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Exploring the location and price differentials of cross-listed firms for arbitrage opportunities

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ABSTRACT

This study analyzes cross-listed Taiwanese firms from 1997 to 2015 to identify the rule of one price, market integration, and arbitrage opportunities. Results show cross-listing locations significant positively and negatively influence home and foreign market returns of firms. The exchange rates insignificantly influence cross-listed firms. Trading volume effect via locational arbitrage opportunities exist in firms with an average return of 10% under 30 days. The minimum and maximum arbitrage average returns are 2% and 18%, respectively. Cross-listed firms in the UK and Hong Kong represent the most liquid arbitrage locations for Evergreen Marine, Far Eastern New Century, and Neo-Neon.

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1. Introduction

The recent development of the global stock market encouraged firms to cross-list stock in the form of depository receipts (De Jong et al., 2009; Otsubo, 2014). Firms may benefit from cross-listing by reducing debt (Flavin and O'Connor, 2010) and increasing investor protection (Benos and Weisbach, 2004; Coffee, 2002; Doidge et al., 2004; Reese and Weisbach, 2002), decrease capital cost and gain better corporate governance (King and Segal, 2009; Sarkissian and Schill, 2009 and 2012), as well as international exposure (Baker et al., 2002; Errunza and Miller, 2000; Foerster and Karolyi, 2000). Firms also cross-list based on one price and market segmentation theory, wherein the values of home and overseas stocks are unaffected by listing locations and foreign exchange rates to provide identical stock prices via integrated and efficient markets (Qadan and Yagil, 2012; Alhaj-Yaseen, 2013). However, the existence of arbitrage opportunities that are derived from cross-listed return differentials indicates potential profit-making via security mispricing (Jarrow, 1992; Suarez, 2005; Dewachter and Smedts, 2007; Liu and Bogomolov, 2013). Activities with foreign bias and those that consist of cross-listing locations, which are selected in favor of home market investors, have a positively significant influence on potential security mispricing to encourage arbitrage activities (Dodd and Frijns, 2015).

The main contribution of this study is to investigate the degree of market integrations, influence of exchange rates, and impact from trading volumes to derive potential arbitrage opportunities via security mispricing. We focus on individual,

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country-specific, and sector-specific portfolios of cross-listed firm return differentials. We also provide arbitrage positions and the time frame of individual cross-listed firms.

2. Literature review

The trading locations of cross-listed stocks generally show insignificant influences on share prices (Froot and Dabora, 1999). However, the stock market index of a new trading location has a significantly positive influence on stock returns (Chan et al., 2003; Ghadhab and Hellara, 2016b). In particular, large movements in stock market indices have a positively significant influence on cross-listed stock returns (Karolyi and Stulz, 1996). Similarly, host country movements have a significantly positive influence on location-specific country funds (Bodurtha et al., 1995; Hardouvelis et al., 1994; Sarkissian and Schill, 2016). Moreover, foreign stocks listed in the US have a significantly positive influence on the US market (Esqueda, 2017; Miller, 1999), in which cross-listed returns show positive significant co-movements with the US index (Gagnon and Karolyi, 2010; Ghadhab and Hellara, 2016a). Therefore, cross-listed stocks benefit from the home country's information in terms of promoting firm growth and stock market growth to lower trading costs via a more significantly positive influence (Frijns et al., 2010). Trading location that is represented by stock market index affects cross-listed stock return differentials, but stock market index with greater significant positive influence indicates a more dominant and influential location (Damodaran, 2012).

Cross-listed stocks with lower trading volumes result in higher price and return differences (Gagnon and Karolyi, 2010), whereas active trading reduces the stock price margins of cross-listed companies between two trading locations with improved liquidity (Ding et al., 1999; Ghadhab, 2016). As a measure of liquidity, increased trading volume lowers cross-listed spread (Huang et al., 2016; Stoll, 2000). Therefore, changes in trading volume have a significantly positive influence on stock returns (Pathirawasam, 2011). Meanwhile, firms that are cross-listed from emerging countries exert stronger trading volume sensitivity than those from developed countries; such a behavior indicates a positive correlation between trading volume and cross-listing (Zhou and Owusu-Ansah, 2014). Firms that originate from emerging countries benefit from cross-listing in developed countries; the advantages include increased investor protection and higher firm valuations (Benos and Weisbach, 2004; Coffee, 2002; Doidge et al., 2004; Reese and Weisbach, 2002). In comparison, firms from emerging countries and are cross-listed in developed countries gain greater liquidity, visibility, and international exposure (Baker et al., 2002; Jayakumar, 2002; Errunza and Miller, 2000; Sarkissian and Schill, 2016).

2.1. Arbitrage opportunities for cross-listed stocks

In a cross-listed stocks pair, a long position with underpriced stock accompanied by a short position with overpriced stock can generate higher annual returns (De Jong et al., 2009). Cross-listed stocks with significant difference in stock returns between home and host country shares also indicate the existence of arbitrage opportunities (Ghadhab, 2016; Kadiyala and Subrahmanyam, 2002; Rabinovitch et al., 2003). Contrarily, when home and host stock markets are highly integrated, the home stock market indicates dominance in cross-listed stocks and exhibits long-run equilibrium in equal stock prices; thus, the arbitrage opportunity is absent (Lok and Kalev, 2006). Therefore, integrated home and host stock markets exhibit the rule of one price for cross-listed shares (Ding et al., 1999). In such a case, the home country is the dominant market when arbitrage opportunities for cross-listed stock pairs share the same drift rate (Lieberman et al., 1999).

The introduction of Directive on Markets in Financial Instruments (MiFID) in November 2007 enhanced stock exchanges trading rules and increased trading for cross-listed stocks in European equity markets (Cumming et al., 2015; Gomber, 2015). In particular, the London stock exchange showed increases in market manipulation and price manipulation for greater arbitrage opportunities (Cumming et al., 2011).

3. Method

3.1. Data

Complete statistical data from 1997 to 2015 were obtained from the Datastream database for a total of 26 Taiwanese firms with international cross-listings in the US, the UK, and Hong Kong.¹ A total of 55,621 pair observations are collected in cross-listed firms across all international listing locations.

¹ Seven firms are listed in the US including Advance semiconductor Engineering Inc. (denoted as "ASX"), AU Optronics Corp. ("AUO"), ChipMOS Technologies Bermuda Ltd. ("IMOS"), Chunghwa Telecom Co. Ltd. ("CHT"), Siliconware Precision Industries Company Ltd. ("SPIL"), Taiwan Semiconductor Manufacturing Co. Ltd. ("TSMC"), and United Microelectronics Corp. ("UMC"). Ten firms are cross-listed in the UK, namely, Acer Inc. ("ACID"), Asia Cement Corp. ("ASCD"), Cathay Financial Holding Co. Ltd. ("CFHS"), Compal Electronics Inc. ("CEIR"), Evergreen Marine Corp. ("EGMD"), Far Eastern New Century Corp. ("FETD"), Hon Hai Precision Industry ("HHPD"), Lite-On Technology Corp. ("LITD"), Shin Kong Financial Holding Co. ("SKFS"), and Asustek Computer Inc. ("ASKD"). The cross-listed Taiwanese firms in Hong Kong include Good Friend International Holdings Inc. (denoted as "Good Friend"), Ju Teng Int'l Holdings Ltd. ("Ju Teng"), Neo-Neon Holdings Ltd. ("Neo-Neon"), New Focus Auto Tech Holdings Ltd. ("New Focus"), Sandmartin International Holdings Ltd. ("Sandmartin"), Solargiga Energy Holdings Ltd. ("Solargiga"), Tingyi Cayman Islands Holding Corp. ("Tingyi"), Vietnam Manufacturing & Export Proc. (Sanyang ("VMEP"), and Yorkey Optical International Cayman Ltd. (denoted as "Yorkey").

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