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Stock exchange business models and their operative performance

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Abstract

In recent years stock exchanges have been increasingly diversifying their operations into related business areas such as derivatives trading, post-trading services and software sales. This trend can be observed most notably among profit-oriented trading venues. While the pursuit for diversification is likely to be driven by the attractiveness of these investment opportunities, it is yet an open question whether certain integration activities are also efficient, both from a social welfare and from the exchanges' perspective. Academic contributions so far analyzed different business models primarily from the former perspective, whereas there is only little literature considering their impact on the exchange itself. By employing a panel data set of 28 stock exchanges for the years 1999–2003, we seek to shed light on this topic by comparing the technical efficiency and factor productivity of exchanges with different business models. Our findings suggest that exchanges that diversify into related activities are mostly less efficient than exchanges that remain focused on the cash market. In particular, we find no evidence that vertically integrated exchanges are more efficient. However, they seem to possess a substantially stronger factor productivity growth than other business models. We presume that integration activity comes at the cost of increased operational complexity which outweigh potential synergies between related activities and therefore leads to technical inefficiencies. Our findings contribute to the ongoing discussion about the drawbacks and merits of vertical integration.

JEL classification: F39; G32; C23; C24; C61

Keywords: Exchanges; Demutualization; Post-trading; Derivatives; Software; DEA; Malmquist-productivity; Bootstrapping

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1. Introduction

In recent years, stock exchanges have increasingly diversified[1] their operations into related business areas such as derivatives trading, post-trading services and software sales. Considering the world's 50 largest stock exchanges according to the World Federation of Exchanges (FIBV), the number of exchanges that added post-trading services to their business portfolio rose from 22 to 30, while the number of venues that operate a derivatives trading platform marked up from 25 to 31. Despite the strongest relative increase, providers of software solutions remained rather scarce, with three exchanges offering this service in 1999 and seven in 2003.[2]

1.1. Integration activity and governance

Interestingly, the great majority of exchanges that contributed to this rise were trading venues that have migrated from a mutual towards a shareholder-based, for-profit organizational form, a process, which is usually denoted as *demutualization*.[3] In fact, stock exchanges that diversified into post-trading or software sales activities were exclusively profit-oriented, while the same group accounted for half of the increase in derivatives trading during the considered time span.[4] There are at least two reasons why predominantly profit-oriented exchanges pursued the integration of related activities: First, these areas possessed a stronger growth potential than the traditional cash market, an aspect which is particularly relevant for exchanges that strive for profit-maximization and relatively unimportant for non-profit entities such as mutual exchanges. Second, demutualized exchanges also have presumably more leeway to pursue attractive business opportunities due to a different control structure: Traditional mutual exchanges are usually owned and dominated by their customers,[5] which not only seek to maximize the value of the trading venue, but also take into account their own business interest as customers of the exchange. Therefore, as they ultimately control the activities of the exchange, they can e.g. prevent investment decisions that threaten their own business interests, even though they would increase the value of the trading franchise.[6]

[1] The terms 'integration' and 'diversification' are used as synonyms in this paper.

[2] We used the following scheme to decide whether an exchange has diversified: If an exchange reported derivatives trading volume to the FIBV and/or reported revenues from this activity and/or stated a majority stake in a derivatives platform in its annual reports, we considered the exchange to be horizontally integrated in derivatives trading. An exchange was assumed to provide post-trading services, i.e. clearing and/or settlement and/or custody services, if it either reported these revenues separately and/or stated a majority stake in a settlement institution in its annual reports. Finally, exchanges that reported revenues from IT-service activities separately were considered to be active in the software sales business.

[3] Aggarwal (2002) discusses the process of demutualization in detail.

[4] More precisely, the exchanges that added post-trading to their business during 1999 and 2003 were Hellenic Exchange, Copenhagen, Deutsche Börse, Italian Exchange, OMHEX, Vienna, National Stock Exchange India, and Philippine. Derivatives trading was introduced by Bermuda, Amex, Lima, Hellenic Exchanges, Istanbul, Johannesburg, and London Stock Exchange. One exchange, Toronto Stock Exchange, ceased to operate a derivatives platform. Therefore, the net increase in derivatives platforms is six. A software sales division was established by Singapore, Toronto and Tokyo.

[5] These are mainly banks and brokers that conduct their businesses on the exchange.

[6] A prominent example in this respect was the reluctance of some customer-owners to introduce an electronic trading platform due to fears that this could adversely affect their brokerage business. In an analogous manner, this could be observable for investments in related business activities. Confer Steil (2002) for an elaborate discussion on this matter.