Diversification across ASEAN-wide sectoral and national equity returns

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A R T I C L E   I N F O

A B S T R A C T

This paper examines the effects of local and global shocks on the sector indices and national returns of the Association of Southeast Asian Nations (ASEAN) by using the univariate AR-GARCH model. We find that regional and global shocks have different influences on the ASEAN-wide sector and national equity indices. There is evidence that the ASEAN-wide sectoral returns are mostly driven by local shocks, except for the insurance and technology sectors. The volatility of Singapore's and Vietnam's national returns mostly results from their own shocks rather than local and global shocks. Applying the trend spillover model, this paper also shows that the effects of regional and global shocks on return volatility have been decreasing for almost all ASEAN-wide sectors' equity indices, while the trend for the volatility spillover effects of those shocks are positive and significant for the production and industries group sectors, as well as the food and beverage sector. Comparing the variance ratios of ASEAN sectoral and national returns, it is evident that the percentage of national equity returns belonging to their own shocks is higher than that of sectoral returns, indicating that investors might be better off diversifying their assets across countries rather than sectors in ASEAN area. This finding is consistent with the results of the mean–variance frontiers, as the portfolio composed purely of ASEAN national returns has a stronger efficiency frontier than a portfolio of all ASEAN-wide sector equity returns. By using the spanning and intersection tests, the paper also indicates that adding ASEAN national equity returns might improve the efficiency frontiers of investors' holding portfolios.

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1. Introduction

It is hypothesized that economic agents are rational and markets are efficient. Diversification is therefore a technique which can reduce risks by allocating investments among various financial instruments, industries and other categories. It aims to maximize returns by investing in different areas that would all react differently to the same event. Most investment professionals agree that diversification is the most important component of reaching long-range financial goals while minimizing risk. However, no matter how diversified a portfolio is, risk can never be eliminated completely. The investor can reduce the risk associated with individual stocks, but he/she cannot minimize the general market risks that affect nearly every stock. It is obvious that the variation of one stock's return depends on its own risk and also on market risk, which cannot be diversified across different assets. That is why many researchers want to measure the magnitude of the responses of equity stock returns to both types of risk to help investors make decisions.

A number of studies on stock investments are carried out most often in developed equity markets such as the United States and Europe, and even in many emerging markets; the Association of Southeast Asian Nations (ASEAN) area is not an exception. For example, Aggarwal et al. (1999) use an iterated cumulative sum of squares algorithm to identify the points of shocks and sudden changes in the variance of returns in each market, and the duration of the shift. They find that most events tend to be local, while the October 1987 crash was the only global event during the period 1985–1995 that caused a considerable jump in the volatility of several emerging stock markets (Mexico, Malaysia, Hong Kong, Singapore and so on). Furthermore, owing to liberalization, the elimination of trade barriers and the alignment of legal and regulatory infrastructure in the South Asian Association for Regional Cooperation (SAARC) region, the volatility in any of the world markets does not significantly impact the return in any of the SAARC countries but impacts the volatility of those nations (Bhargava, 2012).

As a matter of fact, ASEAN is one of the potential environments that foreign investors want to consider for their investment decisions. The ASEAN markets are driven and guided by the principles of an open market economy, and adherence to multilateral rules and a rule-based system. Thus, it creates an integrated regional economy that gives rise to a friendlier trading and investment environment. For a long time,

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people have been calling AESAN markets the next great market or the opportunity of the future. Several empirical studies have shown that liberalization has had a positive effect on developing economies via the decreased costs of equity, increased returns, increased private physical investment and economic growth. Hence, it is possible to say that liberalization has played an important role in the development of ASEAN in recent years.

According to Ariff (1996), while liberalization in ASEAN equity markets is slightly more risky on than in markets, it is less risky than that in emerging ones. During the last two decades, the rapid economic growth in the ASEAN countries was accompanied by an incredible increase in the size of their stock markets. Over the 7-year period 1990–1996, the market capitalization of Indonesia, Malaysia, the Philippines, Singapore and Thailand grew by 816.38%, 360.20%, 637.66%, 83.69% and 211.81%, respectively (World Stock Exchange Fact Book, 1997). As a result, the six major Southeast Asian countries, namely Singapore, Thailand, Indonesia, Malaysia, the Philippines and Vietnam, all enjoyed GDP growth of more than 6% in 2010, with Singapore leading the way. However, these recent developments in the region (i.e., the liberalization and higher economic growth) are more to likely lead the ASEAN markets to be tied to each other. In a more recent study, Karim and Karim (2012) illustrated that the stock markets in the ASEAN region have been increasingly integrated since the last decade, and this integration was much stronger before and after the 1997 financial crisis, and after the US subprime crisis.

From the view of investors, market integration will reduce the scope for diversification possibilities. Therefore, it can be asked whether investors would be better off allocating their assets in cross-border equity markets when the ASEAN stock markets become more integrated after financial liberalization in the long-run perspective. For this reason, many researchers have been exploring the integration of stock markets between six countries in ASEAN, as well as how much their return indices respond to local and global shocks. A previous study using time-series and cross-sectional models, Bekaert and Harvey (1997), found that the capital market liberalizations often enhance the relationship between local market returns and global ones but do not drive up local market volatility via time series and cross-sectional models, meaning that these shocks considerably decreased volatility in emerging markets. On the other hand, several earlier researchers showed increasing long-run relationships among ASEAN nations over time. Ng (2000) shows that the stock markets returns of Indonesia, the Philippines and Thailand had all become closely linked with that of Singapore in the period 1993–1997 while there was no evidence of a cointegrating relationship between those markets before 1990. Similarly, Yang et al. (2003) showed that both the short-run and long-run correlations among Asian emerging markets were strengthened during crises and those relationships rose more gradually in post-crisis periods than during pre-crisis periods. However, by applying the Granger non-causality test, Azman-Saini et al. (2002) revealed that the Singaporean equity market was not affected by other markets, except by that of the Philippines, in the long-run.

As can be seen, the Asian financial crisis created increasing integration among Southeast Asian countries but another arguable result shows that the integration of ASEAN-5 (Indonesia, Malaysia, the Philippines, Singapore and Thailand) was far from complete after this crisis (Click and Plummer, 2005). Consequently, from the perspective of international portfolio investors, the benefits of international portfolio diversification across these five markets are reduced but not eliminated, similar to the conclusions of Majid et al. (2008). Another point to be mentioned here, however, is that Yilmaz (2010), using the forecast error variance decomposition from a vector autoregression, found a substantial difference in the behavior of the East Asian return and volatility spillover indices over time. While the return spillover index revealed increased integration among the East Asian equity markets, the volatility spillover index experienced significant bursts during major market crises.

All these studies agreed that there has been an increase in correlations among ASEAN equity markets and that these have accelerated since the Asian financial crisis. Inevitably, this may lead to a limitation in reducing portfolio risk across region. This paper investigates the effects of local and global shocks on the return volatility of ASEAN-wide sector and national indices in order to examine whether investors can benefit from allocating sectoral indices instead of national equity indices. In the related literature, sectoral equity indices are rarely used to evaluate their performance against the local and global shocks. Mostly, these studies have assumed that there are no different reactions across sectors to these shocks. However, evidence from Kraus (2001), and Brooks and Del Negro (2004) argues that this attitude is not always right. They show that not all sectors in all equity markets respond similarly to local and global shocks. More recently, Moerman (2008) revealed that investors should diversify their portfolios over industries rather than over countries now that the harmonization of fiscal and economic policy has been applied within the European Monetary Union in 1999. Balli and Balli (2011) also indicate that sectoral diversification is better than national diversification across European area. A similar result is found in the Gulf Cooperation Council: F. Balli et al. (2013), H.O. Balli et al. (2013) indicate evidence the better performance of wide sectoral diversification compared to national equity markets.

Following the early empirical research, two types of factors can influence the volatility of stock market returns. Firstly, the volatility of stock price indices can be examined as to whether they belong to the dynamics of key macroeconomic variables. Evidence from Schwert (1989) shows that volatility co-moves tightly with the business cycle, and lagged volatility itself contains a wealth of information about business conditions. Furthermore, Paye (2012) finds that several macroeconomic variables, concentrated around the onset of recessions, help explain time variation in stock return volatility. In order to analyze the sources of disturbances in specific markets, the second strand of the literature concentrates on the correlations among equity markets. Here, Engle (1982) and Bollerslev (1986) used ARCH-GARCH models to focus on the conditional volatility, and then Engle et al. (1990) introduced spillover analysis. Ng (2000) contributes evidence about the volatility spillover effects, namely the increasing influence of world factors on various Pacific Basin stock markets. Moreover, empirical research focuses on the conditional correlation cross-effects with meaningful estimated parameters and fewer computational complications. This research uses the technique known as the vector autoregressive moving average (VAR-GARCH) model developed by Ling and McAleer (2003). Bhar and Nikolova (2009), for example, show that Brazil, Russia, India and China (BRIC) are less integrated with their respective regions and the world. India shows the highest negative relationship between its conditional volatility and that of the Asia-Pacific region and world market returns, followed by Brazil and Russia and lastly by China; Yilmaz (2010) illustrates strong return spillover effects in the East Asian markets. On the other hand, previous research in the European and US stock markets, Balli and Balli (2011), documented that the Euro sector equity returns have not been driven by global factors since the start of the European Monetary Union (EMU), while the regional shocks are still powerful for explaining most of the Euro sector equity indices.

In this paper, we concentrate on the volatility of ASEAN-wide sectoral and national equity returns to address the debate over whether stock market diversification should be sectoral or national within this area. We use the GARCH (1,1) process to model the return and volatility of the sectoral indices, and gauge the magnitude of the spillovers of both regional and world shocks on the volatility of ASEAN-wide sector equity indices. Following H.O. Balli et al. (2013), when trends are added into the spillover model, a number of sector equity indices tend to react similarly to local and global shocks. We therefore classify the ASEAN-wide sector returns into four group sectors: the production and industry sectors, the consumer goods and services sectors, the financial sectors and the technology, media and telecommunications (TMT). We then