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The relationship between satellite and home market volumes: Evidence from cross-listed Singapore futures contracts☆

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ABSTRACT

This paper examines the order flow diversion hypothesis using cross-listed Singapore Exchange (SGX) futures contracts to test if the existence of an off-shore market causes the order migration of futures volume from the domestic to foreign markets. Using structural equation systems estimation based on daily turnover, we observe that a 10% increase in the turnover of the SGX traded Nikkei 225 leads to an increase of 6.6% for the Nikkei 225 traded on the OSE. Further examination of the cross-listed Nifty and the MSCI-Taiwan Index futures provide similar evidence of a positive and significant relationship. We also observe that off-shore index futures have a positive and significant impact on domestic component stocks' turnover. Evidence in this study supports the rejection of the order-flow hypothesis, and suggests that a mutually beneficial relationship exists between cross-border exchanges.

1. Introduction

This paper investigates the turnover relationship between domestic and foreign trading of simultaneously traded futures contracts. Since the introduction of the Value Line Composite, the first stock index futures on 24 February, 1982, the creation and trading of index futures has become commonplace in modern financial markets. While most index futures contracts are based domestically (i.e., on indices containing shares from only that country, with a contract multiplier in the same currency as the underlying shares, and traded in that country), some contracts have an international dimension and are cross-listed on both on-shore and off-shore markets with simultaneous trading hours.

One of the first cross-listed derivatives to be traded simultaneously is the Nikkei 225 Index futures. This index futures was first launched on the Singapore Exchange derivatives market on 3 September, 1986, and

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subsequently introduced on the OSE on 3 September, 1988.[1] Since then, other dual-listed index futures that have concurrent trading hours, like the Morgan-Stanley Capital International Taiwan Index Futures (MSCI-TW) and CNX Nifty (India) Index Futures have been established (see Board and Sutcliffe, 1996), and the examination of these derivatives captures the interest of many practitioners, regulators, and academics.

To date, most cross-listing studies focus solely on the competition between the foreign and domestic markets, with the most common topics being price discovery and information transmission.[2] Other studies compare the futures trading volume, price volatility and components of intraday bid-ask spreads (e.g., Huang, 2002, 2004a, 2004b; and Webb et al., 2007). More recently, the expiry day effects are analyzed by Chung and Hseu (2008). However, no studies examine the simultaneous relationship between the turnover of the relevant exchanges for cross-listed index futures.

Given the common perception that an additional listing in an offshore venue creates competition for the on-shore market, and concern by domestic policymakers about order migration (see Domowitz et al., 1998), this study contributes to the literature by providing a more in-depth analysis of the relationship between the cross-border exchanges of these securities. Findings from this research can be used to assist relevant exchanges and policymakers in the formation of business strategies and the enactment of regulation (e.g., reduction of transaction fees to gain competitive advantages, or collaboration to promote the underlying traded security).

The literature on cross-listed securities provides insight into the complex bond between domestic and off-shore exchanges. Despite the popular belief that an additional offshore listing will cause an outflow of local orders (order-flow hypothesis), research examining this issue like Lau and McInish (2002) document that on-shore markets' trading volume actually benefits from off-shore activities. However, studies on this topic focus only on cross-listed equities, and the proposed theories for the benefits can relate to firm-specific improvements which may not be applicable to index futures contracts that are based on a broad basket of stocks. For instance, market segmentation is not applicable as an index futures is usually designed to reflect the market movement of a specific country. Further, when an index futures contract is cross-listed on a foreign venue, it does not equate to the cross-listing of the individual stocks. This implies that the information content of individual stocks is not affected by the additional listing of the index futures contracts on an off-shore location. Similarly, the bonding hypothesis (which focuses on protection of minority shareholders and reduces agency costs) is not relevant as any enhanced disclosure requirements are not applicable or enforceable. Hence, the beneficial relationship that is documented in prior literature for cross-listed equities may not be relevant to index futures contracts.

Given the paucity of research in this area, this study seeks to extend the cross-listing literature by testing the order flow diversion hypothesis on simultaneously traded cross-listed index futures. Further, given that the existence of off-shore index futures can create additional arbitrage opportunities[3] between (i) the two simultaneously-traded index futures, and (ii) the underlying component stocks, this study also examines if a mutually beneficial turnover relationship exists between the domestic and foreign markets despite the perceived increase in competition.

The Singapore Exchange (SGX) provides an ideal experimental setting for examining the relationship between cross-border exchanges as it is a satellite hub that facilitates the trading of numerous cross-listed financial derivatives, which include the frequently traded Nikkei 225, MSCI-TW and CNX Nifty (India) Index futures. As these SGX traded cross-listed derivatives have concurrent trading hours with the respective domestic markets, it provides a natural experimental setting to directly examine the order flow diversion hypothesis and the potential existence of any positive relationship.

[1] Formerly known as the Singapore International Monetary Exchange (or SIMEX).

[2] See Shyy and Lee, 1995; Booth, Lee and Tse, 1996; Ding, Harris, and McInish, 1999; Roope and Zurbruegg, 2002; Chou and Lee, 2002; Chen, Lin, Chou and Hwang, 2002; Covrig, Ding and Low, 2004; and Hsieh, 2004.

[3] In a traditional setting, opportunities for index-arbitrage exist only between the domestic index futures and its underlying stocks. The existence of an additional venue (i.e., off-shore market) creates extra opportunities as price differentials between the index-futures can exist throughout simultaneously traded hours. This can occur due to the usual lead–lag relationship of the price discovery process between the two different venues and, in some case, exacerbated due to, (a) differences in contract specifications (e.g., OSE-Nikkei has a minimum tick of 10 index points while SGX-Nikkei is only 5), or (b) variation in the composition of the index that are highly correlated (e.g., MSCI-TW and TX-FUT). Further, index-arbitrage can also take place between the domestic component stocks and off-shore index futures.