Why IPO Issuers Prefer the AIM When They Can List for Less on the Main Market?

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Abstract

This study examines what would have been the underwriter spread if AIM IPOs that meet Main Market (MM) listing requirements had issued equity in the MM during the 1995-2016 period. We find that the spread is 1.26% higher in the AIM than the MM for IPO listings that meet the MM listing requirements. This finding suggests that AIM companies, meeting the MM listing requirements, could have saved more than £80 million by going public through the MM than the AIM market. We also find that this spread differential is attributed to the issuing firms' market self-selection.

Keywords: Gross Spread, Listing requirements, Heckman Selection model, Underwriter fixed effects, Propensity Score Matching.

JEL Classifications: G15, G24

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"Over 3,600 companies have joined AIM in the last 20 years. Central to innovation, job creation and productivity, these companies have played a unique role in fuelling economic prosperity in the UK, a dynamic recognised by government, business and investors.

Xavier Rolet, CEO, London Stock Exchange Group (19-06-2015)

1. Introduction

The Alternative Investment Market (AIM) of the London Stock Exchange is one of the most successful second markets in the world in terms of new listings. Despite the enormous growth of the AIM, since its initiation in 1995, no attention has been given to the cost of raising capital in this market. To this date, the level of gross spread (the fees paid to underwriters from IPO proceeds) on small IPOs in the AIM of the London Stock Exchange and how that relates to their counterparts at the Main market (MM) remains unknown. In this paper, we address this issue by investigating the nature of the IPO fees for firms that qualify to list in both markets. To the best of our knowledge, no study has examined the fees charged by book runners in the AIM relative to the MM for firms that meet the listing requirements of MM and their AIM counterpart issuing firms that do not meet the MM listing requirements. This paper seeks to fill this gap in the literature.

Previous empirical evidence shows that US underwriters charge 7% on moderate size IPOs (Chen and Ritter, 2000, Abrahamson, Jenkinson and Jones, 2011) and 13.9% on small IPOs (Garner and Marhsall, 2014). In addition, Abrahamson et al (2011) report that US underwriters charge higher fees compared to European counterparts for IPOs in major exchanges. While the previous literature sheds light on the cost of raising capital in the major markets, the cost of raising capital in second markets, such as the AIM of the London Stock Exchange, has not been the focus of the previous empirical IPO studies.

The UK institutional setting is much different in comparison to the US institutional framework (Khurshed et al, 2016). For example, there is no limit on cash compensation in the

UK while there are limits on cash compensation in the US. US regulation places a reasonable level to the underwriter compensation whereas UK regulation is silent on that. Nevertheless, previous studies (e.g., Torstilla (2001), Abrahamson et al (2011)) show that US gross spreads are much higher than in other countries. In this paper, we further add to the literature by addressing the question: what is the level of underwriter gross spread for small IPOs, mainly issued on the AIM, where there is no restriction on cash compensation by the underwriters?

London Stock Exchange has two markets: the MM also known as the official list, which is a market for large and established companies and the AIM, which is a market for small growth companies. MM has three listing requirements: 3 years of age (published accounts), minimum float of 25% and market value at admission of 750,000. In comparison, AIM does not have any listing requirements. AIM is an exchange regulated market whereas MM is regulated by the FSA. It is believed that the growth of AIM is due to the lack of listing requirements in that market.[2] However, recently Doukas and Hoque (2016) show that at least half of the companies that join AIM could have joined the MM because they fulfil the MM listing requirements. Therefore, these companies have the choice of listing in the AIM or in the Main market since they meet the MM listing requirements. Like other corporate finance decisions, market choice is a self-selection decision for the AIM firms that satisfy MM listing requirements. To address this issue, we employ the Heckman (1979) two-step process and find that the inverse Mills ratio estimates suggest that there are observable and unobservable characteristics in the AIM IPOs for which underwriters charge more. Then, we estimate the endogenous switching regression models to answer the 'what if' type of question since we are interested to find out whether AIM firms that meet the MM listing requirements could be better

[2] AIM has been criticised for its lack of regulation and lax corporate governance standards by John Thain, chief executive of the New York Stock Exchange (NYSE). While speaking at the World Economic Forum in Davos, Switzerland, Mr Thain stated that AIM "did not have any standards at all and anyone could list." James Quinn, NYSE Chief attacks AIM, The Telegraph, 27 January 2007.

off in terms of paying lower spreads if they joined the MM and vice versa.[3] The novelty of this empirical inquiry is designed to shed light on the unanswered question what would have been the underwriter spread if AIM IPOs that meet MM listing requirements had issued equity in the MM.

Our evidence shows that AIM companies that could list on the MM by meeting its listing requirements would have saved a significant amount of money (£83.5 million), representing 1.26% of proceeds, if they had issued equity capital in the MM.[4] The higher cost of issuance for this group of AIM firms could be attributed to the issuing firms' market self-selection due to different firm characteristics, and/or dissimilar post-listing investment and financing priorities between AIM and MM firms (Doukas and Hoque, 2016). Specifically, our results show that the mean (median) spread in the MM is 4.14% (4.00%), whereas the mean (median) spread in AIM is 6.51% (5.10%). The average spread wedge in these two markets is 2.37%. Normally, global investment banks manage IPOs in the MM, while boutique investment banks operate in the AIM.[5] There are 150 book runners, of which 35 are considered prestigious while the rest are boutique investment banks.[6] Since some investment banks only underwrite IPOs in the AIM and some investment banks exclusively underwrite IPOs in the MM, investment bank level heterogeneity could explain some of the fee differential between AIM and MM of the London stock exchange. Therefore, we control for investment bank

[3] Similar analysis was performed by Fang (2005) in a study of investment bank reputation, the price and quality of bond underwriting services, and by Golubov et al (2012) in a study of advisor reputation and bidder returns in M&A transactions.

[4] Over the whole study period the total cost savings is estimated as: 595 AIM Firms Meeting MM listing requirements x £11.14 million average proceeds x1.26% (5.73-4.47%) =£83.5 million.

[5] The legal responsibilities and the overall role in the listing process are very different between AIM's NOMADS and main market underwriters. We address these differences through underwriter fixed effects later on.

[6] Following Derrien and Kecskes (2007), we classified underwriters to be either prestigious or other. A broker is classified as "prestigious" if it is a global investment bank. In instances in which prestige is not obvious, we consult the 1997 to 2003 editions of Thomson's Extel Survey" (Derrien and Kecskes, 2007), as well as 2013 Thomson's Extel Survey.

heterogeneity by using underwriter fixed effects in our regressions and find that underwriter fixed effects explain 54% of variance, which is economically quite large.

Furthermore, we examine whether the absence of regulation has any impact on the underwriter spread in the AIM by dividing the AIM companies into two groups: AIM companies that could list on the MM by meeting the MM listing requirements and the AIM companies that do not meet the MM listing requirements. That is, as half of the AIM firms do not fulfil the MM listing requirements, whether the gross spread is similar for the AIM firms that meet the MM listing requirements relative to their AIM counterparts that do not meet such requirements. Our evidence points out that the gross spread in the former group is 5.73% and 7.24% in the latter group. The 1.51% spread difference between these two AIM IPO groups is statistically and economically significant in the regressions after controlling for other factors. The lower spread of AIM IPOs that meet the MM listing requirements suggests that book runners view these IPOs as less risky than their counterparts that do not meet the MM listing requirements.

As regulators have tightened regulations[7] regarding to AIM companies and nominated advisors (NOMADs), [8] more rigorous due diligence in the AIM IPO market might increase the cost of raising funds through IPOs. We find that tightening the regulations had a positive impact on IPO gross spreads in the AIM. We then examine whether the strict regulations impact the gross spread through the AIM firms that do not fulfil MM listing requirements. It is likely that regulation was more relevant to the firms that do not meet MM listing requirements and hence we observe that it had a greater impact on the AIM firms that do not meet MM listing requirements. In sum, with increases in due diligence procedures after the regulatory changes, AIM firms that do not meet the MM listing requirements are associated with higher spreads.

[7] AIM has tightened regulations in respect to the IPOs and NOMADs in 2005, 2006, 2007 and 2008.
[8] Nominated Advisors (NOMADs) are vital in the AIM IPO process as IPO firms are required to have a NOMAD to join the market and continued listing.

Next, we look at the underpricing, which represents the indirect cost of raising equity capital, and find AIM IPOs to be associated with higher (mean 19.49%; median 8.48%) underpricing than MM IPOs (mean 5.49%; median 6.52%). AIM firms that do not satisfy MM listing requirements are more underpriced (20.79%) compared to AIM firms that meet MM listing requirements (18.37%). Moreover, AIM firms that do not fulfil MM listing requirements are associated with longer lockups and higher fees compared to the AIM firms that meet MM listing requirements. These results indicate the power of the NOMADs to charge higher gross spreads and impose longer lockups on AIM IPO issuers that do not meet MM listing requirements. These findings might also imply that the NOMADs charge higher gross spreads and impose longer lockups for the AIM IPOs that do not satisfy MM listing requirements because these IPOs are perceived as risky. This is in line with Piotroski (2013) who notes several attributes (such as growth prospects, inherent risk) that differ in the AIM and MM market that could lead underwriters to charge different spreads even for two identical companies. The fact that firms listing on the AIM tend to perform poorly (Doukas and Hoque, 2016), and their listing poses significant reputation risk on the underwriter (Gerakos, Lang, and Maffett, 2013) which, in turn, reduces the number of underwriters willing to underwrite AIM companies, results in higher spreads.

The rest of the paper is organised as follows. In section 2, we discuss the institutional background of the MM and AIM. Section 3 describes the data and methodology. Section 4 presents the descriptive statistics. In section 5, we examine the determinants of gross spread. In section 6 we model the self-selection of the market through the Heckman (1979) model and estimate endogenous switching regressions. In Section 7, we examine whether investment bank heterogeneity drives the higher gross spread. Section 8 investigates whether AIM firms that do not meet the MM listing requirements pay higher fees. Section 9 addresses the intertemporal

variation in regulation and gross IPO spread. In section 10, we examine the underpricing and lockup length. Finally, section 11 concludes.

2. Institutional Background

The London Stock Exchange (LSE) has two major segments: the MM (i.e., The Official List of the London Stock Exchange) and the AIM. LSE regulated and looked after the requirements for new companies wishing to list on the LSE until 2000. After 2000, this regulatory and supervisory function was delegated to the UK listing authority (UKLA) that is a part of the UK Financial Services Authority (FSA). Historically, larger and more mature companies join the MM. The EU Investment Services Directive defines the MM as a regulated market and AIM as an exchange regulated market, also known as an unregulated market. This in turn means that companies wishing to list on the MM need to fulfil the listing requirements of the UKLA and the LSE, while the companies wishing to list on the AIM need to meet the admission requirements of the UKLA. However, a company wishing to be listed on the AIM needs to find a Nominated Advisor (NOMAD), who acts as a middleman between the company and the Stock Exchange.

The lighter regulatory environment in the AIM makes it one of the most successful markets for growth companies in the world (Doukas and Hoque, 2016 and Vismara et al., 2013). AIM is a market for smaller and younger companies that raise funds that they need for expansion. AIM was launched in June 1995 and it experienced enormous growth over the 20 subsequent years, attracting more than 3600 UK and foreign new companies,[9] raising £92 billion through new and further issues.[10] By September 2015, this included 857 UK and 206

[9] This includes IPOs and Non-IPOs. Non-IPOs include introduction, reverse takeover, transfer across markets, re-admission, and merger issue. In this paper we analyse IPOs only.
[10] http://www.lseg.com/resources/media-centre/press-releases/london-stock-exchange%E2%80%99s-aim-celebrates-20th-anniversary.

international companies. Following the success of AIM, other stock exchanges launched similar sections. For instance, NYSE-Euronext launched Alternext market, and NASDAQ OMX group launched NASDAQ OMX First North.

Since AIM is regulated by the UKLA while MM is regulated by UKLA and LSE, the AIM IPOs have less continuing obligations than the MM IPOs. In this regard, the main requirement for AIM companies imposed by UKLA is to find a NOMAD, that will advise the company regarding stock market listing and on various corporate matters. Typically, boutique corporate finance firms or small investment banks act as NOMADs. Traditionally, global underwriters and investment banks do not manage an IPO in the AIM with a few exceptions.

NOMADs are fundamental to AIM's regulatory model. NOMADs provide firms wishing to list in the market with necessary advice regarding the rules and regulation they need to follow. In this way the UKLA tries to reduce the cost of regulating AIM listed companies. NOMADs provide corporate advisory services to the firms on Mergers and Acquisitions, Seasoned Equity offerings, Insider trading etc. One of the conditions for firms to be listed and traded in the AIM is that they need to have a NOMAD. If a firm does not have a NOMAD it needs to find one as soon as possible, otherwise it faces the risk of being delisted. In sum, the NOMADs are essential in the AIM and there is a special relationship between the company and the NOMAD. Normally, companies keep their book runners as NOMADs in the AIM (Hoque and Lasfer, 2016), unlike in the US where they change the corporate broker based on their performances (Krigman, Womack and Shaw, 2000). This suggests that NOMADs in the AIM have more power to charge higher fees to the AIM companies seeking to be listed in the AIM.

There are considerable regulatory differences between the two markets in terms of (i)

admission criteria and (ii) continuing obligations.[11] There are three measurable listing requirements in the MM: age, float and market value. For the admission in the MM, the company's minimum age needs to be 3 years (published accounts), at least 25% of shares are floated and £750,000 of market value at entry. If a company does not meet the MM listing requirements it needs to list on the AIM. There are differences between the two markets in that the MM is subject to considerably higher levels of compliance, and greater on-going obligations concerning disclosure and transparency.

The stricter listing requirements in the MM means that some of the companies could not join the MM for not meeting its listing requirements. Firms that fail to meet the MM listing requirements are forced to join the AIM. On the other hand, there are other companies that list on the AIM while they meet the MM listing requirements. Obviously, this decision is by choice. Book runners know which companies fulfil the MM listing requirements and which do not. For the latter group, book runners have higher power to charge higher fees, as these companies can only list in the AIM because they do not satisfy the MM listing requirements. Thus, the listing requirements in the MM have implications for the gross spread charged in the AIM. Taken together, the need for companies to keep their book runners as NOMADs in the AIM and the listing requirements in the MM suggest that the book runners potentially could charge higher fees to companies that do not meet the MM listing requirements. Therefore, the structure of the UK IPO market allows us to address whether the listing requirements and market self-selection has any implications on the level of spread charged by the underwriters.

3. Review of the literature

Starting with the seminal work of Chen and Ritter (2000), several studies have tried to examine

[11] For a detailed discussion on continuing obligations, please see Doukas and Hoque (2016).

why book runners charge a fixed fee of 7% for the US IPOs. Chen and Ritter (2000) explained the 7% spread as some sort of collusion among the book runners. Hansen (2001), however, did not find any evidence of collusive behavior by the book runners, rather he attributes the 7% to efficient contracting of IPOs (7% covers cost plus normal profit for underwriters). According to Hansen (2001) investment banks compete in pricing 7% IPOs, on the basis of reputation, placement service, and underpricing. Using an international sample of IPOs, Torstilla (2003) finds evidence of clustering in IPO gross spreads beyond the U.S. Clustering is common in many countries around the world at lower levels of spread than the 7%. His results indicate that evidence of clustering does not reflect collusive practices by the book runners. Additionally, an analysis of abnormal gross spreads following Hansen (2001) indicates that few clusters contain abnormal positive surpluses.[12] Analyzing European IPOs Torstilla (2001) reports that the IPO gross spread is lower for the European IPOs relative to the US IPOs. More recently, Abrahamson et al (2011) show that the 7% spread charged by the underwriters in the US market has become more common practice in recent years and represents the norm for IPOs raising up to $250 million. However, when they compare the US to the European IPO fees they find that underwriters charge about 3% less the European issuers than the US issuers and attribute the difference to strategic pricing.

In the context of UK market there are a few empirical studies using mostly pre-AIM data. For example, Chen and Mohan (2002) analyze underwriter reputation, underwriter spread and IPO underpricing during the 1990-92 period. They hypothesise that underwriter spread is explicit price for IPOs and underpricing is implicit price for IPOs. Because issue price (hence, underpricing) and underwriter spread are determined at the same time, they model underwriter spread and IPO underpricing as simultaneous equation systems. They find that higher

[12] For brevity these results are not reported here, but they are available upon request

underpricing is associated with higher underwriter spread. Armitage (2000) using a sample that ends just one year after the start of AIM, examines the direct cost of UK rights and open offer and finds that the average is 5.78% and median is 4.28% for the period of 1985-1996. Menyah and Paudyal (2002) explore the cost differentials between listing on Main Market and pre-AIM (the Unlisted Security Market). Though Meoli et al. (2015) for Italy and Migliorati et al. (2012) analysed underwriter remuneration from a European perspective, but they do not model the choice of market as a self-selection decision. More recent empirical work (Doukas and Hoque (2016)) investigates why firms that meet the heavier regulatory environment of the MM choose the AIM, a lighter regulatory environment and shows that the market choice is a self-selection decision. Specifically, it is reported that the two markets attract companies with different characteristics, post-listing investment and financing priorities.

While the previous literature sheds light on several aspects of the US IPO fees, UK IPO market, during the early and more recent stages of the AIM market, the spread differences has been examined only between European and US IPO issuers. The gross IPO spread of the AIM has not been the focus of the empirical literature despite the remarkable growth of the AIM and its importance to small and young firms with high growth potential along with the many changes that occurred in the UK IPO market, such as the evolution of boutique investment banking services that cater to small and young firms who want to issue equity in the AIM, and the regulatory differences between the MM and the AIM. In this paper we subject this issue to a comprehensive investigation. Moreover, we address the question why about 50% of AIM companies that meet the listing requirements of MM prefer to incur a higher cost by listing on the AIM.

4. Data and Descriptive Statistics

4.1 Data

In this study, we collect the IPOs that took place in the Main and AIM markets of the London Stock Exchange for the period starting from 1995 to 2016. We have only included the IPOs that are new admissions, incorporated in the UK. As the behaviour of the financial and investment firms differ from other firms in the market, we have excluded 529 IPOs of financial and the investment firms.

The data in this study have been collected from several sources. The initial list of IPOs and issuing market comes from the London Stock Exchange. The initial list contained 1991 IPOs. We excluded 267 companies, due to missing information. The final list included 1724 IPOs out of which 1214 joined AIM and 510 raised capital in the MM. We use the perfect Filings database to obtain the prospectuses. The fees, lockup dates, venture capital presence, number of book runners, proceeds, and issue price are hand collected from the IPO prospectuses. The trading prices after the IPO are collected are from DataStream.

Following Derrien and Kecskes (2007), we classified underwriters to be either prestigious or other. A broker is classified as "prestigious" if it is a global investment bank. In instances in which prestige is not obvious, we consult the 1997 to 2003 editions of Thomson's Extel Survey" (Derrien and Kecskes, 2007), as well as 2013 Thomson's Extel Survey. All the variables are defined in Appendix 1.

4.2 Descriptive Statistics

In this section, we describe the sample. Table 1 displays the summary statistics of the data used in the analysis. The mean (median) spread is 5.89% (5.00%) for the whole sample of IPOs. The maximum is 21.02% and the minimum is 1.16%. These figures show a wide variation in the fees charged by book runners. The mean (median) proceeds is £52.40 (£5.50) million. The

maximum is more than 6 billion and the minimum is 400,000, which again shows that London attracts very large companies as well as very small ones. The mean (median) number of book runners is 1.14 (1.0), implying that a single book runner manages most of the IPOs. However, one of the IPOs has 8 book runners. The results show that 47% companies hire prestigious investment banks. The mean (median) lockup length is 389 (365) days. The mean (median) underpricing is 17.47% (8.17%). Again, underpricing shows a huge variation represented by a maximum of 792.44 and a minimum of -99.94%. The results also show that 28% of companies join the MM and 20% of them are venture capital backed.

Table 1 also reports statistics across the two markets, AIM and the MM. The results show that the mean (median) spread is lower in the MM. Proceeds are higher in the MM which is also reflected by the higher number of book runners in the MM. 88% of the book runners are prestigious in the MM, whereas only 39% are prestigious in the AIM. Lockup length and underpricing is lower in the MM in comparison to the AIM. These statistic patterns highlight that the IPO characteristics between the AIM and MM are considerably different.

[Insert Table 1 about here]

Table 2 reports the number of IPOs, average spread, median spread, average number of book runners, average underpricing of the sample IPOs per year from 1995 to 2016. The number of IPOs is always higher in AIM than in the MM, the only exception is 1995 when the AIM started its operation. The mean and median spread is also higher in the AIM than the MM throughout the 1995-2016 period. On the other hand, as expected, the average proceeds and average book runners in the MM are higher in comparison to the AIM. Average underpricing is higher in AIM in most of the years. The results show that the cyclicality of IPO market behaviour is present in both AIM and Main. In all the sample years, on average, the spread is 2% higher in the AIM than the MM.

[Insert Table 2 about here]

We construct the correlation matrix to check the relationship across the variables that are introduced in the models. The correlation matrix shows that log of proceeds, no of book runners, and prestigious underwriters are negatively related to the spread while lockup length and the AIM dummy are positively related to the spread. The correlation matrix is also helpful in detecting the presence of any multi-collinearity in the data. It shows that log of proceeds is correlated with several variables.[13]

5. Empirical Results

5.1 Determinants of Gross IPO Spread-baseline model

In this section, we document the determinants of the gross IPO spread. Following Abrahamson et al., (2011), we include log of proceeds and number of book runners in the baseline regression model of the determinants of gross IPO spread (*Spread*). In addition, we examine the effects of the prestigious book runner, number of book runners, lockup length, underpricing, venture capital backing, high tech dummy, AIM dummy (AIM equals 1). The OLS regression is specified as follows:

$$Spread_i = \alpha + \beta_1 Log\ Proceeds_i + \beta_2 No\ of\ book\ runners_i + \beta_3 Prestigious_i + \beta_4 VC_i + \beta_5\ tech\ dummy + \beta_6 AIM\ dummy_i + \beta_7 \log lockup\ length_i + \beta_8 Underpricing_i + \varepsilon_i \quad (1)$$

Where Spread represents the fees charged by the book runners scaled by gross proceeds. The first explanatory variable is the log proceeds.[14] Proceeds is in £ million. No of book runners is the number of investment banks as book runners. Prestigious is defined as if the book

[13] For brevity these results are not reported but are available from the authors upon request.
[14] We also checked for the non-linearity with regards to log of proceeds, but the data shows it is linear.

runner is global investment bank as in Derren and Kecskes (2007). Lockup length is the number of days insiders are not allowed to sell shares. Underpricing is calculated as the return on the offering price to the closing price at the end of first trading day. AIM is a dummy for the Alternative Investment Market in London. VC backing is a dummy if the IPO is venture capital backed.

The results are reported in Table 3. In the first regression (Model 1), as explanatory variables we include log of proceeds, no of book runners and prestigious underwriters.[15] Log of proceeds, no of book runners and prestigious underwriters enter this regression with negative and significant coefficients. The negative coefficient of proceeds indicates that the higher the proceeds the lower the spread, suggesting that economies of scale is the most important factor that explain the PO spread. The higher the number of book runners tends to lower the spread, implying that book runners mitigate the risk of not selling IPO shares by forming a syndicate. Consistent with Abrahamson et al., (2011), the negative effect of prestigious book runners on the spread shows that they charge less. This pattern with respect to the sign and significance of log of proceeds, no of book runners and prestigious underwriters, holds, across all six Models even when we control for other effects. Interestingly, the AIM dummy, as shown in Models 3 and 6, is positive and significant implying that book runners charge IPO issuers higher fees in the AIM than in the MM, after controlling for other factors. Underpricing is also positive and significant in Models 4 and 5, suggesting that concerns relating to liquidity and uncertainty about the level at which the stock will trade influence the IPO spread. Because underpricing and lockup length are determined outside of the models (endogenous variables) we estimate them in separate regressions and use the estimated value for underpricing and lockup length in

[15] We also ran regressions entering one variable (e.g., log of proceeds, no of book runners, and prestigious underwriter) at a time. In this setting, we find that log of proceeds, no of book runners, and prestigious underwriter are negative and significantly related to the spread. The R^2 from different models shows that log of proceeds explains the highest variation in spread, which is 24.9%. For brevity, these results are not reported but are available upon request.

second stage regression. In unreported results, we also consider other variables such as idiosyncratic risk, log age days, bid-ask spread, and inverse issue price. The bid-ask spread and the inverse issue price have a positive and significant impact on the spread.

[Insert table 3 about here]

6. Heckman Two-step Process for Gross Spread

The above analysis assumes that the market choice is exogenously determined. However, the choice of the IPO market could be endogenous for AIM companies that meet the heavier regulatory environment of the MM. In fact, half of the AIM companies in our sample fulfill the listing requirements of the MM. Essentially, the decision to issue equity in the AIM or MM is a self-selection decision like other corporate finance decisions. If this is the case, our previous analysis through OLS could produce biased results as pointed out by Heckman (1979). In fact, Heckman (1979) shows that use of OLS in case of self-selection choice results in specification error and proposes a two-step estimation process to control for self-selection bias.

We apply a two-stage process, where we model the choice of AIM versus the MM in the first stage. Then, we estimate the inverse Mills ratio in the first stage and in the second stage equations we use the inverse Mills ratio to correct for the bias. It is recommended that at least one extra variable is present in the first stage that is not used in the second stage (Li and Prabala, 2007). This extra variable should be exogenous and have an impact on the choice of market but not on the gross spread. It is widely believed that the MM is a market for established, larger and mature companies while the AIM is a market for young and small firms. In line with this view, we use three identifiable listing requirements in the MM such as market capitalization, percent float and age as the additional explanatory variables in the first stage equation. The justification of these variables stems from the listing requirements of the MM.

To address this issue, we use the Heckman (1979) two-step process as described in the Appendix 2.

6.1 Estimating IPO spread in an alternative environment: AIM IPOs that meet MM listing requirements and MM IPOs

For the firms that do not meet the MM listing requirements there is no choice. They are forced to join the AIM. Thus, for such IPO issuers there is no endogeneity problem. In this section, we try to address endogeneity by considering the AIM IPOs that meet MM listing requirements but join the AIM. So, it is by choice. These IPO issuers could have joined the MM. Thus, we run the Heckman model using these two groups: the AIM IPOs that meet MM listing requirements and the MM IPOs.

6.1.1 Heckman Two-step process for AIM firms that meet MM listing requirements and MM IPOs

The results of Heckman two-step estimation process, reported in Panel A of Table 4, show that the coefficients of the log of market capitalization (-3.170) and log of age (-0.296) are negative and significant in the first step Probit regression. This suggests that smaller and younger companies choose to raise capital in the AIM. Next, we estimate the inverse Mills ratio from the Probit regression in the first stage and add it in the second stage regression as an additional explanatory variable and report these results in Panel B. As can be seen, the coefficient of the inverse Mills ratio is 0.290 and significant at 10% level. This result reveals self-selection and implies that certain obvious and unobservable characteristics of the AIM companies that satisfy MM listing requirements increase the likelihood of choosing AIM as the platform of equity issuance which raise the IPO gross spread. Since, the inverse Mills ratio is significant only at 10% level, it seems that the unobservable characteristics only moderately increase the gross IPO spreads.

[Insert Table 4 about here]

6.1.2 Endogenous switching regression- AIM firms that meet MM listing requirements and MM IPOs

Panel A of Table 5 reports the second stage switching regression results for the AIM IPOs. These second stage results indicate that only the log of proceeds is negative (-1.779) and significant at the 1%.[16] The Inverse Mills ratio (0.641) is significant at 5%, suggesting that the discernable (e.g., IPO characteristics such as size, age) and undiscernible (e.g., unmeasurable risk) characteristics of the AIM IPOs that meet MM listing requirements are associated with the higher level of gross spread. The MM regression shows that the log of proceeds (-0.666) and the number of book runners (-0.433) are negative and significant while VC backing is positive and significant (0.490). In this setting, the MM results in Panel B, show that the inverse Mills ratio (0.147) is not significant. The insignificant inverse Mills ratio for MM implies that the market choice does not have any impact on the level of gross IPO spread firms pay to issue equity in the market of their choice —AIM or MM. However, since, there is an endogenous choice for the AIM firms which meet the MM listing requirements to issue equity in AIM or MM, as before we perform a "what if" analysis next to determine what would be the spread if this group of AIM firms had chosen to issue equity in the MM.

As shown in Panel C of Table 5, AIM firms would have paid a significantly lower spread if they would issue equity in the MM. Specifically, AIM firms that meet MM would pay 4.47%, which is 1.26% lower than what they actually paid (5.73%) by selecting to raise capital in the AIM. This result suggests that AIM firms that meet the MM listing requirement could have experienced significant cost savings by listing on MM.

[16] The first stage regression in Table 8 is the same as first stage regression in Table 7. Hence, it is not discussed here.

[Insert Table 5 about here]

While so far, we have examined the impact of the IPO market choice on the spread of IPO issuers, IPO timing, industry differences and heterogeneity among book runners could also influence spreads, Hence, we focus on these issues in the next section.

7. Does Investment bank level heterogeneity drives the higher gross spread?

7.1 Time, industry and book runner fixed effects

Time is an important variable in the IPO literature. Boom and busts are shown to be having significant relationship with IPO underpricing and with long term returns. For example, Ritter and Welch (2002) show that underpricing and longterm returns are different across times in the US market. Chambers and Dimson (2009) show that underpricing during the 1918-2007 period in the London Stock exchange varies with time. To shed light on how different years have a different effect on the spread charged we use the year fixed effect. While Abrahamson et al., (2011) use year dummies, we achieve the same goal by using year fixed effects. These results are report in Table 6. Our evidence, as shown in Models 1 and 2, reveals that year fixed effects explain 14.26-16.18% of the variation in the spread charged by the book runners. Moreover, we find that log of proceeds is negatively related to spread supporting the economies of scale hypothesis. Prestigious is also negative and significant indicating that prestigious book runners charge less, controlling for other factors. The AIM dummy in this specification is significant implying that AIM underwriters charge more.

To capture whether fees charged vary across different industries, we next use the industry fixed effects in the regression Models 3 and 4. Industry fixed effects explain only 3.47-4.76 percent of the variation in the spread charged by the book runners. This result implies that book runners do not charge different spreads across different industries.

There are 150 book runners in our sample and we have identified 35 as prestigious. This means that 115 are boutique investment banks. Therefore, there is great deal of heterogeneity in terms of book runners' presence in the IPOs. Hence, it is possible that different book runners charge different fees. To shed light on the book runners and to capture its specific effect on spreads, we run regressions using fixed effects model for the book runners. The results are shown in Models 5 and 6 of Table 6. The results show that book runners fixed effects alone explain 51.32-54.44% of variance. In this specification, consistent with our previous regression results, log of proceeds is significant and negatively related to spread. In sum, the book runner fixed effect regressions show that some book runners charge more compared to others.

In the next two regressions (Models 7 and 8) we include year, industry and book runner fixed effects. The fraction of variance due to fixed effects is 51.36% in Model 7 and 58.08 in Model 8. Given that book runners fixed effects alone explain 51.32-54.44% of the variance in IPO spreads (Models 5 and 6), these results suggest that year and industry fixed effects exert little influence on IPO spreads. Log of proceeds and AIM dummy are significant. Jointly, the results suggest that the higher the proceeds the lower the spread. Prestigious underwriters charge less and IPO issuers in the AIM pay significantly higher fees (the AIM dummy is significant in all the regressions) compared to the MM IPOs. Since, book runner differences explain a considerable fraction of spread differences in AIM and MM in the next section we try to neutralize the differences that are due to book runner heterogeneity.

[Insert Table 6 about here]

7.2 Spread after neutralizing the difference between book runners

The previous results show that, book runners' specific effects are very important in the IPO spread regression. However, one important issue is that global investment banks do not underwrite many IPOs in the AIM. We also notice that there are a number of book runners who

manage IPOs only in the AIM. To get a deeper understanding why fees are higher in the AIM, we first examine the underwriters' involvement in the MM and AIM market. Table 7 provides a description of the underwriter characteristics in both markets. Panel A describes the MM IPOs by book runners who manage issues in the MM and AIM. There are 231 such IPOs. The gross spread for this group is 3.93%. Average log of proceeds and number of book runners is 8.06 and 1.57, respectively. Idiosyncratic risk is 54.11% and underpricing is 3.97%. 92% of IPOs are underwritten by prestigious underwriters and 22% has VC presence. Panel B describes the AIM IPOs by book runners who manage issues in the MM and AIM. There are only 78 IPOs. The spread is 4.37%, which is slightly higher than the spread in Panel A. The underpricing is very high in Panel B (10.37%), compared to Panel A (3.21%). In terms of mean differences, the log of proceeds and idiosyncratic risk are different.

Table 7, Panel C illustrates IPO gross proceeds higher than 15 million or more. The average spread is 4.41% for such IPOs. Average log of proceeds and number of book runners is 7.59 and 1.13, respectively. 58% of these IPOs are underwritten by prestigious underwriters and 24% are VC backed. In terms of mean difference between AIM IPOs by the book runners who manage issues in the MM and AIM and IPOs of 15 million or more shows that spread, log of proceeds, number of book runners and prestigious underwriters are significantly different.

[Insert Table 7 about here]

Then, we run separate multivariate regressions for the underwriters who manage issues in the AIM and MM and AIM only underwriters, respectively, and report the results in Table 7. The log of proceeds has a negative and significant effect on the spread for the underwriters who manage equity issues in the AIM and MM (Model 1 and 2). No other variables are significant in these regressions. However, for underwriters who exclusively concentrate on AIM IPOs (Model 3), the log of proceeds is negative and significant and prestigious

underwriters are positive and significant. Because firms listing on the AIM tend to perform poorly (Doukas and Hoque, 2016) once they list on the AIM (Gerakos, Lang, and Maffett, 2013) underwriters are exposed to significant reputation risk. This reduces the number of underwriters willing to underwrite AIM companies, leading to higher spreads. On the other hand, the number of book runners and the log of lockup length are positive and significant. Surprisingly, the positive sign of these two variables reveals that as the number of book runners in the AIM increases they charge higher spreads and impose longer lockups. These results indicate the special nature of NOMADs and highlight the ability of book runners to charge higher spreads in the AIM.

7.3 Spread after neutralizing the size of IPOs

Since, the size of the IPOs is smaller in the AIM than in the MM, one might argue that we are comparing apples with oranges. To construct a more comparable sample to the MM, we examine the IPOs in the AIM that are larger. Specifically, we look at IPOs with proceeds of £15 million or greater. By looking at large IPOs, we neutralise the size difference between the two markets. This allows us to better understand the gross spread charged for the larger IPOs in MM and AIM. The results in Models 5 and 6 of Table 8, show that the log of gross proceeds and number of book runners is negative and significant for larger IPOs. The negative coefficient of the number of book runners suggests that for the larger IPOs the higher the number of book runners mitigates the risk of the IPO and they charge lower spreads. This result is in sharp contrast with the regression results for the AIM only underwriters where the number of book runners is positively related to the gross spread. The log of lockup length is positive but not significant. These results show the power of book runners in the AIM to charge higher fees for smaller IPO issues. However, we have not addressed yet the question of whether book

runners charge higher spreads when AIM IPO issuers meet the MM listing requirements. We address this question in the next section.

[Insert Table 8 about here]

8. Do the AIM IPOs that do not meet MM listing requirements pay more?

To address this question, we split the sample of AIP IPOs into firms that do not meet the MM listing requirements and thus list on the AIM and firms that had the choice to join the MM by meeting its regulatory listing requirements or AIM, but they elected to go public through the AIM. The London MM has three identifiable listing requirements, size, age and free float. We conjecture that the spread charged by the book runners will be different for these two sets of AIM firms.

The sample characteristics of these two types of AIM IPOs are reported in Table 9. As can be seen, about 50% of the AIM firms that could list on the MM by meeting its listing requirements elected not do so. Specifically, the number of firms that do not fulfil MM listing requirements is 577 and the number of firms that fulfil MM listing requirements is 566. As anticipated, book runners charge higher fees for IPOs that do not fulfil the MM listing requirements (7.24%) relative to the IPOs that fulfil MM listing requirements (5.73%). The mean difference is 1.51% and statistically significant at 1% level. Surprisingly the proceeds and number of book runners is higher for the AIM firms that do not meet MM listing requirements. They are also associated with significantly higher lockups than their counterparts that meet the MM listing requirements designed to attenuate market's lack of faith in the firm's prospects by restricting insiders to cash in long-anticipated profits. AIM firms that fulfil MM listing requirements go public with prestigious underwriters more than their counterpart firms that do not fulfil MM listing requirements.

Then we re-estimate our base line regressions (Table 9, Panel C) to examine whether listing regulations play any role in determining the gross spread for all AIM IPOs, AIM firms that meet the MM listing requirements and AIM firms that do not meet the MM listing requirements. In addition, we introduce a dummy variable that takes the value of one if an AIM firm does not fulfil MM listing requirements and zero otherwise. These results are in line with our conjecture. Specifically, Model 1 shows that log of proceeds and prestigious underwriter are negatively related to gross spread. The dummy for AIM firms that do not fulfil MM listing requirements is positive and statistically significant at 1 percent level. It is economically significant as well. This implies that the firms that do not fulfil MM listing requirements need to pay higher fees to the underwriters. That is, meeting the MM listing requirements by AIM IPO issuers works as a cost saving mechanism resulting in lower underwriting fees than the fees charged to their counterparts that do not meet the MM listing requirements.

[Insert Table 9 about here]

8.1 Do the observable firm and IPO characteristics such as gross proceeds, age explain the higher spread paid by AIM IPOs that meet MM listing requirements?

Previous results show that AIM IPOs that meet MM listing requirements compared to the MM IPOs charged higher spreads by the underwriters. One might argue that the reason AIM IPO issuers that meet MM listing requirements charged higher level of spread than their MM counterparts might be driven by the firm and IPO characteristics (such as gross proceeds, age) at the time of IPO. To address this potential endogeneity issue, we use propensity score matching (PSM) to neutralise the firm level differences and estimate the spread difference between AIM firms that meet MM listing requirements and Main Market IPOs. Specifically, we use propensity score matching difference in difference (DD) estimation that combines the Abadie and Imbens (2011) bias-adjusted propensity score matching with the standard DD

approach. The matching between the AIM firms that meet MM market listing requirements (treatment group) and the MM market IPOs (control group) employs the matching variables at the time of the IPO. Specifically, we run a probit model to calculate the propensity score where the dependent variable is 1 when AIM firms meet MM listing requirements and 0 for MM IPOs and dependent variables are log of proceeds, number of bookrunners, prestigious, log age days, log (lockup length), Percent sold and VC backing. For each AIM IPO issuer that meets the MM listing requirements, we use the four best matches out of the control group according to the bias-adjusted propensity score.[17] The average treatment effect (ATE), main variable of interest, controlling for firm and IPO characteristics, shows the extra spread that AIM IPOs that meet MM listing requirements paid compared to the control group (MM market IPOs).

The PSM results, reported in Table 10, show that AIM firms that meet the MM market listing requirements pay 0.888% higher spread (significant at 1% level) compared to the MM market IPOs. This result indicates that the higher level of spread for AIM firms that meet MM market listing requirements is not driven by the firm level characteristics of IPO firms. We rule out the possibility that the higher level of spread charged to the AIM firms that meet MM listing requirements is driven by their characteristics (such as smaller size and young age).

[Insert Table 10 about here]

9. Intertemporal variation in AIM regulations and gross spread

In this section, we briefly describe several AIM regulatory changes and their impact on gross spread. AIM has tightened regulations in respect to the IPOs and NOMADs in 2005, 2006,

[17] We choose the number of matches according to the simulation results in Abadie and Imbens (2011) who find the best matching quality is obtained for the number of four matches.

2007 and 2008. In 2005, London Stock Exchange announced some changes of rules with respect to the company, disposals relating to the company, NOMAD independence, rights to delay or refuse admissions and sanctions with respect to the NOMADs. The regulations first time introduced a £25,000 fine for the NOMADs if they violate any rules in respect to the IPO.[18] The Exchange announced that the existing 'rule 8' will be amended giving right to refuse admission of an applicant to AIM where it considers that admission may be detrimental to the orderly operation of the Exchange's markets, or where the applicant does not comply with a special condition imposed by the stock exchange. In 2006, the London stock exchange increased the mandatory requirements for all listed firms. One such change was to maintain a well working webpage where they release all investor related announcements. In 2007, AIM published new rules for nominated advisors.[19] The rules discuss the nominated advisors' eligibility criteria and approval process. They also mention the continuing obligations of a nominated advisor. In 2008, the London Stock Exchange fined a NOMAD for the first time. "Nabarro Wells & Co Ltd, an AIM nominated adviser ('Nomad'), has today been fined £250,000 and publicly censured in respect of its conduct. Nabarro Wells has been found to have breached AIM Rule 39 and Part 2 of the Eligibility Criteria for Nomads which were in force at the relevant time."[20] In sum, there are few regulatory changes that might have an impact on IPO gross spreads.

More rigorous due diligence might increase the cost of raising funds through IPOs. NOMADs, for example, will be more careful after one of them gets fined and censored. To

[18] It should be noted the maximum fine internal AIM executive panel can impose is £25,000. The external AIM Disciplinary Committee has no such limit on the level of fine that can be imposed. For detail, please see AIM release 13, www.londonstocexhange.com, 18 March 2005.

[19] Effective from February 2007, an entity seeking approval as a nominated adviser must:
• be a firm or company (individuals are not eligible);
• have practised corporate finance for at least the last two years;
• have acted on at least three Relevant Transactions during that two-year period; and
• employ at least four Qualified Executives.

[20] http://www.lseg.com/media-centre/news/corporate-press-releases/nabarro-wells-co-ltd-fined-%C2%A3250000

examine whether the regulatory changes have a positive impact on gross spreads, dummies are used to capture the effect of regulatory changes. Therefore, we create post-2005, post-2006, post-2007, post-2008 dummies to examine which of these regulations (if any) had an impact on the gross spread. Since, the regulation affects AIM, in the first model, we analyse all AIM companies and, as reported in Table 11, we find that post-2005, post-2006 and post-2008 regulation dummies are positive and significant. This result implies that tightening the regulations had a positive impact on IPO gross spreads. The 2007 dummy, however, suggests that AIM published new rules for nominated advisors had no significant effect on spreads. This result remains unchanged in all regressions. We then partition the sample in line with our previous tests, AIM firms that do not meet MM listing requirements and AIM firms that meet MM listing requirements. Our objective here is to examine whether the strict regulations impact the gross spread through the AIM firms that do not fulfil MM listing requirements. In Model 2 (Table 10), the regression results show that the post-2006 dummy is positive and significant. In 2006, London Stock Exchange increased the mandatory requirements for all listed firms such as maintaining a working website to disclose investor related data. It is likely that this regulation was more relevant to the firms that do not meet MM listing requirements and hence we observe that is had a greater impact on the AIM firms that do not meet MM listing requirements. In Model 3, we run the regressions for the firms that meet MM listing requirements and find the post-2005 and post-2008 dummies to be positive and significant.

To reconfirm that the regulations do not exert greater influence towards the AIM firms that do not meet MM listing requirements, we interact the post-2005, post-2006, post-2007 and post-2008 firms with the AIM firms that do not meet MM listing requirements dummy in Models 4 and 5. The interaction terms are not significant. The post-2008 dummy and post-2005 dummy variables are significant in Models 4 and 5, respectively. In Model 5, we introduce the dummy of AIM firms do not meet MM listing requirements and after controlling for the

regulatory changes it is still positive and significant. In sum, with increases in due diligence procedures after the regulatory changes, AIM firms that do not meet the MM listing requirements are associated with higher spreads.

[Insert Table 11 about here]

While the direct cost of IPOs has been examined thus far, the level and nature of indirect cost of IPOs (i.e. IPO underpricing) in the AIM and MM are the focus of our investigation in the next section.

10. Indirect cost of raising money and lockup length

IPO underpricing is an indirect cost of raising capital and in order to gain an understanding of the fee differences in the AIM and the MM, we examine the underpricing in both markets. Our objective here is to find out whether the higher gross spreads we have observed in the AIM are offset by the lower underpricing in the AIM. To address this issue, we estimate the following OLS regression specification:

$$Underpricing_i = \alpha + \beta_1 Log\ Proceeds_i + \beta_2 MultiBookrunner_i$$

$$+\beta_3 Prestigious_i + \beta_4\, VC\ Backing + \beta_5 Tech + \beta_6 AIM_i +$$

$$\beta_7 AIM\ firms\ DON'T\ fulfil\ MM + +\beta_8 AIM\ only\ underwriters\left(\sum_{j=1999}^{2015} \beta_j Year_j\right) + \varepsilon_i \quad (12)$$

where the underpricing is the first trading day return in comparison to the issue price. The variables of interest are the AIM dummy and AIM firms that do not fulfil MM listing requirements. The results are reported in Table 12. Panel A, Model 1, shows that the coefficients of log of proceeds and multiple book runners are negative and significant. The AIM dummy is not significant, suggesting that book runners do not underprice more the AIM IPOs than the MM IPOs. This implies that the indirect cost of raising funds in the AIM is not

significantly higher than what it would cost in the MM. However, the AIM only underwriters dummy is significantly positively related to the underpricing. This implies that AIM only underwriters underprice more. The AIM firms that do not fulfil MM listing requirements dummy is also not significant, suggesting that firms that do not fulfil MM listing requirements are not subject to great underpricing. Hence, the heavier regulatory environment in the MM is not associated with the higher underpricing in the AIM. The insignificance of the AIM dummy and the AIM firms that don't fulfil MM listing requirements dummy could also be due to the fact that the book runners cannot control the market price in the post-IPO market.

Next, we focus on the length of lockups where the book runners have more direct control. Our objective here is to examine the lockup length that is at the discretion of the book runners. If underwriters have more power in the AIM are expected to charge higher fees and also impose longer lockups on insider selling. This is quite important because we reported earlier that the gross spread and lockup length are positively related to AIM only underwriters. To examine it formally we use the following regression equation:

$$\log(lockup\ length)_i = \alpha + \beta_1 Log\ Proceeds_i + \beta_2 MultiBookrunner_i$$

$$+\beta_3 Prestigious_i + \beta_4\, VC\ Backing + \beta_5 Tech + \beta_6 AIM_i +$$

$$\beta_7 AIM\ firms\ DON'T\ fulfil\ MM + \beta_8 AIM\ only\ underwriters + \left(\sum_{j=1999}^{2015} \beta_j Year_j\right) + \varepsilon_i \quad (13)$$

where the lockup length is the number of days after IPO which allows insiders to sell their shares, typically 180 to 365 days subsequent to the first day of trading. The variables of interest are the AIM dummy, AIM firms that do not fulfil MM listing requirements dummy and AIM only underwriters dummy. These regression results, listed on Panel B of Table 12, show that the AIM dummy is positive and significant, implying that the AIM companies are associated with higher lockup periods. The same pattern is observed for AIM firms that do not fulfil MM

listing requirements. This pattern suggests that book runners have higher power in imposing longer lockups and charge higher fees for the AIM IPOs. The AIM only underwriters is positive and significant, implying that AIM only underwriters impose longer lockups. Secondly, the AIM firms that do not fulfil MM listing requirements dummy is also positive and significant. This indicates that firms that do not fulfil MM listing requirements pay higher underwriter fees and they are subject to longer lockup periods on insider selling. This reveals that AIM only underwriters have more power in the context of charging higher fees and imposing longer lockups for the companies that do not meet the MM listing requirements.

[Insert Table 12 about here]

11. Conclusion

Despite the enormous growth of the AIM IPOs in the UK since its initiation in 1995, no study has examined the fees charged by book runners in the AIM relative the MM for firms that meet the listing requirements of MM. In this study, we address this issue by investigating the IPO gross spread differences between the AIM and the MM of the London Stock Exchange during the 1995-2016 period and find that the IPO spread is 2.37% higher in the AIM than in the MM for IPO listing issuers that meet the MM listing requirements. When we employ endogenous switching regressions to determine what would be the spread if AIM firms that meet MM listing requirements joined MM and vice versa, our findings show that AIM IPO issuers could save more than £80 million by raising equity capital in the MM. Specifically, we find that the self-selection parameter, inverse mills ratio, reveals that observable and unobservable characteristics (risks) of IPOs lead them to choose the AIM where AIM companies pay higher gross spread compared to the Main Market. Moreover, we examine whether IPO spread differences, between the AIM and the MM of the LSE, book runner heterogeneity and issuers' endogenous market choice influence their decision to go public through the AIM than the MM

of the LSE even when they meet the strict listing requirements of the MM. Our evidence reveals that this spread differential is attributed to the issuing firms' market self-selection.

Interestingly, the spread for AIM IPOs that meet the MM listing requirements is 1.51% lower (5.73%) than the spread (7.24%) of their AIM IPO counterparts that do not fulfil the MM listing requirements controlling for other factors. This finding suggests that meeting MM listing requirements by AIM IPO firms that choose not to list on the MM act as a cost-savings issuance attribute although they could have saved even more by going public through the MM. Finally, when we examine whether the higher gross spread in the AIM than the MM is related to IPO size and book runner heterogeneity we find that IPO size does matter, but book runner fixed effects explain more than 50% of the gross spread variation. Because some underwriters specialize on AIM IPO issues, we also neutralize the underwriter's specific effect and document higher underpricing and lockup length. In sum, when we control for all the issue characteristics and use the propensity score matching, the results show that even after neutralizing the issue characteristics, AIM firms that meet MM market listing requirements pay 0.888% higher spread compared to Main market IPO firms.

Appedix 1: Variable Definitions

Variable	Definitions
Spread	Spread is total issuers fees divided by the gross proceeds
No of book runners	Number of book runners is the number of investment banks acting as book runners.
Proceeds	Proceeds is in £ million in 2007 inflation adjusted figures
Prestigious	Prestigious is defined as one if the book runner is global investment bank by following Derren and Kecskes (2007), and zero otherwise.
Lockup Length	Lockup length is the number of days insiders are not allowed to sell shares
Underprcing	Underpricing is calculated as the return on offering price to the closing price at the end of first trading day
MM	MM is the London Main Market.
VC backing	VC backing is a dummy if the IPO is venture capital backed.
Book runners who are active in the Main and AIM	Book runners who are active in the Main and AIM means if the book runner has issued IPOs in the both markets
AIM only underwriters	AIM only underwriters are the ones who only issued shares in AIM but not on the MM
Techdummy	One if the IPO is a technology IPO and zero otherwise.
Log (mkt cap mil)	Market capitalisation of an IPO at admission date
Percent float	Percetage of shares issued in the market.
Log (age days)	The time from when the company started to the IPO date.
AIM dummy	AIM dummy equals 1 for AIM companies and zero otherwise.
AIM firms DON'T fulfil MM	AIM firms that do not fulfill Main Market IPO listing requirements that is age (minimum 3 years), float (minimum 25% shares in public hands) and size (minimum size of £750,000).

Appendix 2:Heckman two-step selection bias test

To address this issue, we use an OLS regression model of the following form:

$$Spread_i = X_i'\beta + \theta Market_i + \mu_i \quad (2)$$

where X_i'i is a vector of firm-specific characteristics, $Market_i$ is a dummy for market (AIM=1 and MM =0), and μ_i, is the error term. For the OLS estimates to be reliable, this setup implicitly requires that $Market_i$ be exogenous in equation 2. If $Market_i$ is endogenous, then equation (2) cannot be consistently estimated by OLS. Heckman (1979) proposes a simple two-stage estimator to correct for this bias. First, the following equation is estimated by probit:

$$Market_i = Z_i'\delta + \varepsilon_i \quad (3)$$

where Z_i' is a vector of characteristics that affect the choice between the AIM and MM in the London Stock exchange, and ε_i, is the error term of the selection equation. Given the binary nature of our listing choice measure,

$$Market_{i=}1 \; if \; Z_i'\delta + \varepsilon_i > 0 \; and \; Market_{i=}1 \; if \; Z_i'\delta + \varepsilon_i \leq 0 \quad (4)$$

When $\mu_i$and ε_i are correlated, OLS estimates in equation (1) are biased.

However, it has been shown that, if equation (1) is replaced by

$$Spread_i = X_i'\beta + \omega\frac{\varphi(Z_i'\delta)}{\phi(Z_i'\delta)}\, Market_i + \frac{-\varphi(Z_i'\delta)}{1-\phi(Z_i'\delta)}\,(1 - Market_i) + \upsilon_{\ i} \quad (5)$$

where φ (.) and ϕ (.) are the density function and the cumulative distribution function of a standard normal, respectively, then equation (5) can be consistently estimated by OLS. Moreover, the coefficient ω will determine the effect of market of issue on $Spread_i$.

The above setup can be further generalized to allow for any differences in the effect of firm-specific characteristics on the outcome variables between the two markets, i.e, the AIM and MM. The resulting model is known as a switching regression model with endogenous switching, whereby equation (4) is replaced by two equations:

$$Spread_{AIM} = X_i'\beta_{AIM} + \mu_{AIMi} \quad (6)$$

$$Spread_{Main} = X_i'\beta_{Main} + \mu_{Maini} \quad (7)$$

Equation (6) is the outcome equation for the AIM, and (7) is the outcome equation for the MM but for the same deal. Of course, we only observe $Spread_{AIM}$ or $Spread_{Main}$, depending on the market choice. Thus,

$$Spread_i = Spread_{AIM\,i}\; if\; Market_i = AIM\; and\; Spread_i = Spread_{main\,i}\; if\; Market_i = Main \quad (8)$$

Endogeneity is modelled by allowing for the correlation between the residuals of the selection and outcome equations (ε_i and μ_{AIMi} (μ_{Maini})). This implies that the unobserved determinants of the market choice can now affect the outcome variable of interest. The following covariance matrix is thus non-diagonal:

$$Cov(\mu_{AIMi}\, \mu_{Maini}, \varepsilon_i) = \begin{pmatrix} \sigma_{AIM,AIM} & \sigma_{AIM,Main} & \sigma_{AIM,\varepsilon} \\ \sigma_{Main,AIM} & \sigma_{Main,Main} & \sigma_{Main,\varepsilon} \\ \sigma_{AIM,\varepsilon} & \sigma_{Main,\varepsilon} & 1 \end{pmatrix} \quad (9)$$

Since we only observe (6) or (7) depending on the outcome of (2), and never both, the observed $Spread_i$ becomes a conditional variable, and the error terms in equations (6) and (7) do not have zero mean. However, it turns out that if equation (6) is augmented with an additional regressor $\frac{\varphi(Z_i'\delta)}{\phi(Z_i'\delta)}$, then the nonzero mean of μ_{AIMi} is adjusted for and the equation can be consistently estimated by OLS. Accordingly, for equation (7) this is $\frac{-\varphi(Z_i'\delta)}{1-\phi(Z_i'\delta)}$. These additional regressors are known as inverse Mills ratios. This setup is a generalization of the classical Heckman (1979) two-stage process. Similar methodology is applied in Dunbar (1995) in a study on the use of warrants for underwriter compensation, in Fang (2005) in a study of investment bank reputation and the price and quality of bond underwriting services, and in Golubov et al (2012) in a study of advisor reputation and bidder returns in M&A transactions.

Because we only observe an IPO in the AIM and MM, we need to address the question "what would have been the spread for the same deal, had it been issued in a different market"

to infer the effect of market issuance choice on the $Spread_i$. This question can be answered by comparing the spread charged for an IPO issue in the AIM and the spread that the same issuer would be charged in the Main Market. Econometrically, the potential outcome (market choice of IPO issuance) can be estimated by evaluating X_i' in the alternate market equation.

$$E[Spread_{\ Main\ i}|AIM_{i=}1] = E[X_i'\beta_2 + u_{Main\ i}|\ Z_i'\delta + \varepsilon_i > 0] = E\left[X_i'\beta_2 + u_{Main\ i} + Cov\left(u_{Main\ i,}\varepsilon_i\right)\frac{\varphi(Z_i'\delta)}{\phi(Z_i'\delta)}\right] \quad (10)$$

The difference between the actual and hypothetical outcome is then computed and forms the basis of inference

$$E[Spread_{\ Main\ i}|AIM_{i=}1] - Spread_{AIM\ i} \quad (11)$$

The hypothetical value $E[Spread_{\ AIM\ i}|Main_{i=}1]$ and the associated improvement are computed similarly. In the next section, we conduct detailed analysis on what would have been the IPO spread if AIM IPO firms are issued in the MM and vice versa.

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Table 1. Descriptive Statistics

This table reports descriptive statistics for All IPOs, MM IPOs, AIM IPOs spreads and other IPO characteristics from the London Stock Exchange over 1995-2016. All variables are defined in Appendix 1.

	Spread (%)	Proceeds (£mil)	No of book runners	Prestige -ious	lockup length (days)	Under-pricing	Main Market (MM)	VC	Tech	Book runners who are active in Main and AIM	AIM only underwriters
All IPOs											
N	1724	1724	1724	1724	1724	1724	510	345	255	140	561
Mean	5.89	52.40	1.14	0.47	389	17.47	0.28	0.20	0.16	1	1
Median	5.00	5.50	1.00	0.00	365	8.17	0.00	0.00	0	1	1
Max	21.02	6022.28	8.00	1.00	1260	792.44	1.00	1.00	0	1	1
Min	1.16	0.04	1.00	0.00	85	-99.94	0.00	0.00	1	1	1
MM											
N	510	510	510	510	510	510	510	97	105	115	
Mean	4.14	257.70	1.54	0.88	327	5.49	1.00	0.19	0.24	1	
Median	4.00	67.19	1.00	1.00	365	6.52	1.00	0.00	0	1	
Max	9.23	6022.28	8.00	1.00	912	792.44	1.00	1.00	0	1	
Min	1.40	1.59	1.00	0.00	120	-98.73	1.00	0.00	1	1	
AIM											
N	1214	1214	1214	1214	1214	1214	--	248	150	25	561
Mean	6.51	13.40	1.07	0.39	401	19.49	0.00	0.20	0.13	1	1
Median	5.10	3.93	1.00	0.00	365	8.48	0.00	0.00	0	1	1
Max	21.02	307.73	3.00	1.00	1260	495.00	0.00	1.00	0	1	1
Min	1.16	0.04	1.00	0.00	85	-99.94	0.00	0.00	1	1	1

Table 2. IPOs Proceeds and spreads charged by underwriters in the Main and AIM Markets

This table reports the time series of IPO number, average and median spread, average proceeds, average number of book runners and underpricing. All Variable definitions are in Appendix 1.

	Number			Average Spread (%)			Median spread (%)			Average Proceeds (Mil)			Average Book runners			Underpricing (%)		
Year	AIM	Main	Total	AIM	Main	Total	AIM	Main	Total	AIM	Main	Total	AIM	Main	Total	AIM	Main	Total
1995	8	47	55	6.02	4.22	4.48	5.10	3.90	4.00	4.0	155.5	52.0	1.25	1.23	1.11	-0.95	6.30	5.25
1996	47	63	110	6.57	4.22	5.22	6.10	3.70	4.00	7.4	95.3	41.2	1.00	1.05	1.00	28.22	5.50	15.21
1997	39	54	93	6.23	3.52	4.66	5.20	3.90	5.00	5.9	290.0	35.3	1.02	1.11	1.05	12.71	5.00	8.23
1998	15	33	48	6.32	4.10	4.79	4.50	4.00	4.00	3.6	178.6	39.6	1.00	1.00	1.02	11.37	0.50	3.90
1999	32	18	50	4.71	3.74	4.40	4.20	3.80	4.00	3.0	149.5	49.0	1.04	1.27	1.11	77.71	17.60	56.07
2000	100	59	159	4.40	4.09	4.28	4.00	4.00	4.00	6.2	97.7	42.2	1.00	1.06	1.02	49.51	10.40	35.00
2001	56	7	63	6.67	4.30	6.39	5.50	4.60	5.00	3.9	353.8	44.3	1.00	1.00	1.00	71.32	7.00	64.17
2002	43	15	58	7.02	4.06	6.34	7.00	4.40	5.40	2.5	115.5	28.6	1.00	1.22	1.05	4.66	-11.80	0.40
2003	37	6	43	9.25	3.71	8.60	6.60	4.10	6.20	3.8	333.8	42.6	1.00	1.50	1.06	13.09	11.40	12.86
2004	159	17	176	6.61	4.15	6.34	5.20	4.30	5.00	8.2	90.3	17.2	1.02	1.40	1.06	28.21	12.80	26.72
2005	213	17	230	6.46	3.79	6.24	5.30	3.80	5.00	12.2	178.6	25.9	1.02	1.53	1.06	25.88	5.50	24.38
2006	165	21	186	6.80	4.03	6.51	5.40	4.00	5.10	19.4	211.7	39.9	1.05	1.86	1.14	17.42	12.50	16.86
2007	91	19	110	6.09	4.01	5.71	5.00	3.70	5.00	20.0	173.1	47.9	1.06	1.39	1.12	10.35	8.10	9.96
2008	18	3	21	5.64	6.25	5.71	4.80	6.30	4.90	22.2	470.2	72.0	1.19	1.00	1.17	12.40	-7.10	9.61
2009	9	1	10	5.55	4.00	5.38	3.80	4.00	4.00	65.4	55.8	64.3	1.13	2.00	1.22	7.80	0.00	7.02
2010	10	5	15	5.69	3.25	5.14	5.30	2.90	5.00	24.4	242.8	74.3	1.22	2.00	1.40	15.20	1.60	10.67
2011	24	11	35	7.78	3.06	7.16	7.50	2.20	6.70	11.9	1428.2	198.2	1.09	4.20	1.50	13.57	7.80	11.75
2012	19	14	33	8.04	6.12	7.90	6.80	4.00	6.40	15.3	66.0	19.0	1.08	1.50	1.11	12.21	5.90	9.53
2013	26	12	38	7.25	4.20	6.29	6.20	4.00	5.70	13.9	205.1	62.0	1.08	2.00	1.40	14.62	6.10	11.93
2014	32	13	45	7.06	4.05	6.19	6.30	4.10	5.90	15.5	262.3	52.0	1.09	1.50	1.14	12.05	4.70	9.93
2015	33	38	71	6.05	4.14	5.86	6.20	4.00	5.95	25.5	100.7	69.6	1.02	1.50	1.18	15.90	7.40	13.32
2016	50	25	75	6.21	4.32	5.91	6.20	4.00	6.00	17.8	84.5	44.8	1.00	1.40	1.28	13.57	6.79	12.32
Total	1214	510	1724	6.51	4.14	5.89	5.10	4.00	5.00	13.4	257.7	52.4	1.07	1.54	1.14	21.87	5.49	17.47

Table 3. Determinants of IPO spread

This table reports regression results of the determinants (i.e., log of proceeds, number of book runners, prestigious book runners, venture capital backing, high tech dummy, AIM dummy, underpricing and log of lockup length) of gross IPO spread (Spread) by estimating the following base line model:

$$Spread_i = \alpha + \beta_1 Log\ Proceeds_i + \beta_2 No\ of\ book\ runners_i + \beta_3 Prestigious_i + \beta_4 VC_i + \beta_5\ tech\ dummy + \beta_6 AIM\ dummy_i + \beta_7 \log lockup\ length_i + \beta_8 Underpricing_i + \varepsilon_i$$

T-statistics based on cluster adjusted standard errors (Petersen, 2009) are in parentheses. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	OLS	OLS	OLS	OLS	2SLS	OLS	2SLS
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
log of proceeds	-2.568***	-2.567***	-2.706***	-2.628***	-2.224***	-2.702***	-2.818***
	(-14.00)	(-13.98)	(-13.10)	(-14.19)	(-11.73)	(-13.11)	(-12.05)
No book runners	-0.630***	-0.618***	-0.559***	-0.600***	-0.715***	-0.584***	-0.039
	(-3.84)	(-3.74)	(-3.48)	(-3.71)	(-4.13)	(-3.49)	(-0.15)
Prestigious	-0.469*	-0.484*	-0.414*	-0.490**	-0.447**	-0.415*	-0.409*
	(2.13)	(2.20)	(1.86)	(2.24)	(2.02)	(1.86)	(1.83)
VC backing		0.124	0.129	0.118	0.158	0.129	0.101
		(0.49)	(0.51)	(0.47)	(0.63)	(0.51)	(0.40)
tech dummy		-0.187	-0.247	-0.158	-0.354	-0.247	-0.273
		(-0.74)	(-0.96)	(-0.63)	(-1.31)	(-0.96)	(-1.06)
AIM dummy			0.584*			0.604*	
			(2.53)			(2.57)	
Underpricing				0.005**	0.027*		
				(3.06)	(2.53)		
log (lockup length)						0.269	8.530*
						(0.49)	(2.53)
constant	22.649***	22.653***	24.193***	23.172***	19.732***	23.469***	26.939***
	(19.14)	(19.14)	(16.15)	(19.28)	(14.77)	(11.65)	(4.66)
R-sqr	0.271	0.272	0.274	0.278	0.274	0.274	0.274
N	1724	1724	1724	1724	1724	1724	1724

Table 4. Heckman two-step selection bias test -AIM firms that meet MM listing requirements and MM IPOs

This table reports results of the Heckman two-stage process for gross IPO spread analysis for the AIM and MM in London Stock exchange from 1995 to 2016. Panel A represents the first-stage selection equation estimated by Probit regression, where the dependent variable is one if a firm meets the MM listing requirements, but issues equity on the AIM (595 IPOs) and zero if it issues equity in the MM (510 IPOs). Panel B represents the outcome (second-stage equation), where the dependent variable is IPO gross spread. Inverse Mills ratio adjusts for the selection bias. All variables are defined in Appendix 1. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. 1ST Stage Regression (Selection equation)		
	Coef.	Z
Log (mkt cap mil)	-3.170***	-9.78
Percent float	0.002	0.49
Log (age days)	-0.296***	-2.10
cons	6.877***	9.00
Pseudo R^2	0.6395	
N	1105	
Panel B. 2nd stage regression (Outcome equation)	**Coef.**	**t**
log of proceeds	-1.637***	-6.56
No of Book runners	-0.267	-0.94
Prestigious	0.035	0.16
VC backing	0.058	0.22
Tech dummy	-0.308	-1.16
Inverse mills ratio	0.290*	1.68
cons	16.768***	9.94
Adj R^2	0.1592	
N	1105	

Table 5. Endogenous switching regression -AIM firms that meet MM listing requirements and MM IPOs

This table reports results of the switching regression model analysis for gross IPO spread for the AIM and MM in London Stock exchange from 1995 to 2016. Panel A represents the first-stage selection equation estimated by a Probit regression, where the dependent variable is set equal to one if a firm meets the MM listing requirement, but issues equity on the AIM (595 IPOs) and zero if it issues equity in the MM (510 IPOs). Panel B represents the outcome (second-stage equation), for the AIM and MM separately where the dependent variable is IPO gross spread. Inverse Mills ratio adjusts for the selection bias. All variables are defined in Appendix 1. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. 1ST Stage Regression (Selection equation)				
	Coef.	Z		
Log (mkt cap mil)	-3.170***	-9.78		
Percent float	0.002	0.49		
Log (age days)	-0.296***	-2.10		
cons	6.877***	9.00		
Pseudo R^2	0.6395			
N	1105			
Panel B. 2nd stage regression (Outcome equation)	**AIM**		**Main**	
	Coef.	t	Coef.	t
log of proceeds	-1.779***	-4.94	-0.666*	-1.67
No of Book runners	0.394	0.36	-0.433***	-2.42
Prestigious	0.097	0.35	0.350	1.00
VC backing	-0.069	-0.19	0.490*	1.69
Tech dummy	-0.213	-0.57	-0.153	-0.57
Inverse mills ratio	0.641**	2.09	0.147	0.91
cons	17.029***	6.60	9.161***	3.16
Adj R^2	0.0825		0.0791	
N	595		510	
Panel C. What if analysis	**AIM**		**Main**	
	Spread	t	Spread	t
Actual	5.73%***	42.58	4.00%***	38.13
Hypothetical	4.47%***	221.09	5.52%***	80.63
Difference	1.26%***	-10.17	-1.52%***	11.59

Table 6. Time, industry and book runner fixed effects

This table reports fixed effect regression results of the IPO spread (Spread). Variable definitions are in Appendix 1. T-statistics based on cluster adjusted standard errors (Petersen, 2009) are in parentheses. ***,,** and * represents significant at 1,5 and 10%, respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
log of proceeds	-3.165***	-3.224***	-2.999***	-3.046***	-3.306***	-3.478***	-3.418***	-3.439***
	(-17.35)	(-11.93)	(-15.92)	(-11.35)	(-14.69)	(-10.82)	(-14.50)	(-10.24)
No of Book runners	0.17	0.089	-0.508*	0.479	0.322	0.586	-0.016	0.101
	(0.65)	(0.27)	(-1.88)	(1.48)	(1.13)	(1.59)	(-0.05)	(0.25)
Prestigious	-0.788***	-0.589*	-0.477**	0.276	-0.698		-0.346	
	(-3.55)	(-1.97)	(-2.04)	(0.91)	(-0.31)		(-0.16)	
AIM Dummy	1.738***	1.727***	0.908**	1.017**	0.544	0.587	1.048**	1.079*
	(4.78)	(3.53)	(2.40)	(2.05)	(1.29)	(1.02)	(2.34)	(1.81)
VC backing	0.179	0.559	0.203	0.521	0.248	0.55	0.35	0.627
	(0.67)	(1.50)	(0.76)	(1.44)	(0.95)	(1.45)	(1.25)	(1.59)
constant	25.471***	28.018***	25.633***	27.310***	23.929***	27.101***	23.451***	25.650***
	(11.80)	(8.09)	(11.20)	(7.68)	(8.64)	(7.49)	(7.93)	(6.52)
R-sqr	0.283	0.274	0.269	0.265	0.216	0.293	0.276	0.293
N	1724	1724	1724	1724	1724	1724	1724	1724
Year FE	Yes	Yes	No	No	No	No	Yes	Yes
Industry FE	No	No	Yes	Yes	No	No	Yes	Yes
Book runner FE	No	No	No	No	Yes	Yes	Yes	Yes
Fraction of variance due to FE	0.1618	0.1426	0.0347	0.0476	0.5132	0.5444	0.5136	0.5808

Table 7. Descriptive statistics of book runners who underwrite in the MM and AIM

This table reports descriptive statistics for IPOs in: a) MM IPOs by book runners who manage issues in the MM and AIM, b) AIM IPOs by the book runners who manage issues in the MM and AIM and c) IPOs=>£15 in the AIM. Variable definitions are in Appendix 1. [a] represents that the means are different between MM IPOs by the book runners who manage issues in the MM and AIM and AIM IPOs by the book runners who manage issues in the MM and AIM. [b] represents that the means are different between All Main and AIM IPO grater or equal to £15 million.

Variable	Mean	Std. Dev.	Min	Max
Panel A. MM IPOs by book runners who manage issues in the MM and AIM, N=231				
MM				
Spread	3.93	1.29	1.55	9.23
log of proceeds	8.06	0.52	6.92	9.78
no of book runners	1.57	1.03	1.00	8.00
Prestigious	0.92	0.27	0.00	1.00
underpricing	3.21	29.86	-98.73	95.00
vc backing	0.22	0.41	0.00	1.00
Panel B. AIM IPOs by book runners who manage issues in the MM and AIM, N=78				
Spread	4.37	1.73	1.71	9.46
log of proceeds	7.72[a]	0.47	6.67	8.49
no of book runners	1.24	0.52	1.00	3.00
Prestigious	0.92	0.28	0.00	1.00
underpricing	10.77	35.06	-98.48	104.92
vc backing	0.12	0.33	0.00	1.00
Panel C. IPOs=>£15 million in the AIM, N=247				
Spread	4.41[b]	1.74	0.32	13.95
log of proceeds	7.59[b]	0.30	7.18	8.49
no of book runners	1.13[b]	0.36	1.00	3.00
Prestigious	0.58[b]	0.50	0.00	1.00
underpricing	4.14	27.07	-98.54	108.13
vc backing	0.24	0.43	0.00	1.00
Log of lockup length	2.57[b]	0.14	1.93	3.04

Table 8. Regressions for book runners who underwrite in the MM and AIM (3SLS)

This table reports regression results for IPO spread after neutralising the effects of book runners and size. In the first stage, we estimate underpricing using log of proceeds, no of book runners, prestigious, vc backing, tech dummy and AIM dummy. In the second stage, we estimate log of lockup length using log of proceeds, no of book runners, prestigious, vc backing, tech dummy and AIM dummy. All variables are defined in Appendix 1. T-statistics based on cluster adjusted standard errors (Petersen, 2009) are in the parenthesis. ***,,** and * represents significant at 1,5 and 10%, respectively.

	Underwrites in the Main Market and AIM		AIM only underwriters		All MM IPOs and IPOs of £15M and above in the AIM	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
log of proceeds	-0.761**	-1.178***	-3.824***	-4.262***	-0.508*	-1.008***
	(-2.17)	(-2.79)	(-13.59)	(-11.65)	(-1.90)	(-3.05)
No of book runners	-0.163	-0.031	1.525*	1.828*	-0.323*	-0.313*
	(-0.83)	(-0.14)	(1.76)	(1.79)	(-1.82)	(-1.72)
Prestigious			1.350***		0.090	-0.005
			(3.57)		(0.35)	(-0.00)
AIM dummy	-0.247	-0.012			-0.147	-0.092
	(-0.57)	(-0.03)			(-0.51)	(-0.27)
log of lockup length	1.41	1.36	1.686*	3.705**	0.533	0.977
	(1.16)	(1.28)	(1.67)	(2.42)	(0.81)	(1.27)
Underpricing	0.00	0.002	-0.004	-0.003		
	(0.09)	(0.29)	(-1.23)	(-0.90)		
VC baking	0.177	0.121	0.289	0.469	-0.344	-0.364
	(0.44)	(0.27)	-0.67	-1.04	(-1.30)	(-1.22)
constant	8.603**	12.650***	22.688***	20.299***	6.655*	9.442**
	(3.05)	(3.51)	-6.51	-4.39	(2.28)	(2.70)
Year/Ind dummies	Yes	Yes	Yes	Yes	Yes	Yes
Underwriter FE	No	Yes	No	Yes	No	Yes
R-sqr	0.369	0.428	0.35	0.336	0.142	0.17
N	230	230	736	736	660	660

Table 9. Descriptive statistics for firms that fulfil MM listing requirement but list in the AIM

This table reports (Panel A and Panel B) various IPO characteristics for IPOs for a) AIM firms that do not fulfil MM listing requirement and b) AIM firms that fulfil MM listing requirements. All Variables are defined in Appendix 1. The table also reports (Panel C) Regression results for firms who fulfil MM listing requirement but list in the AIM (3SLS). AIM firms that do not fulfil the MM listing criteria is a dummy if the firm joins AIM because they do not fulfil the MM listing requirements. There are three listing requirements to join the MM: Minimum 25% shares need to be floated, normally 3-years of published account required and Minimum market capitalisation of £750,000. AIM firms that fulfil MM listing requirements means that the firms who fulfils MM listing requirements but lists on the AIM. T-statistics based on cluster adjusted standard errors (Petersen, 2009) are in the parenthesis. ***,,** and * represents significant at 1,5 and 10%, respectively.

Variable	Mean	Std.	Min	Max
Panel A. AIM firms that do not fulfil MM listing requirement, N=619				
Spread	7.24***	4.50	1.16	21.02
Proceeds mil	14.18***	35.30	0.12	307.73
No of book runners	1.05***	0.23	1.00	3.00
Prestigious	0.34***	0.47	0.00	1.00
Underpricing	20.79	65.78	-98.54	495.00
VC backing	0.22	0.41	0.00	1.00
Lockup length	413.03*	121.56	85.00	1260.00
Panel B. AIM firms that fulfil MM listing requirements, N=595				
Spread	5.73	2.62	1.27	20.66
Proceeds mil	11.14	17.74	0.04	179.65
No of book runners	1.03	0.17	1.00	2.00
Prestigious	0.43	0.50	0.00	1.00
Underpricing	18.37	41.57	-99.94	431.27
VC backing	0.18	0.39	0.00	1.00
Lockup length	388.14	135.62	92.00	1096.00

Panel C. Regression results for firms who fulfil MM listing requirement but list in the AIM (3SLS)

	Model 1	Model 2
log of proceeds	-2.544***	-3.044***
	(-14.66)	(-13.05)
No of book runners	0.272	0.031
	(1.02)	(0.11)
Prestigious	-0.954***	0.369
	(-4.19)	(0.17)
log of lockup length	0.228	1.503
	(0.35)	(1.80)
Underpricing	-0.002	-0.002
	(-1.18)	(-0.84)
VC baking	0.191	0.366
	(0.69)	(1.32)
AIM firms DON'T fulfil MM	0.855***	1.008***
	(3.58)	(4.12)
constant	19.568***	20.346***
	(8.23)	(6.85)

Year/Ind dummies	Yes	Yes
Underwriter FE	No	Yes
R-sqr	0.343	0.287
N	1574	1574

Table 10. Propensity score matching (PSM) results between AIM IPOs that meet MM listing requirements and MM IPOs

This table reports results for propensity score matching difference in difference (DD) estimation that combines the Abadie and Imbens (2011) bias-adjusted propensity score matching with the standard DD approach. The matching between the AIM firms that meet MM market listing requirements (treatment group) and the Main market IPOs (control group) employs the matching variables at the time of the IPO. We run a probit model to calculate the propensity score where the dependent variable is set equal to 1 when AIM firms meet MM listing requirements and 0 for MM IPOs and dependent variables are log of proceeds, number of bookrunners, prestigious, log age days, log (lockup length), Percent sold and VC backing. For each AIM IPO that meets MM market listing requirements, we use the four best matches out of the control group according to the bias-adjusted propensity score. The average treatment effect (ATE) shows the extra spread that AIM IPOs that meet MM market listing requirements paid compared to the control group. The standard error of ATE is provided in parenthesis. The matching quality is provided by the average reduction of the standardized bias. ***,,** and * represents significant at 1,5 and 10%, respectively.

	Spread
ATE	0.888 ***
	(0.06)
Matching variables	
Log of proceeds	Yes
Number of bookrunners	Yes
Prestigious	Yes
Log age days	Yes
Log(lockup length)	Yes
Percent sold	Yes
VC backing	Yes
Matching quality (average reduction in standardised bias)	0.754
Matching method	Bias adjusted
Number of Matches	4
Observations	595

Table 11. The effect of AIM regulation changes on the gross IPO spread (Spread).

This table reports regression results for the impact of AIM regulation changes on IPO spread. Post-2005 dummy is equal to 1 if the IPO issuers raised money in 2005 and onwards and 0 otherwise. Post-2006 dummy is equal to 1 if the IPO issuer raised money in 2006 and onwards and 0 otherwise. Post-2007 dummy is equal to 1 if the IPO issuer raised money in 2007 and onwards and 0 otherwise. Post-2008 dummy is equal to 1 if the IPO issuer raised money in 2008 and onwards and 0 otherwise. All variables are defined in Appendix 1. T-statistics based on cluster adjusted standard errors (Petersen, 2009) are in the parenthesis. ***, ** and * represents significant at 1, 5 and 10%, respectively.

	All AIM (1)	AIM firms that do not meet MM listing requirements (2)	AIM firms that meet MM listing requirements (3)	All AIM (4)	All AIM (5)
log of proceeds	-3.438***	-4.170***	-1.586***	-3.434***	-3.338***
	(-17.99)	(-13.50)	(-10.89)	(-17.56)	(-16.93)
No of book runners	-0.934	-1.49*	-0.063	-0.889	-0.807
	(-1.64)	(-1.70)	(-0.33)	(1.56)	(1.42)
Prestigious	-0.839***	-1.631***	-0.102	-0.868***	-0.861***
	(-3.55)	(-3.87)	(-0.51)	(-3.67)	(-3.66)
VC baking	0.03	0.505	-0.08	0.041	0.04
	(0.10)	(0.99)	(-0.33)	(0.14)	(0.14)
tech dummy	0.115	-0.049	-0.002	0.11	0.104
	(0.34)	(-0.08)	(-0.01)	(0.33)	(0.31)
Post-2005 dummy	0.713*	0.335	0.478*	0.608	0.997*
	(2.38)	(0.61)	(1.94)	(1.64)	(2.55)
Post-2006 dummy	0.887*	1.580*	0.324	0.422	0.416
	(2.34)	(2.43)	(0.97)	(0.80)	(0.79)
Post-2007 dummy	-0.13	-0.529	-0.107	-0.171	-0.167
	(-0.27)	(-0.73)	(-0.23)	(-0.21)	(-0.20)
Post-2008 dummy	0.891*	0.353	0.978*	1.779*	1.754*
	(1.90)	(0.49)	(2.23)	(2.18)	(2.16)
AIM firms DON'T meet MM LR				0.245	-0.791
*post2005				(0.50)	(-1.32)
AIM firms DON'T meet MM LR				0.860	0.839
*post2006				(1.14)	(1.11)
AIM firms DON'T meet MM LR				-0.293	-0.324
*post2007				(-0.30)	(-0.33)
AIM firms DON'T meet MM LR				-1.405	-1.353
*post2008				(-1.40)	(-1.35)
AIM firms DON'T meet MM LR					1.078**
					(3.05)
constant	27.030***	31.290***	16.007***	27.032***	26.080***
	(21.45)	(16.41)	(17.32)	(21.10)	(19.87)
R-sqr	0.295	0.347	0.234	0.300	0.309
N	1214	595	619	1214	1214

Table 12: Determinants of underpricing and lockup length in IPOs

This table reports regression results for IPO underpricing and lockup length. Variable definitions are in Appendix 1 T-statistics based on cluster adjusted standard errors (Petersen, 2009) are in the parentheses. ***, ** and * represents significant at 1,5 and 10%, respectively.

	Panel A. Underpricing		Panel B. Lockup length	
	Model 1	Model 2	Model 3	Model 4
log of proceeds	-17.842***	-13.389***	0.011	0.006
	(-6.44)	(-5.23)	(1.17)	(0.63)
No of book runners	-12.480**	-6.764	-0.065***	-0.023
	(-2.64)	(-1.21)	(-5.32)	(-1.95)
Prestigious	1.021	-16.683	-0.01	0.051
	(0.22)	(-0.38)	(-0.81)	(0.55)
VC baking	-1.784	-0.773	-0.003	-0.005
	(-0.37)	(-0.15)	(-0.24)	(-0.44)
tech dummy	6.434	5.447	-0.004	-0.013
	(1.15)	(0.90)	(-0.26)	(-1.00)
AIM dummy	11.8	24.249**	0.095***	0.036*
	(2.80)	(2.86)	(5.60)	(2.02)
AIM firms DON'T meet MM listing requirements	0.993	3.705	0.019**	0.021*
	-0.23	-0.79	(2.70)	(2.14)
AIM only underwriters	15.797**	17.94***	3.01**	2.75***
	(3.00)	(3.20)	(2.75)	(3.15)
constant	31.951***	52.394*	2.577***	2.547***
	(3.43)	(2.22)	(107.82)	(50.96)
R-sqr	0.021	0.013	0.094	0.015
N	960	824	959	823
Underwriter FE	No	Yes	No	Yes
Fraction of variance explained by FE		0.24		0.78

Figure 1: Gross Spread in the MM and AIM

This figure illustrates the gross spread and log of proceeds for a) AIM IPOs that do not fulfil MM listing requirements b) AIM IPOs that fulfil MM listing requirements c) MM IPOs and d) All IPOs.