



The success of option listings[☆]



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ABSTRACT

We examine unexplored factors that affect the ex-post adoption rates of newly listed stock options. We show that a variety of measures of information asymmetries concerning underlying stocks predict option adoption rates. These predictive relationships are robust after including factors that have been found to be significant in earlier literature, such as stock volatility and volume. Moreover, we report that not only do information asymmetries prior to option listings forecast a successful listing, but also that successful listings themselves end up reducing ex-post the extent of the information asymmetries affecting a stock.

1. Introduction

Since the first day of negotiations on the Chicago Board Option Exchange (CBOE) on April 26, 1973, when 911 plain vanilla contracts were opened for trading on 16 stocks, the U.S. equity option market has experienced an explosive growth. Between 1973 and 2011, in the United States alone, the equity option volume and the number of optioned stocks grew on average by 34% and 19% per year, respectively. In 2011, over 1,534 million contracts were traded on more than 3,684 stocks, for a total cleared value in excess of 426 billion dollars.¹ In spite of the enormous expansion of equity option markets, the newly listed options series have been characterized by rather heterogeneous adoption rates – as proxied by traded option volume and open interest – and hence, they had different successes among investors. In fact, some of the options introduced have subsequently disappeared over time (i.e. the underlying stock has stopped being optioned), as a result of de-listings that may be imputed by low demands for new option contracts.² In this context, our objective is to examine unexplored factors that may affect the *ex-post* adoption process of newly listed stock options; in particular factors related to the levels of asymmetric information in the underlying asset.

An important feature of option markets is the presence of informed investors (see [Easley et al., 1998b](#); [Chakravarty et al. 2004](#);

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¹ Information obtained from the Option Clearing Corporation (the common clearinghouse shared by all the option exchanges) web page, www.optionsclearing.com.

² See “Exchanges Agree To Delist Options; More To Come”, *Inside Market Data*, 26 Feb. 2006, Vol. 11 No 11.

Pan and Poteshman, 2006), who may affect initial option adoption rates. Informed investors may be eager for stocks on which they have access to superior information to be optioned, since options offer cheap ways in which private information may effectively be turned into profits.³ Hence, the existence of informed investors, especially at the beginning of option listings, could induce an initial trading activity in the listed options series. However, options are not only used to make profits by the trading activity *per se* (which is the main purpose of informed agents). Option contracts are also used by uninformed agents for other intrinsic reasons, which are reflected in 'private' values such as hedging needs, tax reductions, and differences in investment horizons, among others (see Hollifield et al., 2006). These uninformed agents are willing to trade new options (even if they lose money with informed agents), and thus to obtain as soon as possible their exogenous intrinsic values to trade. Hence, the initial trading activity of informed investors in newly listed equity options may trigger the whole *ex-post* demand for the new option contracts. Therefore, we investigate empirically whether and how measures of information asymmetries, and other factors characterizing a stock prior to option introduction, forecast a higher degree of *ex-post* success of options written on the same underlying asset.

We use data from listings on the U.S. equity option markets. Option listings are common examples of financial innovations in which new securities (option contracts) are introduced (see Massa, 2002). Moreover, option listings represent a rather special kind of security design innovation in that the number of option contracts traded is endogenously determined by investors. In option listings, a set of standardized contracts written on the same underlying stock are made available for trading on an option exchange.⁴ However, for each new option (series) there is no initial "established number" of contracts that should be traded. This is different from other types of offerings in which the number of assets is exogenously determined by the issuer, and the price is adjusted to bring supply and demand into equilibrium. As a result, in the standard case, a failure of the offering (e.g. an equity IPO) simply means a lack of interest that is reflected in a low trading price. Conversely, in the case of option listings, we can judge the success or failure based on traded volume and open interest, regardless of the realized, observed price for the newly created contracts.

We consider option dollar-volume, option volume, and open interest as alternative proxies for adoption levels of newly listed contracts (see Duffie and Jackson, 1989). In addition, we use different measures as proxies of information asymmetries affecting stocks, including estimated indicators that rely on a range of microstructure models such as: Easley et al.'s (1996, 1997, 1998a, 1998b) *PIN* model, where *PIN* means probability of informed trading; Duarte and Young's (2009) adjusted *PIN* model; and Odders-White and Ready's (2008) model (as well as plausible observable proxies related to the number of analysts in the market).

We show that, even when we control for the effects of lagged stock volume and volatility, an elevated level of information asymmetry (measured in the year that precedes a listing) results in a high rate of option adoption among investors.⁵ Our empirical results highlight the fact that information asymmetries are significant in forecasting the success of an option listing. This positive relationship between the success of a listing and information asymmetries is consistent with previous theoretical results (see Brennan and Cao, 1996; Vanden, 2008). Our results are robust with regard to a range of control variables, and to using either parametric or non-parametric econometric tests.

Furthermore, we find that information asymmetries in the underlying stock market significantly decrease after option listings. Thus, we report that not only do information asymmetries prior to option listings forecast a successful listing, but that successful listings themselves end up reducing the *ex-post* extent of information asymmetries affecting a stock. This result can be explained by the fact that option trading is expected to improve the informational efficiency of the security market as whole, in the sense that option trades contribute to revealing private information (e.g. Chern et al., 2008; De Jong et al., 2006; Kumar et al., 1998; Senchack and Starks, 1993). In particular, option trades should accelerate the rate of disclosure of information from informed investors as a result of the newly observable market activity (as predicted by theoretical models such as Diamond and Verrecchia, 1987, and Jennings and Starks, 1986). Moreover, option listings create incentives for additional information collection and dissemination, which may improve the analysis and interpretation of the information revealed by informed agents through their trading, as implied by the theoretical models of Cao (1999) and Massa (2002). For instance, we find that the number of analysts increases significantly after option introductions, similarly to Skinner (1990).

The paper is organised as follows. Section 2 presents a review of the literature. Section 3 introduces the data. Section 4 shows the impact of information asymmetries on the success of stock option listings. Section 5 analyzes the reduction in information asymmetries that follows the listing of options. Section 6 concludes.

2. Literature review

Option listings have been analyzed previously in the literature (see Mayhew and Mihov, 2004; Danielsen et al., 2007). These studies have explored which factors are used by an option exchange to select a stock for introducing option contracts. They find that stock volume and volatility are the key variables in this decision-making process. However, this is only an *ex-ante* perspective, given that these papers do not study the *ex-post*, effectively realized adoption rate (success) that follows a listing. To our knowledge, such

³ Previous empirical literature (see Anand and Chakravarty, 2007; De Jong et al., 2006, and references therein) presents strong evidence of informed investors adopting trading strategies within option markets.

⁴ Differently from stock markets, where firms voluntarily apply to be listed, decisions to list options are made within the exchanges without any formal application by the stock-issuing company. For example, the bylaws of the CBOE include the criteria for options to be listed. These include share price, number of shareholders who are not insiders, and the trading volume of the underlying stock. Rule 5.4 lists the criteria that will cause the CBOE to stop listing options on a stock. The SEC also plays a role in determining the eligibility requirements for securities to be optioned, see <http://www.sec.gov/rules.shtml>.

⁵ Controlling for stock volume and volatility is important because previous papers (see e.g. Mayhew and Mihov, 2004) have revealed that these are key factors in explaining which stocks become optionable.

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