Int. Fin. Markets, Inst. and Money 20 (2010) 590–605

Contents lists available at ScienceDirect

Journal of International Financial Markets, Institutions & Money

journal homepage: www.elsevier.com/locate/intfin

Time-shift asymmetric correlation analysis of global stock markets

Sergey K. Aityan[a,*], Alexey K. Ivanov-Schitz[b,1], Sergey S. Izotov[b,1]

[a] Department of Business and Economics, Lincoln University, 401 15th Street, Oakland, CA 94612, USA
[b] School of International Economic Relations, MGIMO University, 76 Prospekt Vernadskogo, 119454 Moscow, Russia

ARTICLE INFO

Article history:
Received 16 March 2010
Accepted 27 July 2010
Available online 6 August 2010

Keywords:
Stock market
Correlation
Asymmetric
Time-shift
Globalization

JEL classification:
C01
F21
G11
G15

ABSTRACT

The time-shift asymmetric correlation analysis method is introduced for stock exchanges with different but non-overlapping trading hours to analyze the degree of global integration between stock markets of different countries and their influence on each other. Next-day correlation (NDC) and same-day correlation (SDC) coefficients are introduced. Correlations between major U.S. and Asia-Pacific stock market indices are analyzed. Most NDCs are statistically significant while most SDCs are insignificant. NDCs grow over time and the U.S. stock market plays a pacemaking role for the Asia-Pacific region. The correlation coefficients can be used as a measure of the degree of globalization for the corresponding countries.

© 2010 Elsevier B.V. All rights reserved.

1. Introduction

As globalization progresses, economies of all countries have become more economically interdependent. However, different countries are engaged in this process to different degrees, which results in different impacts on their financial and securities markets.

Correlations of stock market returns have been studied for decades (Atchinson et al., 1987; Bollerslev, 1990; Badrinath et al., 1995; Chan, 1993; Yu and Wu, 2001; Cohen et al., 1980; Conrad and

* Corresponding author. Tel.: +1 510 628 8016; fax: +1 501 628 8012.
E-mail addresses: aityan@lincolnuca.edu (S.K. Aityan), alexey.k.ivanov@gmail.com (A.K. Ivanov-Schitz).
[1] Tel.: +7 495 434 60 56.

1042-4431/$ – see front matter © 2010 Elsevier B.V. All rights reserved.
doi:10.1016/j.intfin.2010.07.006

Kaul, 1988; Ilina and Daragan, 2001a; Kumar and Dhankar, 2009; and many others) in the attempt to learn the market behavior for predicting trends and identifying hints for trading decisions. Stock market correlations have been attributed to information propagation including news and a variety of other factors that may impact the interrelations in the stock market on local or global scales.

Delays in information propagation may cause a lead–lag relationship in different stock markets and in different segments of a single stock market. Autocorrelation and cross-correlation approaches were used to learn about such a relationship and its impact on trading behavior. Researchers have utilized a variety of models for analyzing the lead–lag relationship. Correlations between stock markets or within a given stock market have been analyzed utilizing model-free conventional statistics or special models to account for more complex relationships and effects like random information delays, noise, and others. Among the most popular models used in econometrics are Autoregressive Conditional Heteroskedasticity (ARCH) proposed by Engle (1982) and its modifications like Generalized Autoregressive Conditional Heteroskedasticity (GARCH) proposed by Bollerslev (1986) for analysis of market volatility. The GARCH model has led to a variety of modifications such as EGARCH – Exponential GARCH (Nelson, 1991), QGARCH – Quadratic GARCH (Sentana, 1995), GARCH-M – GARCH-in-mean (Hentschel, 1995), TGARCH – Threshold GARCH (Zakoian, 1994) and many others.

Bollerslev et al. (1988) proposed a measure for determining the conditional covariance based on VECH representation, which would effectively become an ARMA model for the product of the error terms. To capture the asymmetric answer of the volatility by the different sign of the stock market shocks, Engle et al. (1990) proposed the AGARCH model.

It is well known by now that cross-correlations of stock market returns vary over time (Makridakis and Wheelwright, 1974; Koch and Koch, 1991; Knif and Pynnonen, 1999). Correlations increase as economic integration intensifies (Erb et al., 1994; Longin and Solnik, 1995; Goetzmann et al., 2005), but the correlations most likely are higher in bull markets and lower in the bear markets. Longin and Solnik (1995), Ang and Bekaert (2002), and Longin and Solnik (2001) showed that correlations between markets were going up during the periods of high volatility and correlation coefficients were higher than average when diversification was profitable. It was noticed that such a behavior of correlations leads to a quite insignificant return with portfolio diversification in a bear market (Baele, 2005).

Multiple studies identified that correlations between international stock markets has a tendency to increase when returns decrease (King and Wadhwani, 1990; Lin et al., 1994; Solnik et al., 1996; Chesnay and Jondeau, 2001; Baele, 2005).

Richardson and Peterson (1999) have found that cross-correlation between large and small stocks takes place even after controlling for own-autocorrelation. The lead–lag phenomenon among returns of size-sorted portfolios may imply a complex information transmission between large and small firms and can be used as an important source for trading decisions. Chan (1993) suggested that own- and cross-autocorrelations among stock returns occur due to imperfection of market-to-market information that causes correlation pattern asymmetry. Lo and MacKinlay (1990a,b) documented asymmetric return caused by cross-correlations and nonsynchronous trading. Yu and Wu (2001) applied asymmetric cross-correlation analysis approach to identify "the differential quality of information between large and small firms." It was suggested that the asymmetric cross-correlation between large and small firms is mainly caused by differences in the sensitivity of stock prices to market-wide information and cash flow information between those firms.

Ilina and Daragan (2001a) noted that if any two indices are highly correlated, then diversification between them makes no sense because the diversification effect will be quite slim. They conducted correlation analysis for studying international stock market indices including S&P 500 (U.S.), DAX (Germany), FTSE (UK), TSE 300 (Canada), and Nikkei 225 (Japan) from 1990 to 2001 (Ilina and Daragan, 2001b). The study identified the highest correlation between S&P 500 and the Canadian TSE 300 indices. The lowest correlation was found between S&P 500 and Japanese Nikkei 225 indices.

A well-known gravity model frequently used for explanations of trade patterns can also be used for the explanation of stock market correlations (Flavin et al., 2002). Its essential conclusion is that geography does matter for goods markets while physical location and trading costs should be less of an issue in asset markets. It was found that geographical locations still matter when examining equity market linkages. In particular, the number of overlapping opening hours and sharing a common border tends to increase cross-country stock market correlation. Flavin et al. (2002) wrote "these

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات