in a sample of 223 UK IPOs, during the period 1999-2014. Average (mean) length of lockups is 416 days. The minimum and maximum length of lockups is 180 and 508 days respectively. PE backed sample IPOs tend to have shorter lockups compared to their non-PE backed counterparts. Majority (72%) of the sample lockups are absolute lockups with clear cut expiry date. We document more early (i.e. before lockup expiry) purchases and sales compared to previous literature.

Based on the results for 1,093 director sales and 1,979 director purchases, directors follow contrarian strategy. There are however significant differences in information content of directors and dealings of PE firms before and after lockup expiry. Overall, the price effect of director sales and purchases is stronger compared to the price effect of PE firm deals. Majority (75%) of PE firms sell their locked shares in instalments. When they sell for the first time, PE firms adopt contrarian strategy only for complete exits (i.e. sales). For subsequent sales, PE firms follow contrarian strategies only for partial sales. Among different types of directors, founder purchases and CEO sales produce strongest price effects.

Our results contribute to both IPO and insider dealing literature. We also shed more light on changes in ownership after the lockup expires. The examination of insider trading in UK IPOs is timely and it contributes to the debate about the recently proposed changes of the Market Abuse Directive and its replacement with the Market Abuse Regulations (MAR; No.596/2014).

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Table 1: Descriptive statistics

This table present sample descriptive statistics. Values in brackets (column 2) are for IPOs with PE lockups. MCap is average (mean) market capitalisation using the first trading day closing price. MRaised is the total amount raised at IPO. Relative lockup is percentage of sample IPOs with relative lockups. Absolute lockup is percentage of sample IPOs with absolute lockup. Combined lockup is percentage of sample IPOs with combined (absolute and relative) lockup. Lockup length is a number of days from IPO to lockup expiry. N is number of observations.

	Total sample	Basic materials	Consumer goods	Consumer services	Financials	Health care	Industrials	Technology	Telecom.	Utilities
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
MCap (£m)	836.41 (511.64)	5,894.77	423.28	772.94	706.84	274.67	631.51	489.19	723.69	810.00
MRaised (£m)	228.43 (192.10)	1,129.40	160.39	243.57	260.09	89.22	247.92	91.63	300.97	234.00
Relative lockup	19.73 (15.69)	0.00	0.00	15.00	11.11	5.00	15.15	45.00	60.00	0.00
Absolute lockup	72.20 (74.51)	100.00	100.00	82.50	77.78	90.00	72.73	47.50	20.00	100.00
Combined lockup	8.07 (9.80)	0.00	0.00	2.50	11.11	5.00	12.12	7.50	20.00	0.00
Lockup length	415.77 (218.40)	391.50	399.00	382.95	540.44	410.50	434.24	396.93	527.20	365.00
N	223 (102)	10.00	5.00	40.00	18.00	12.00	33.00	40.00	5.00	1.00

Table 2: Market reaction to expiry of lockups

This table presents results for CARs during 2 trading day window around expiry of directors' and PE firms lockup expiries. N is a number of positive and negative CARs. P-values reported for T-tests, Patell (1976); Boehmer et al. (1991); Corrado (1989); and Cowan (1992) test.

Window	-2 to +2	
	Directors	PE firms
CAR	-0.0068	-0.0114
N (positive/negative)	115/108	52/49
T-test (time series)	0.1765	0.1063
T-test (cross-sect.)	0.3603	0.2639
Patell	0.3601	0.4795
Boehmer et al.	0.5774	0.6126
Corrado rank	0.2198	0.8312
Cowan	0.7871	0.9947

Table 3: Director trades

Event day is disclosure of director trades. We excluded transactions during the first calendar month after IPOs. Since the minimum lockup period is 180 calendar days, a trading transaction is only considered when it is at least 150 calendar days after the IPO. In Panel B, results are for directors' trades during 252 trading days after lockup date. In Panel C, results are for all post IPO directors' trades. P-values reported for T-tests, Patell (1976); Boehmer et al. (1991); Corrado (1989); and Cowan (1992) test.

Panel A: Prior to lockups' expiry

	Purchases (N=151)					Sales (N=79)				
Window	-20 to -1	0	0 to +10	0 to +20	-20 to +20	-20 to +1	0	0 to +10	0 to +20	-20 to +20
CAR	-0.0314	0.0153	0.0538	0.0744	0.043	0.0396	0.0002	0.0017	-0.0143	0.0253
N (postive/neg.)	62/89	90/61	106/45	101/50	83/68	48/31	34/45	36/43	34/45	38/41
T-test (time series)	0.0029	0.0000	0.0000	0.0000	0.0043	0.0059	0.9583	0.874	0.332	0.2191
T-test (cross-sect.)	0.0599	0.0046	0.0000	0.0000	0.0909	0.0049	0.9569	0.9255	0.5327	0.3716
Patell	0.0000	0.0000	0.0000	0.0000	0.0258	0	0.8918	0.9626	0.3033	0.0274
Boehmer et al.	0.0214	0.0029	0.0000	0.0000	0.2092	0.0011	0.8972	0.9683	0.4111	0.1192
Corrado rank	0.0405	0.0004	0.0001	0.0001	0.1801	0.0536	0.7268	0.9399	0.1668	0.7198
Cowan	0.0022	0.1306	0.0000	0.0009	0.7115	0.0227	0.3818	0.6715	0.3818	0.979

Panel B: At and after lockups' expiry

	Purchases (N=300)					Sales (N=178)				
Window	-20 to -1	0	0 to +10	0 to +20	-20 to +20	-20 to +1	0	0 to +10	0 to +20	-20 to +20
CAR	-0.0416	0.01	0.059	0.0791	0.0375	0.0166	0.0036	-0.0086	0.0004	0.017
N (postive/neg.)	128/172	171/129	175/125	170/130	141/159	97/81	85/93	76/102	82/96	87/91
T-test (time series)	0.0000	0.0000	0.0000	0.0000	0.0044	0.0633	0.0753	0.1952	0.9651	0.184
T-test (cross-sect.)	0.0105	0.0347	0.0000	0.0000	0.1175	0.172	0.1229	0.2213	0.9716	0.3289
Patell	0.0000	0.0009	0.0000	0.0000	0.6974	0.0029	0.2783	0.033	0.5075	0.109
Boehmer et al.	0.0001	0.1572	0.0000	0.0000	0.8498	0.0256	0.456	0.0779	0.5966	0.2592
Corrado rank	0.0273	0.142	0.0017	0.0034	0.5804	0.0346	0.7883	0.0416	0.7174	0.2238
Cowan	0.0049	0.0313	0.0089	0.0415	0.1899	0.0322	0.7353	0.3104	0.9103	0.523

Panel C: All

	Purchases (N=1979)					Sales (N=1093)				
Window	-20 to -1	0	0 to +10	0 to +20	-20 to +20	-20 to +1	0	0 to +10	0 to +20	-20 to +20
CAR	-0.045	0.0089	0.039	0.0519	0.0069	0.0166	-0.0005	-0.0152	-0.0257	-0.0091
N (postive/neg.)	807/1172	1098/881	1207/772	1182 /797	959 /1020	614/479	482/611	439/654	438/655	506/587
T-test (time series)	0.0000	0.0000	0.0000	0.0000	0.1211	0.0000	0.4441	0.0000	0.0000	0.0449
T-test (cross-sect.)	0.0000	0.0000	0.0000	0.0000	0.3324	0.0000	0.5223	0.0000	0.0000	0.1217
Patell	0.0000	0.0000	0.0000	0.0000	0.3341	0.0000	0.917	0.0000	0.0000	0.9836
Boehmer et al.	0.0000	0.0000	0.0000	0.0000	0.5751	0.0000	0.9418	0.0000	0.0000	0.9876
Corrado rank	0.0000	0.0002	0.0000	0.0000	0.6657	0.0000	0.2333	0.0000	0.0000	0.9293
Cowan	0.0000	0.0000	0.0000	0.0000	0.3292	0.0000	0.1913	0.0001	0.0001	0.881

Table 4: PE firms sales

In Panel A, we excluded transactions during the first calendar month after IPOs. Since the minimum lockup period is 180 calendar days, a trading transaction is only considered when it is at least 150 calendar days after the IPO. If a lockup's length is longer than 180 calendar days the considered period before lockup expiry increases correspondingly. In Panel B, directors' trades during 252 trading days after lockup date. Event day is disclosure of directors' trades. P-values reported for T-tests, Patell (1976); Boehmer et al. (1991); Corrado (1989); and Cowan (1992) test.

Panel A: Prior to lockups' expiry

	N=19				
Window	-20 to -1	0	0 to +10	0 to +20	-20 to +20
CAR	0.0829	0.0053	-0.0234	0.0018	0.0847
N (postive/neg.)	11/08	09/10	08/11	12/07	12/07
T-test (time series)	0.0048	0.4218	0.2826	0.9528	0.0442
T-test (cross-sect.)	0.0643	0.4746	0.4963	0.971	0.3044
Patell	0.0201	0.2164	0.8139	0.3689	0.0234
Boehmer et al.	0.0772	0.5298	0.8701	0.5803	0.1901
Corrado rank	0.0428	0.6089	0.1584	0.9168	0.1363
Cowan	0.5406	0.7597	0.4444	0.2843	0.2843

Panel B: At and after lockups' expiry

	N=101				
Window	-20 to -1	0	0 to +10	0 to +20	-20 to +20
CAR	0.0242	-0.0002	0.0055	-0.0114	0.0128
N (postive/neg.)	58/43	52/49	49/52	53/48	60/41
T-test (time series)	0.042	0.9515	0.5293	0.3495	0.4531
T-test (cross-sect.)	0.101	0.9585	0.552	0.48	0.5809
Patell	0.0044	0.5259	0.2698	0.7626	0.0762
Boehmer et al.	0.0386	0.6872	0.33	0.8217	0.2158
Corrado rank	0.5919	0.802	0.4469	0.6081	0.4585
Cowan	0.0501	0.4451	0.8681	0.3356	0.0184

Panel C: All

	N=233				
Window	-20 to -1	0	0 to +10	0 to +20	-20 to +20
CAR	0.038	0.0014	-0.0025	-0.0118	0.0261
N (positive/negative)	138/95	125/108	112/121	119/114	133/100
T-test (time series)	0.0000	0.4545	0.6917	0.1698	0.03
T-test (cross-sect.)	0.001	0.6339	0.7435	0.3047	0.17
Patell	0.0000	0.009	0.3125	0.7782	0.0000
Boehmer et al.	0.0001	0.173	0.4289	0.8401	0.0055
Corrado Rank	0.0144	0.1434	0.9545	0.974	0.0833
Cowan	0.0003	0.0521	0.8133	0.2482	0.0028

Table 5: Comparison of PE firm first and subsequent sales
P-values reported for T-tests, Patell (1976); Boehmer et al. (1991); Corrado (1989); and Cowan (1992) test.
Panel A: PE firm first sales

	PE first sales									
	Complete (N=16)					Partial (N=47)				
Window	-20 to -1	0	0 to +10	0 to +20	-20 to +20	-20 to -1	0	0 to +10	0 to +20	-20 to +20
CAR	0.1141	0.0076	0.0009	-0.0154	0.0987	0.0191	-0.0011	-0.0261	-0.0365	-0.0175
N (positive/neg.)	10/06	10/06	09/07	10/06	10/06	25/22	20/27	20/27	21/26	24/23
T-test (time series)	0.0001	0.252	0.9665	0.6136	0.0202	0.3701	0.8198	0.0981	0.0941	0.5671
T-test (cross-sect.)	0.0724	0.3165	0.961	0.8389	0.4172	0.3927	0.8357	0.2063	0.1572	0.6667
Patell	0.0001	0.5717	0.7606	0.6137	0.0218	0.0776	0.6571	0.372	0.4843	0.4641
Boehmer et al.	0.034	0.6327	0.8077	0.7919	0.3242	0.1293	0.7988	0.4306	0.523	0.5633
Corrado rank	0.0176	0.4159	0.1973	0.9748	0.0928	0.1876	0.9266	0.2977	0.4178	0.7335
Cowan	0.3214	0.3214	0.623	0.3214	0.3214	0.2849	0.6925	0.6925	0.9183	0.4375

Panel B: PE firm subsequent sales

	PE subsequent sales									
	Complete (N=44)					Partial (N=129)				
Window	-20 to -1	0	0 to +10	0 to +20	-20 to +20	-20 to -1	0	0 to +10	0 to +20	-20 to +20
CAR	0.015	-0.0098	-0.0311	-0.0419	-0.0269	0.041	0.0052	0.0152	0.0076	0.0487
N (postive/neg.)	25/19	24/20	20/24	19/25	22/22	78/51	73/56	64/65	71/58	78/51
T-test (time series)	0.359	0.0074	0.0102	0.0123	0.2498	0.0003	0.0392	0.0695	0.5099	0.0026
T-test (cross-sect.)	0.3104	0.3302	0.0973	0.0716	0.3521	0.0147	0.1382	0.0842	0.5892	0.0582
Patell	0.1735	0.245	0.1606	0.082	0.7687	0.0000	0.0001	0.0043	0.0424	0.0000
Boehmer et al.	0.2478	0.5892	0.281	0.1926	0.8372	0.0043	0.0519	0.0272	0.1533	0.0041
Corrado rank	0.1418	0.6975	0.3955	0.5458	0.5528	0.3849	0.1074	0.1429	0.3438	0.199
Cowan	0.1905	0.314	0.8404	0.6147	0.6871	0.0035	0.0417	0.653	0.0923	0.0035

Table 6: Dealings by different types of directors
P-values reported for T-tests, Patell (1976); Boehmer et al. (1991); Corrado (1989); and Cowan (1992) test.
Panel A: Founders' dealings

	Founder purchases					Founder sales				
Window	(-20...-1)	(0...0)	(0...10)	(0...20)	(-20...20)	(-20...-1)	(0...0)	(0...10)	(0...20)	(-20...20)
CAR	-0.0777	0.0146	0.0637	0.0881	0.0103	0.022	-0.0036	-0.0158	-0.0174	0.0046
N (positive/negative)	89/160	146/103	167/82	169/80	117/132	99/77	72/104	69/107	71/105	85/91
T-test (time series)	0	0	0	0	0.435	0.0069	0.0498	0.0089	0.0373	0.6917
T-test (cross-sect.)	0	0.0073	0	0	0.585	0.0168	0.1251	0.0061	0.0565	0.7608
Patell	0	0	0	0	0.9021	0.0001	0.0521	0.0143	0.0179	0.3183
Boehmer et al.	0	0.019	0	0	0.9388	0.0013	0.1966	0.0223	0.0358	0.4444
Corrado Rank	0.0002	0.0083	0	0	0.367	0.0061	0.0496	0.0029	0.032	0.7045
Cowan	0	0.0269	0	0	0.143	0.0015	0.3586	0.1697	0.2848	0.2916

Panel B: CEO dealings

	CEO purchases					CEO sales				
Window	(-20...-1)	(0...0)	(0...10)	(0...20)	(-20...20)	(-20...-1)	(0...0)	(0...10)	(0...20)	(-20...20)
CAR	-0.0578	0.0118	0.0532	0.0743	0.0166	0.0074	-0.0068	-0.0259	-0.0432	-0.0358
N (positive/negative)	81/144	115/110	142/83	140/85	107/118	64/59	42/81	39/84	39/84	51/72
T-test (time series)	0.0000	0.0000	0.0000	0.0000	0.2125	0.3822	0.0003	0.0000	0.0000	0.003
T-test (cross-sect.)	0.0000	0.0462	0.0000	0.0000	0.429	0.3439	0.0003	0.0000	0.0000	0.0039
Patell	0.0000	0.0000	0.0000	0.0000	0.827	0.1988	0.0002	0.0001	0.0000	0.0093
Boehmer et al.	0.0000	0.0544	0.0000	0.0000	0.8989	0.227	0.0021	0.0000	0.0000	0.0186
Corrado Rank	0.001	0.1519	0.0006	0.0000	0.518	0.0958	0.0027	0.001	0.0011	0.2405
Cowan	0.0000	0.984	0.0003	0.0008	0.2951	0.1311	0.0133	0.0025	0.0025	0.3979

Panel C: PE director dealings

	PE directors sales					PE directors purchases				
Window	(-20...-1)	(0...0)	(0...10)	(0…20)	(-20...20)	(-20...-1)	(0...0)	(0...10)	(0...20)	(-20...20)
CAR	0.0021	0.0006	-0.003	-0.0165	-0.0144	-0.0047	0.0089	0.0732	0.1343	0.1296
N (positive/negative)	10/08	09/09	08/10	07/11	11/07	04/11	09/06	09/06	11/04	08/07
T-test (time series)	0.9236	0.9003	0.8541	0.4608	0.6449	0.9099	0.3378	0.0171	0.0015	0.0288
T-test (cross-sect.)	0.9704	0.9545	0.9068	0.6693	0.7885	0.9671	0.3439	0.0495	0.0063	0.3285
Patell	0.0052	0.3141	0.9374	0.4388	0.1626	0.0053	0.0594	0.0037	0.0007	0.631
Boehmer et al.	0.1778	0.613	0.9577	0.5226	0.3701	0.1129	0.1267	0.0646	0.0353	0.7412
Corrado Rank	0.148	0.4356	0.446	0.6262	0.5082	0.0018	0.3959	0.2526	0.0099	0.7382
Cowan	0.4261	0.7467	0.881	0.5336	0.2046	0.1089	0.3258	0.3258	0.0437	0.6416