Executive Summary

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Drivers and Effects of Stock Market Fragmentation – Insights on SME Stocks*

Jens Lausen, Benjamin Clapham, Peter Gomber, Micha Bender

Goethe University Frankfurt, Theodor-W.-Adorno-Platz 4, 60323 Frankfurt, Germany

In the last two decades, regulatory reforms and new trading technology proliferated market fragmentation in securities trading. Regulatory authorities passed new legislation (e.g., Reg NMS in the US and MiFID in the European Union) eliminating national monopolies of incumbent exchanges by enabling competitors to operate alternative trading venues that compete for investors' order flow. Academic literature to date mostly analyzed the impact of market fragmentation on liquid and actively traded stocks. However, recent regulatory and industry discussions regarding potential negative effects of market fragmentation on trading and market quality of small and medium enterprise (SME) stocks increased the interest regarding research analyzing the impact of fragmentation on SME and other less actively traded stocks. Therefore, this analysis is in the focus of our paper.

While early theoretical models show that fragmentation can be harmful for market quality if market participants are unable to quickly and cheaply observe and access multiple liquidity pools (e.g., Mendelson, 1987; Pagano, 1989), several empirical studies provide evidence that there is no negative effect of market fragmentation and even find that fragmentation benefits liquidity by leading to lower spreads and higher order book depth (e.g., Gresse, 2017; O'Hara and Ye, 2011). The empirical evidence can be explained by fully electronic trading platforms, smart order routing technologies as well as algorithmic/ high frequency traders that create a virtually integrated marketplace in the absence of a single central limit order book. These technologies eliminate the frictions which were the major concerns of the early theoretical literature. Yet, it is unclear whether the positive effect of market fragmentation also holds for SME and other less actively traded stocks where the lower trading frequency and the low levels of algorithmic trading activity might limit the virtual connection of different liquidity pools.

This concern is also supported by market observers' statements that market fragmentation and the fragmentation of liquidity created unintended consequences for SME and other less liquid stocks by splitting up the already low trading activity and order flow across multiple venues. They argue that regulations fostering the fragmentation of stock markets did not improve the conditions for going and being

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public but increased the costs for SMEs. Hence, SME issuers “should have the right to choose where to be traded to avoid fragmentation of already low liquidity” (Federation of European Securities Exchanges, 2019).

To add empirical evidence to this debate, this study provides a comprehensive and granular analysis of the impact of market fragmentation by examining the drivers and the effects of stock-specific initial fragmentation events and by analyzing the effects of market fragmentation on a wide range of market quality parameters for stocks of different size and trading activity. Previous research has shown that market fragmentation positively affects market quality of large and blue chip stocks despite the spatial fragmentation of liquidity pools due to advanced trading technology leading to a virtual connection of different markets. Our results not only confirm this finding, but we show that fragmentation improves liquidity of large stocks along a multitude of dimensions, i.e., spread, depth, and order book imbalance. Furthermore, we provide evidence for trading activity thresholds where stocks substantially fragment and when fragmentation positively affects market quality. Our analyses show the following major results:

- Market fragmentation is not exogenous but is rather driven by stock-specific characteristics. We find that stocks with higher market capitalization and trading activity are more likely to be traded on multiple venues and that operators of alternative venues selectively choose to offer these stocks for trading on their venues. This holds for both the likelihood of a stock being traded on multiple venues and the level of market fragmentation.

- Looking at the initial fragmentation events of stocks, i.e., when stocks are traded on an alternative venue for the first time, we find that SME stocks only marginally fragment whereas the vast majority of trading still happens on the main venue. As a consequence, we do not find a significant effect of initial fragmentation on market quality for most SME stocks.

- The impact of market fragmentation on market quality is not identical for every stock but depends on the size and trading activity of a stock. Our results suggest that there are trading activity thresholds after which relevant levels of fragmentation emerge and when fragmentation becomes beneficial for stock market quality. In particular, market quality of least actively traded stocks is not affected as trading still mainly takes place on the main venue. Up to a certain activity threshold, relative spreads of less liquid stocks even increase (and market depth decreases) with higher levels of market fragmentation. With increasing levels of trading activity, higher fragmentation improves market quality. Overall, these results indicate a hockey stick effect of fragmentation on market quality.

Our results are relevant for regulators, market operators and issuers of SME stocks within the current debate on the European Capital Markets Union (European Commission, 2015, 2020a) and within the currently ongoing review of MiFID II (European Commission, 2020b). In these debates, market observers have argued that issuers of SME stocks should be given the right to choose where to be traded to prevent a fragmentation of their already less liquid stocks (Federation of European Securities Exchanges, 2019). Our results show that a nuanced and case-specific debate regarding the impact of fragmentation on SME and other less actively traded stocks is needed, which is supported by the observed activity thresholds and the hockey stick effect of market fragmentation.

As our results show, the impact of fragmentation depends on the trading activity of a stock and becomes beneficial for more liquid and actively traded stocks. Therefore, regulators should focus on creating an environment that increases the attractiveness and trading activity of SME stocks and, thereby, enable stocks that achieve some initial liquidity to reach a tipping point where fragmentation will likely improve market quality. Also, issuers could increase their efforts to gain investors' interest in their stocks, e.g., with increased investor relations initiatives. If relevant liquidity levels and trading activities in SME stocks are achieved, market fragmentation can even promote the aims of the Capital Markets Union and of MiFID by reducing implicit transaction costs for investors and cost of capital for issuers.

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