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Bid–ask spread and liquidity searching behaviour of informed investors in option markets

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ABSTRACT

We show evidence of a liquidity searching behaviour of informed investors in option listings, which was also found by Collin-Dufresne and Fos (2015) using stock markets. Nevertheless, and differently from Collin-Dufresne and Fos (2015), we find that the option bid–ask spread may be still a good proxy for informed trading, despite of the liquidity searching behaviour of informed agents. We show an upward trend in the option bid–ask spread after option introductions (as informed traders avoid trading in initial periods after listing dates due to the low liquidity environment), which is steeper for options with high chances of information asymmetries.

1. Introduction

A number of studies have suggested that the bid–ask spread should increase when there are more informed investors in the market (see, e.g., [Glosten and Milgrom, 1985](#); [Kyle, 1985](#); [Easley and O’Hare, 1987](#)). Recently, however, [Collin-Dufresne and Fos \(2016\)](#) developed a theoretical model, where they suggest that the relationship between the bid–ask spread and informed trading is not as straightforward as previously thought. This is due to a strategic behaviour that is often adopted by informed agents. They argue that informed investors may wait to use their additional information until there is an environment characterised by low levels of illiquidity (i.e. high liquidity), and hence where there are more chances to find noise traders who will behave as the counterpart of the informed trading strategies. As we know the bid–ask spread not only has an adverse selection component, but also an illiquidity component.¹ Therefore, informed investors may trade in the market when the value of the illiquidity component of the bid–ask spread is low, which can make the bid–ask spread not a good proxy for informed trading. This is consistent with the empirical evidence presented in the [Collin-Dufresne and Fos \(2015\)](#) study, which shows that informed investors trade more when there is increased liquidity in the stock market.

Differently to [Collin-Dufresne and Fos \(2015\)](#), who analyse the relationship between bid–ask spread and informed trading using stock market data, we want to examine such relationships in the option market. This analysis is interesting, as informed investors should use the option market, since it provides a cheaper way in which additional information may be translated into profits (e.g., see [Easley et al., 1998](#); [Lee and Yi, 2001](#)). The high leverage that characterises option markets, and thus the low capital requirements, is particularly attractive to better informed investors who can use here their superior information rather than directly using the underlying asset market.

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¹ As standard in the literature, the relative bid–ask spread is often used as a measure of illiquidity, among others see [Amihud and Mendelson \(1986\)](#) and [Conroy et al. \(1990\)](#).

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In particular, we analyse the relationship between the bid–ask spread and informed trading in *newly listed equity options*. Informed investors may be eager for the stocks on which they have access to superior information to be optioned. However, informed investors may not use their informational advantages through option trading immediately after the listing date. This is because on the first days after option listings there is a low option liquidity (e.g., a low option trading volume). Thus, informed investors may wait until there are higher levels of liquidity where there are more noise traders in the option market, who are part of the option trading activity. Consequently, informed investors should follow a liquidity searching behaviour to exploit their information advantages, as suggested [Collin-Dufresne and Fos \(2015, 2016\)](#).

The question that we want to answer in our study is, given that informed investors may still have a liquidity searching behaviour after option listings, does the bid–ask spread decrease in new options with more chances of having investors with additional information? In other words, we want to analyse whether the results obtained by [Collin-Dufresne and Fos \(2015\)](#) in the stock market are still valid in option markets, in terms that the bid–ask spread is not a good proxy for informed trading.

In the study from [Collin-Dufresne and Fos \(2015\)](#), they use as a proxy of informed trading transactions from Schedule 13D filings by activist investors with the SEC. In the Schedule 13D filings, activist investors have to report within 10 days of acquiring more than 5% of any class of securities, if such investors have an interest in influencing the management of the company. Thus, Schedule 13D filings represent a proxy of ‘private’ information, in term that the agents in the Schedule 13D filings should have ‘confidential’ knowledge of the firm. However, agents with ‘private’ information are not the only ones with informational advantages. Agents with informational advantage can be also sophisticated investors, who have a large group of experts developing advanced quantitative tools to extract in a more effective way information from the publicly available market signals (which does not necessarily imply the use of ‘confidential’ information). Therefore, the use of Schedule 13D filings may narrow the analysis to only a subset of informed investors (i.e. investors with ‘private’ information), without considering ‘sophisticated’ agents.

Differently to [Collin-Dufresne and Fos \(2015\)](#), we use as a proxy for the level of asymmetric information, the number of analysts following the company that issued the underlying stock involved in an option listing. The use of the number of analysts is based on the premise that it is easy to detect informed strategies in trades when many trained and specialised people are looking at and analysing the market activity; this circumstance should decrease informational asymmetries. For instance, [Easley et al., \(1998\)](#) stated in their conclusion, “*high analysts stocks face a lower probability of information-based trading*” (p. 200).² This proxy should be able to capture the long-term activity of investors with ‘private’ information and ‘sophisticated’ investors with more developed tools to extract information from publicly available signals. The number of analysts as a proxy of asymmetric information has already been used in previous studies (e.g., [Roll et al., 2009](#); [Bernales, 2017](#)).

In line with the traditional literature of informed trading, and contrary to [Collin-Dufresne and Fos \(2015\)](#), we find evidence that the bid–ask spread is still a good proxy for informed trading in the new introduced equity options. We show that in the first year after option listings, the option bid–ask spread is larger for option with higher chances of having informed trading. Our results are robust after including year fixed effects, using all option contracts and a subset of at-the-money one-month-to-maturity option contracts, and controlling for option liquidity, stock liquidity and option price levels.

We also find that, in the initial months immediately following an option listing, the option relative bid–ask spread is lower than in future periods. Such a low starting value for the relative bid–ask spread, followed by an upward trend, is somewhat surprising because the early ‘life’ of an option should be marked by a relatively low liquidity, so that comparatively *high* and not *low* bid–ask spreads should be expected (due to the illiquidity component of the bid–ask spread). The low initial values observed for the option relative bid–ask spread, just after option listing, can be explained by a modest level of early participation by informed investors in the new option market (from the adverse selection component of the bid–ask spread). It is the low volumes in the market of newly listed options that discourages informed traders, and hence may cause relatively low bid–ask spreads immediately after the option listing. This is sensible because the early stages after option listings are characterised by a reduced trading volume in which: (i) there are not many noise traders in the option market to be the counterpart in informed trades; and (ii) even small transactions are important, and thus the use of additional information in trades from informed investors may be discovered by other agents (which implies that informational advantages disappear before being fully exploited). Therefore, informed investors have incentives to wait until there are higher levels of liquidity in the option market.

We also show that the upward trend in the option relative bid–ask spreads is more pronounced for option listings characterised by high chances of having asymmetric information. In summary, on the one hand, our results are consistent with the liquidity searching behaviour of informed investors suggested by [Collin-Dufresne and Fos \(2015, 2016\)](#). However, on the other hand (and differently from [Collin-Dufresne and Fos, 2015, 2016](#)), we find evidence that the bid–ask spread is still a good proxy for informed trading, in spite of the strategic behaviour of informed investors in terms of liquidity searching.

We consider three possible explanations for the difference of our results compared with the findings in [Collin-Dufresne and Fos \(2015\)](#). First, as we mentioned previously, the bid–ask spread has an illiquidity component and an adverse selection component. Thus, it may be the case that the adverse selection component is more important (relative to the illiquidity component) in option markets than in stock markets. This is sensible since the non-linear features of options (i.e. which are reflected in the high leverage that characterises option contracts) can induce larger damage to counterparts of informed investors in options than would occur in stocks. Secondly, given the intrinsic features of option contracts, which have a time-to-maturity, there are time limits to profit from informational advantages. Thus, the optimal time for informed investors to step in (to exploit their additional information) is

² We also use the total market capitalization of the underlying asset as a proxy for the level of informed trading, in the robustness checks in the supplementary Appendix.

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