



# Market makers as information providers: The natural experiment of STAR

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## ARTICLE INFO

### Article history:

Received 1 May 2009

Received in revised form 7 June 2010

Accepted 19 July 2010

Available online 4 August 2010

### JEL classification:

G10

G14

D82

### Keywords:

Designated market makers

Information disclosure

Limit order books

Market quality

Information asymmetries

## ABSTRACT

Market makers are financial intermediaries who are supposed to provide additional liquidity, but do not have any information-related obligation. This paper studies the unique case of the Italian Stock Exchange, where market makers are also obliged to facilitate information disclosure about the firms they cover. We focus on a group of small/medium capitalization stocks (STAR) that are assigned a designated market maker (DMM) starting from 2001. We show that their liquidity requirements are not binding during the sample periods and that the main impact of DMMs' introduction is due to their obligations on information provision. We find that DMMs' activity as information providers reduces spread and price volatility, the probability of informed trading (PIN), and the adverse selection component of the spread. An event study provides evidence that the information released through DMMs is perceived as useful by market participants.

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## 1. Introduction

In financial markets information on less traded stocks is generally supplied by firms or by analysts. This paper investigates an alternative channel of information disclosure by considering the role of market makers as information providers. Market makers are financial intermediaries that are supposed to provide additional liquidity but do not usually have any information-related obligation. We here study the unique trading environment of the Italian Stock Exchange, where market makers have obligations aimed at facilitating information disclosure of the listed firms.

In April 2001, Borsa Italiana (Bit from now on) started assigning a designated market maker (DMMs from now on) to a group of small-medium capitalization stocks, that were named STAR. The main novelty of this experiment is that DMMs have information disclosure requirements. Information obligations require DMMs to act as analysts on STAR stocks and to produce at least two detailed financial analyses per year; DMMs are also required to organize at least two yearly meetings, named roadshows, with professional investors. The purpose of the paper is to study how these information disclosure requirements affect market quality.

Generally in order driven markets DMMs who act as liquidity suppliers are required to comply only with liquidity requirements, the most relevant being the maximum quoted spread (Bessembinder et al., 2008). In the Italian case, instead, for the

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59 companies that were assigned a DMM between 2001 and 2005, the maximum spread requirement was not binding,<sup>1</sup> and this creates an ideal setting to focus on the effect of the information disclosure provided by DMMs.

We use high frequency data covering four sample periods, one before and three after the companies joined the STAR group. We find that after the assignment of the DMM, spread and volatility decrease for STAR stocks compared to a matched sample of control stocks, while volume does not change significantly. In the longer run, spread and volatility decrease substantially and volume increases significantly: we show that this improvement in market quality is associated with a decrease in information asymmetries (and, in turn, in adverse selection costs) induced by the DMMs' disclosure requirements. Accordingly, we find that information asymmetries, measured by the probability of informed trading (PIN) as in [Easley et al. \(1996\)](#), tend to decrease after the companies are assigned a DMM; furthermore, by estimating the model of [Glosten and Harris \(1988\)](#), we document that the component of the spread due to traders' inability to efficiently process information decreases. To verify that the short term reduction in the price impact is due to adverse selection costs and not to inventory adjustments, we estimate a VAR model similar to [Hasbrouck \(1991\)](#) and find evidence of a permanent decrease in adverse selection costs.

We show that these findings are consistent with a simple framework of asymmetric information and rational price formation in the spirit of [Grossman and Stiglitz \(1980\)](#) where information is disclosed to uninformed market participants. In order driven markets where both informed and uninformed traders can supply liquidity, this information disclosure reduces adverse selection costs for uninformed traders and hence makes them more willing to supply liquidity. Within this framework we show that when information is publicly disclosed the spread decreases. We also show that information disclosure has two opposite effects on volatility: it reduces the price impact component, and it increases the demand shock component.

An extensive literature exists that investigates whether the assignment of a market maker affects market quality. Numerous empirical papers<sup>2</sup> have shown advantages and disadvantages of moving from the NASDAQ dealer market (or from the OTC market) to the NYSE auction based specialist market, and at least as many papers have investigated how the specialist's activity can affect trading.<sup>3</sup>

By contrast, the experiment we study consists of a group of stocks listed on an order driven market organized as a limit order book that at a certain point in time, and all other things being equal, are assigned a DMM. The DMM has to meet the obligations imposed by Borsa Italiana, and does not monopolistically control the order book. This means that we depart from the literature comparing the virtues of NASDAQ vs. the NYSE for at least two main reasons. Firstly, the assignment of the DMM does not come with a change in market structure as in the NASDAQ vs. NYSE experiment. Secondly, the role of the DMM on the Italian stock market, as in any other stock market that works as an electronic limit order book, substantially differs from that of the specialist on the floor of the NYSE, who has an active and key role in managing the order book; by contrast, STAR DMMs act as limit order traders and have no privilege in the access to the order book.

The present paper is related to three recent empirical papers that study the effect on market quality<sup>4</sup> of the introduction of DMMs with only liquidity requirements. [Venkataraman and Waisburd \(2007\)](#) find that introducing DMMs in the Paris Bourse leads to an increase in liquidity for a sample of stocks traded through a call auction; their analysis also differs from ours as we consider DMMs trading in a limit order book. [Anand et al. \(2009\)](#) document an improvement in market quality after the introduction of DMMs in the limit order book of the Stockholm Stock Exchange; in this case, however, DMMs' maximum spread obligations are binding and, yet again, there are no requirements in terms of information disclosure. [Menkveld and Wang \(2009\)](#) study the introduction of DMMs in Euronext Amsterdam; they find that liquidity increases, stock prices increase and liquidity risk decreases after the event.

This analysis is also closely related to the field of research on the relation between analysts' activity and market liquidity. A vast body of literature examines the stock price reaction to analysts' forecasts (for a recent critical survey, see for example, [Ramnath et al., 2008](#))<sup>5</sup> but little attention has been devoted to the effects of analysts' information on liquidity and adverse selection costs. Most previous papers, as [Brennan and Subrahmanyan \(1995\)](#), [Roulstone \(2003\)](#) and [Kanagaretnam et al. \(2005\)](#) find that liquidity is positively associated with analyst coverage; others (e.g. [Chung et al., 1995](#)) document a negative association. There is no consensus on whether analysts' activity fosters liquidity by reducing information asymmetries, or it is instead perceived as a signal of the presence of higher information asymmetries.

STAR DMMs differ from the analysts considered in previous research, because they are directly involved in trading on the same stocks about which they provide information.<sup>6</sup> Furthermore, previous studies are concerned with the contemporaneous

<sup>1</sup> Clearly, if the spread requirement is not binding the other liquidity requirements cannot be effective either.

<sup>2</sup> See among the many others [Huang and Stoll \(1996\)](#), [Barclay et al. \(1999\)](#), [Kadlec and McConnell \(1994\)](#), [Christie and Huang \(1994\)](#) and more recently [Boehmer \(2005\)](#).

<sup>3</sup> See for example [Corwin \(1999\)](#) and [Kavajecz \(1999\)](#).

<sup>4</sup> Theoretical literature also examines the role of market makers in providing liquidity and on how they compete with limit order books. [Grossman and Miller \(1988\)](#) show that market makers can increase liquidity by reducing temporary imbalances in the order flow. [Seppi \(1997\)](#) shows that a hybrid market structure (with a limit order book and specialists) can provide better liquidity than a pure limit order book depending on the order size, whereas [Parlour and Seppi \(2003\)](#) identify conditions under which a hybrid market Pareto-dominates a pure limit order book. Finally, [Viswanathan and Wang \(2002\)](#) show that introducing market makers in a limit order book can improve the customers' welfare.

<sup>5</sup> Following the classification proposed by [Ramnath et al., 2008](#), two main research questions can be identified: some studies concentrate on whether stock prices efficiently reflect the information provided by analysts (e.g. [Barber et al., 2001](#); [Gleason and Lee, 2003](#), [Irvine, 2003](#); [Irvine, 2004](#); [Mendenhall, 2004](#); [Li, 2005](#); [Sorescu and Subrahmanyan, 2006](#)) and other papers investigate how analysts' forecasts explain inefficiencies in stock prices (e.g. [Dechow et al., 1999](#); [Shane and Brous, 2001](#); [Teoh and Wong, 2002](#); [Kadiyala and Rau, 2004](#), [Purnanandam and Swaminathan, 2004](#), [Jackson and Johnson, 2006](#)).

<sup>6</sup> Some papers also examine the incentive that market makers have to provide research regarding the stocks they trade (e.g. [Brennan and Hughes, 1991](#); [Angel, 1997](#); [Aggarwal and Angel, 1998](#)).

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