Empirical Study on the Volatility Spillover Effect in “China Concept” Shares

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Abstract. Our study examined the volatility spillover effects in “China Concept” shares. Both a variance decomposition analysis and a DCC-MVGARCH model show that “China Concept” shares returns are driven more by US market returns than Chinese stock market. Although it do not exist volatility spillovers effects among the Chinese stock market and “China Concept” shares, time-varying correlation coefficient between them shows that they are more closely linked in recent years.

Keywords: “China Concept” Shares, Volatility Spillover Effect, DCC-MVGARCH model.

1 Introduction

While previous literature agreed that international financial markets had become increasingly correlated and integrated, recent studies showed that equity returns were correlated more with the markets where their businesses were located. As a continuation of the existing literature, our study examines intraday return and volatility characteristics of “China Concept” shares from June 2007 to December 2010. Doing so allows us to determine whether Chinese stock market impacts equity pricing behavior of “China Concept” shares.

Under perfect market integration, the pricing of cross-listed assets should be predominantly driven by fundamental information. Under partial market segmentation, non-fundamental factors such as where their businesses are located also may have significant impacts on cross-listed asset returns. The majority of previous literature finds evidence supporting that the location of businesses matters.

For example, Tse studied 10-years Japanese Government Bond futures contracts traded on two markets: the London International Financial Futures and Options Exchange and the Tokyo Stock Exchange. Tse found that while the two exchanges’ bond contracts were nearly identical, LIFFE traders preferred home market which they are familiar. A consequence of this home market preference was that two markets could

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be segmented despite underlying similarities in both trading mechanism and contract specification.

Jun Chen, Yiuman Tse and Michael Williams examined US market sentiment and the importance of trading location on equity returns by studying US-traded UK ADRs. The overall results indicated that US market sentiment for UK ADRs existed and that trading location impacted pricing behavior.

Several papers, e.g., Grossman et al (2007), Suh (2003), Suarez (2005), and Wahab and Lashgari (1992), have examined price discrepancies between ADRs and their underlying shares. Consistent with the findings of Bodurtha et al. (1995) regarding closed-end funds, Grossman et al. and Suh find that ADR returns are driven by US market sentiment.

As a continuation of the existing literature, our study examined intraday data for “China Concept” shares traded on USA market to determine whether “China Concept” shares were affected by where their businesses were located thus leading to US stock market.

“China Concept” shares are shares of a Chinese company which trade on US financial markets and are supported by a US depository institution. There “China Concept” shares facilitate US investors’ participation in Chinese firms without additional cross-border transaction costs. As such, examining “China Concept” shares is helpful for cross-market investors to allocate the assets rationally and effectively meanwhile guard against financial risks.

Because of its important in theoretical and practical, this article studied the volatility spillover effects within US and Chinese stock markets and “China Concept” shares. The first analysis focused on estimating a Vector Autoregression (VAR) of returns between them. By employing Granger causality tests and performing a Variance Decomposition on the VAR, we found that US market returns explained a sizeable portion of “China Concept” shares returns variation while Chinese market returns provided little explanatory power. The returns Granger causality, Impulse Response Function and Variance Decomposition analyses all indicated that US market impacted “China Concept” shares more than Chinese stock market.

Our second analysis employed a Dynamic Conditional Correlation Multivariate GARCH model to examine volatility spillover among markets. Controlling for asymmetric volatility effects, we found only unidirectional volatility transmission from US market to “China Concept” shares. This result provided evidence that investors in US market may ignore information flows from Chinese stock markets and may regard “China Concept” shares as local equities.

2 Methodology

2.1 Dataset

This study examined the effect of Chinese stock market on “China Concept” shares by examining the intraday returns and volatility characteristics of Hushen 300 index, S&P 500 index and USX China index. Intraday data for each instrument are collected from Wind database for the period spanning Sep 2007 to Dec 2010.