

Working Paper No. 17-08

Economics and Finance Working Paper Series

Guglielmo Maria Caporale, Luis A. Gil-Alana
and Kefei You

Global and Regional Financial Integration
in Emerging Asia:
Evidence from Stock Markets

May 2017

**GLOBAL AND REGIONAL FINANCIAL INTEGRATION
IN EMERGING ASIA:
EVIDENCE FROM STOCK MARKETS**

Guglielmo Maria Caporale, Brunel University London

Luis A. Gil-Alana, University of Navarra

Kefei You, University of Greenwich

May 2017

Abstract

This paper employs a price-based measure of integration, namely stock return differentials between ten emerging Asian economies and the US (as an indicator of global integration), as well as Japan and the Asian region (as two alternative indicators of regional integration), to test for mean reversion and draw inference on financial integration. It makes a three-fold contribution: it uses not only aggregate but also industry level data on stock returns; it examines the impact of the 2008 crisis; it employs a fractional integration approach to investigate the issues of interest. The evidence suggests that in emerging Asia there is more regional than global integration, and that the former has become even stronger in the post-2008 crisis period.

Keywords: Global and regional integration, Asian stock markets, fractional integration, Global financial crisis

JEL classification: F31, C22, C32

Corresponding author: Professor Guglielmo Maria Caporale, Department of Economics and Finance, Brunel University London, UB8 3PH, UK. Tel.: +44 (0)1895 266713. Fax: +44 (0)1895 269770. Email: Guglielmo.Maria.Caporale@brunel.ac.uk

The second-named gratefully acknowledges financial support from the Ministerio de Economía y Competitividad (ECO2014-55236).

1. Introduction

Since the 1997 Asian financial crisis and the information technology bubble at the turn of the century, Asian stock markets have rebounded strongly, peaked in November 2007, and then plunged by 41.9% (in US dollars) a year later at the onset of the 2008 global financial crisis (Figure 1). They again recovered at an astonishing speed and by 2016 accounted for nearly a quarter (23.2% in US dollars) of the global stock markets capitalisation (World Federation of Exchange, 2016). The global financial crisis of 2008 had a greater impact than the previous two crises, both in terms of the speed and the size of the decline in daily stock prices (see Hinojales and Park, 2011). An interesting question to ask is whether this reflects a greater degree of financial integration either at the regional or the global level. Financial integration generally has positive implications for the efficient allocation of capital and an economy's ability to absorb shocks (Pauer, 2005); in addition, it may promote financial development and enhance economic growth (Fung et al., 2008). However, stronger financial linkages may also imply a higher risk of cross-border financial contagion with adverse consequences for financial stability and economic growth. Therefore, assessing and monitoring the progress of financial integration is of particular importance in developing Asia.

This paper employs a price-based measure of integration, namely stock return differentials between ten emerging Asian economies and the US (as an indicator of global integration), as well as Japan and the Asian region (as two alternative indicators of regional integration), to test for mean reversion and draw inference on financial integration. It makes a three-fold contribution to the literature on stock market integration in emerging Asia. First, it uses not only aggregate but also industry level data on stock returns, thereby shedding light on which industries drive either global or regional financial integration in Asia. Very few previous studies have analysed Asian stock market integration using industry level data (see Hinojales and Park, 2011).

Second, it examines the impact of the 2008 crisis on the process of regional and global integration in Asian stock markets, both at the aggregate and industry level. Again, only a few other studies have addressed this issue. Wu et al. (2015) and Wang (2014) both use daily data at the aggregate level. The former focus on the transmission of shocks (contagion) from the US, Japan, and Hong Kong to other Asian countries and hence regional integration in East Asia stock markets is not considered, and neither is the evidence at the industry level.

Third, unlike previous studies using either correlation tests or vector autoregression (VAR) techniques,¹ it employs a fractional integration approach as in Gil-Alana (2000) and Caporale and Gil-Alana (2017). A fractional differencing parameter d below one in the return differentials does not necessarily imply mean reversion, which would indicate stock market integration: only values below zero represent evidence of integration, whilst values above zero imply long memory in the return differentials, i.e., no stock market integration. To our knowledge, fractional integration tests have not been carried out before in the case of the emerging Asian stock market returns, despite their advantages over conventional methods based on the classical $I(0) / I(1)$ dichotomy.²

The layout of the paper is as follows. Section 2 briefly reviews the relevant literature. Section 3 outlines the methodology. Section 4 presents the empirical results. Section 5 offers some concluding remarks.

¹ Another strand of the literature on stock market integration examines volatility spillovers - see Sharma and Seth (2012) for an extensive review.

² Some recent examples of mean-reverting analysis on Asian stock prices using techniques other than conventional ADF unit root tests include Chen and Kim (2011), who employ nonlinear mean reversion tests, and Wang et al. (2015), who carry out a Lagrange Multiplier Fourier unit root test and a stationary test with a Fourier function.

2. Literature Review

Broadly speaking, three types of financial integration measures have been used in the existing literature: (1) price-based measures that are largely embodied in interest parity conditions in the money markets as well as in co-movements in assets returns in stock and bond markets; (2) volume-based measures that include the saving-investment correlations pioneered by Feldstein and Horioka (1980), consumption correlations (e.g., Bayoumi, 1997; de Brower, 1999) and capital flows (cross-border financial transactions) (Cavoli et. al., 2006); (3) measures based on regulatory or institutional factors, capital controls and legal restrictions such as those on foreign equity holdings (e.g., Grilli and Milesi-Ferretti, 1995; Magud and Reinhart, 2006). Price-based measures are the most widely employed (Kearney and Lucey, 2004, and Sharma and Seth, 2012). VAR estimation (including Granger causality tests, variance decompositions, impulse responses and cointegration tests) as well as (time-varying) correlation analysis are often carried out.³

More recently, Loh (2013) has investigated co-movement between 13 Asia-Pacific stock market returns using the wavelet coherence method over the sample period 2001M1-2012M3, and found long-run co-movement between most of the Asia-Pacific stock markets as well as them and both Europe and the US. Abid et al. (2014) test a conditional version of the International Capital Asset Pricing Model (ICAPM) using pre-2008 data for five major Asian countries and estimating a multivariate General Dynamic Covariance (GDC)-GARCH model; their results support the validity of the ICAPM and indicate that risk is priced at the regional level. Again testing the ICAPM, Boubakri and Guillaumin (2015) find segmented stock markets until 2008 and an upward trend in regional integration between the East Asian stock markets using GARCH-dynamic conditional correlations (DCCs) and data from 1990M1 to 2012M8. Narayahet et al. (2014) also estimate a GARCH-DCC model to

³ For a review of the literature on financial integration in Asia focusing on money and bond markets, see Rughoo and You (2016).

investigate the patterns of stock market integration of four emerging Asian nations vis-à-vis the US, Australia, China and India over the period 2001M1-2012M3; they find stronger correlations during the 2007-2009 crisis period. Cao et al. (2017) carry out a volatility constrained multifractal detrended cross-correlation analysis (VC-MF-DCCA) and highlight the key role of the Hong Kong stock market. Wang et al. (2017) apply a coupling de-trended fluctuation analysis (CDFFA) method to four Asian stock markets and find evidence of financial integration.

VAR studies on the Asian stock market include Huyghebaert and Wang (2010) and Wang (2014), both examining long- and short-term linkages using cointegration tests and impulse response analysis, respectively. Some recent studies focusing on individual Asian countries include Gupta and Guidi (2012) on India and Chien et al. (2015) on China, both using cointegration techniques (DCC analysis is also carried out in the former).

The overall conclusion of the above mentioned papers is that financial integration between the Asian stock markets has increased and linkages between them have become stronger as a result of shocks. Some recent studies estimate correlations to investigate the issue of whether the higher degree of financial integration between the Asian stock markets is due to stronger integration within the region or with the global markets (e.g., Hinojales and Park, 2011; Park and Lee, 2011; Kim et al., 2011; Kim and Lee, 2012; Park, 2013); the common finding is that global integration is the main driving force, although regional integration has also intensified.⁴

3. Methodology

The fractional integration framework adopted in the present study allows the differencing parameter required to make a time series stationary or $I(0)$ to be any real number (as opposed

⁴ In addition to correlation analysis, other techniques such as factor analysis (e.g., Hinojales and Park, 2011) and convergence tests (e.g., Park, 2013) have also been employed in studies comparing global and regional integration of Asian stock markets.

to an integer): a series x_t , $t = 1, 2, \dots$ is said to be integrated of order d , and is denoted as $I(d)$ if it can be represented as

$$(1 - L)^d x_t = u_t, \quad t = 1, 2, \dots, \quad (1)$$

where x_t is the observed series, L the lag operator (i.e., $Lx_t = x_{t-1}$) and u_t is $I(0)$ and assumed to be a covariance stationary process with a finite sum of the autocovariances. In this context, a process is defined to be mean reverting if d is smaller than 1; this framework is more general than the standard approaches that only consider mean reversion in the case of $d = 0$. In addition, the lower the value of d in the interval $[0, 1)$ is, the faster the convergence process is. Also, if d is higher than 0, the process is said to exhibit long memory because of the strong degree of association between observations that are far away in time, and covariance stationarity holds if d is smaller than 0.5. Therefore, if d belongs to the interval $[0.5, 1)$ the process is non-stationary but mean-reverting.⁵

Specifically, we consider the following regression model,

$$y_t = \beta_0 + \beta_1 t + x_t, \quad t = 1, 2, \dots, \quad (2)$$

where y_t is the series of interest, β_0 and β_1 are unknown coefficients on an intercept and a linear time trend, and the regression errors, x_t , are specified as in equation (1), that is, as integrated of order d , where d is also an unknown parameter to be estimated. The estimation method for all parameters is the Whittle function in the frequency domain as in Dahlhaus (1989). Other approaches produce very similar results.

4. Data and Empirical Results

4.1. Data

Our group of emerging Asian economies includes China (PRC), Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand. To examine global

⁵ Note that the nonstationarity refers to the variance. In the $I(d)$ context, the variance of the partial sums increases with d .

financial integration in Asian stock markets we calculate the stock market return differentials between emerging Asian economies and the US. To examine integration at the regional level we calculate instead stock market return differentials between the emerging Asian economies and two alternative regional benchmarks: the first is Japan, which has been long regarded as the regional leader in terms of financial market development; the second is a regional stock index for emerging Asia, specifically the Morgan Stanley Capital International (MSCI) Asia (excluding Japan) index that includes the above mentioned ten emerging Asian economies; the frequency is monthly and the sample period is 2000M1-2016M8; the data source is Datastream. Stock market returns are calculated as monthly log first differences in each case, and then return differentials are computed between each of the ten emerging Asian economies considered and the US, Japan; and the regional index respectively.

As mentioned before, in addition to aggregate data, we also analyse industry level data. Using the same data sources and methods, we calculate three sets of differentials for the following sectors: 1) industrials; 2) consumer goods; and 3) financials. Further, in order to examine the impact of the 2007-08 financial crisis on the process of both global and regional integration, we divide the sample into two sub-periods: 1) 2000M1-2007M12; and 2) 2009M1-2016M8, excluding 2008 when markets were most volatile.

4.2. Empirical Results

The results are presented in Tables 1 - 12, specifically the aggregate ones in Tables 1, 2 and 9, and the disaggregated ones in Tables 3 - 8 and 10 - 12. As expected, most of the return differentials are $I(0)$ processes, which implies a unit root in the original series. We focus in particular on cases of long memory ($d > 0$) in the return differentials, which indicates high persistence ($d > 1$) in the original series, and on cases of anti-persistence ($d < 0$), which implies mean reversion ($d < 1$) in the original series and therefore integrated markets.

4.2.1 Full Sample and Pre- and Post-Crisis Results

Table 1 presents estimates of d for three sets of return differentials at the aggregate level. Long memory in return differentials ($d > 0$) or high persistence in the original series ($d > 1$) is only found for Indonesia vis-à-vis the US. By contrast, there is evidence of anti-persistence ($d < 0$) or mean reversion ($d < 1$) in the original series in a few cases, namely Hong Kong vis-à-vis the US and Asia, as well as India, Taiwan and Thailand vis-à-vis Asia.

The sub-sample results are presented in Tables 2a and 2b. In the pre-crisis period, long memory ($d > 0$) or high persistence in the original series ($d > 1$) is only found for China vis-à-vis Japan, whilst there is evidence of anti-persistence ($d < 0$) or mean reversion ($d < 1$) in various cases, specifically Hong Kong, India and the Philippines vis-à-vis the US, and Hong Kong and India vis-à-vis Asia.

In the post-crisis period, there is no evidence of anti-persistence in any case vis-a-vis the US and Japan. The only evidence of mean reversion is found for Singapore, Taiwan, and Thailand vis-à-vis Asia. Further, it appears that there is long memory or high persistence in the original series in the case of Malaysia vis-à-vis Asia.

Overall, there is no evidence of integration between the emerging Asian economies considered and Japan, either in the whole sample period or the sub-periods. The number of cases of mean reversion implies more regional than global integration for the whole sample period, when the regional index (excluding Japan) is used as the benchmark. In the pre-crisis period, global integration is stronger than the regional one but the opposite is true in the post-crisis period where no cases of global integration are found but there is stronger regional integration.

Table 9 summarises the results by country. An increase in d (i.e., a move away from stock market integration) is found in the case of Hong Kong, India and the Philippines vis-à-

vis the US; there is instead a decrease in d (a move towards stock market integration) in the case of China vi-a-vis Japan; finally, there is an increase in d for Hong Kong, India and Malaysia, and a decrease for Singapore, Taiwan and Thailand vis-à-vis the Asian regional index.

4.2.2 Industry Level Results

Industrial Sector

For the industrial sector (Table 3) evidence of long memory is found only for South Korea vis-à-vis Asia, and of anti-persistence (or mean reversion in the original series) for Hong Kong and Thailand vis-à-vis the US and Asia, Thailand vis-à-vis Japan and Taiwan vis-a-vis Asia. Regional integration appears to be stronger than the global one when the regional index (excluding Japan) is employed for the analysis.

In the pre-crisis period (Table 4a) there is no evidence of long memory, whilst anti-persistence is found for Thailand vis-à-vis the US, Japan and Asia, Hong Kong and Malaysia vis-à-vis the US. In the post-crisis period (Table 4b), there is no evidence of integration with the US, whilst there appears to be integration for Hong Kong and Malaysia vis-à-vis Japan and China and Taiwan vis-à-vis Asia. Evidence of long memory is found only for Indonesia vis-à-vis the US. Global integration seems to be stronger than the regional one prior to the 2008 crisis and the opposite is true in the following period.

Table 10 provides a summary of the results for the industrial sector by country. An increase in d is found for Hong Kong, Indonesia, the Philippines and Thailand vis-à-vis the US; d also increases in the case of Thailand while it decreases in the case of China and Malaysia vis-à-vis Japan; it increases for Hong Kong and Thailand as well and decreases for China and Taiwan when the regional index is used for the analysis. Therefore, Thailand

seems to move away from both regional and global integration whilst China appears to have become integrated regionally in the post-crisis period.

Consumer Goods Sector

For this sector (Table 5), most estimated values of d imply $I(0)$ stationarity, although there are also some cases of long memory ($d > 0$) or high persistence: Indonesia vis-à-vis the US and Japan, the Philippines vis-à-vis Japan and Asia, Thailand vis-à-vis Japan. No evidence of anti-persistence or mean reversion is found in any case.

The sub-sample results (Tables 6a-b) provide evidence of regional integration only for China vis-à-vis Japan in the pre-crisis period and Taiwan vis-à-vis Asia in the post-crisis period, whilst there is no evidence of global integration. There are various cases of long memory in the post-crisis period, i.e., the Philippines, South Korea and Thailand vis-à-vis Japan and India and Malaysia vis-à-vis Asia, but only one in the pre-crisis period, namely China vis-à-vis Japan. Overall there is limited evidence of integration, and only at the regional level, with long memory being found in more cases after the crisis.

The results by country for this sector are summarised in Table 11. The estimated value of d increases only for Indonesia vis-à-vis the US, and for the Philippines, South Korea and Thailand vis-à-vis Japan. Finally, d increases in the case of India and Malaysia and decreases in the case of China and Taiwan when the regional index is used as a benchmark. Hence, several emerging countries appear to be moving away from integration, either globally or regionally, China and Taiwan being the exceptions.

Financial Sector

For the financial sector (Table 7) full-sample evidence of long memory is found for Indonesia vis-à-vis the US and Japan, and of mean reversion for Thailand vis-a-vis Asia. In the pre-

crisis period, there is only one case of mean reversion, namely Thailand vis-à-vis Asia, whilst in the post-crisis period six economies exhibit mean reversion vis-à-vis Asia. There is only one case of mean reversion vis-à-vis the US, namely that of China, and none vis-à-vis Japan. The only case of long memory is that of India vis-à-vis Japan. The sub-sample analysis provides strong evidence of integration at the regional level after the 2008 crisis when using the regional index rather than the Japanese one.

The results by country are summarised in Table 12. The estimated value of d increases only in the case of China vis-à-vis the US, and India vis-à-vis Japan. When the regional index is used, it declines in various cases, namely those of China, the Philippines, Singapore, South Korea, Taiwan and Thailand, which implies stronger regional integration in the post-crisis period.

Overall, at the aggregate level there are various cases (Hong Kong, India, Taiwan and Thailand) indicating much stronger regional than global integration. The most persistent return differentials are those for Indonesia, especially vis-à-vis the US and Japan. The sub-sample analysis suggests that global integration was stronger than the regional one before the 2008 crisis, but in the subsequent period a number of economies (Singapore, Taiwan and Thailand) seem to be regionally integrated but none globally.

At the industry level there appears to be some heterogeneity across sectors, although in all three sectors examined regional integration appears to be stronger. This is particularly apparent in the case of the financial sector: there is only one case of regional integration in the full sample and the pre-crisis period (Thailand vis-à-vis the Asian index), but in the post-crisis period six of the ten economies examined exhibit regional integration, whilst there is only one case (China) of global integration. For the industrial sector, there is slightly stronger regional than global integration for the whole sample period, with much weaker global integration and slightly stronger regional integration in the second sub-sample (mainly

reflecting stronger integration of China). As for the consumer goods sector, there is no evidence of global integration and very limited evidence of regional integration.

It is also noteworthy that at the aggregate level regional integration is only found when using the regional price index (excluding Japan) rather than the Japanese price index (with the exception of the industrial sector in Thailand), which sheds some doubt on the role of Japan as a regional leader; this holds at the sector level as well, with only a few exceptions. Our results also highlight China's increasing integration, especially after the 2008 crisis (at the regional level for the industrial sector and both regionally and globally for the financial sector). Hong Kong, Taiwan and Thailand are among the most regionally integrated economies.

5. Conclusions

This paper investigates the issue of global and regional financial integration of ten emerging Asian economies at both the aggregate and industry level analysing the stochastic behaviour of stock return differentials by means of fractional integration techniques. Our main findings are as follows. First, there is overwhelming evidence of stronger regional than global integration at the aggregate level. The sub-period analysis shows that in the pre-2008 crisis period global integration was stronger than the regional one, whilst the opposite is true of the second period. Second, stronger evidence of regional integration is also found at industry level, especially in the post-crisis period, especially for the financial sector. Third, regional integration in emerging Asia is mainly within member economies rather than with Japan. Besides, China appear to be more integrated both globally and regionally after the 2008 crisis, and Hong Kong, Taiwan and Thailand are the countries that are most regionally integrated.

Our first finding of stronger regional integration is in contrast to the conclusions of numerous other studies finding more evidence of global integration (e.g., Hinojales and Park,

2011; Park and Lee, 2011; Kim et al., 2011; Kim and Lee, 2012; Park, 2013), but consistent with the results of Wang (2014) for the post-2008 crisis period. This could reflect the various regional agreements signed in recent years (e.g., Chiang Mai Initiative in 2000, Asian Bond Market Initiative (ABMI) in 2003, new ABMI roadmap in 2008, Chiang Mai Initiative Multilateralization in 2012) to promote financial cooperation in the region. The 2008 financial crisis provided further incentives for greater regional integration to deal with external common shocks (Asian Development Bank, 2013). Hence an important policy implication of our findings is that regional cooperation should be continued and intensified if possible.

The immediate and sizeable adverse effects of the 2008 global financial crisis on the Asian stock markets also highlight the crucial role played by shifts in investors' risk appetite. Whilst the developed economies were mainly hit by a liquidity shock, emerging equity markets were primarily affected by a decline in risk appetite (Chudik and Fratzscher, 2011), regardless of their level of financial integration with the developed economies (Wang, 2014). Therefore, despite the declining level of global integration after the 2008 crisis, policy makers in the emerging Asian economies should have a framework in place to assess and monitor this type of transmission mechanism of financial crisis (e.g., the daily measures of risk appetite proposed by Kumar and Persaud (2002)) to be able to react quickly and effectively.

Our industry level analysis suggests that the financial sector is highly regionally integrated while its integration with the US or other countries in the region such as Japan has been declining, especially after the 2008 crisis, which is consistent with the findings of Hinojales and Park (2011). Therefore, the Asian stock markets could be an attractive option for investors seeking global portfolio diversification. By contrast, regional diversification

does not seem to be achievable given the evidence of strong regional integration in the case of China, Hong Kong, Taiwan and Thailand.

References

- Abid, I., Kaabia, O. and Guesmi, K., 2014, “Stock market integration and risk premium: Empirical evidence for emerging economies of South Asia”, *Economic Modelling* 37, 408–416
- Asian Development Bank (2013, October). “Regional cooperation and integration”. In Asian Development Bank (Ed.), *Asian Economic Integration Monitor*. Asian Development Bank.
- Bayoumi, T. (1997). *Financial integration and real activity*. Manchester University Press.
- Boubakri, S. and Guillaumin, C., 2015, “Regional integration of the East Asian stock markets: An empirical assessment”, *Journal of International Money and Finance* 57, 136–160
- Cao, G., Zhang, M. and Li, Q., 2017, “Volatility-constrained multifractal detrended cross correlation analysis: Cross-correlation among Mainland China, US, and Hong Kong stock markets”, *Physica A* 472, 67–76.
- Caporale, G.M. and Gil-Alana, L.A. (2017), “Persistence and cycles in the US Federal Funds rate”, *International Review of Financial Analysis*, forthcoming.
- Cavoli, T., Rajan, R.S. and Siregar, R. (2006). “Financial integration in East Asia: How far? How much further to go?” *eSocialSciences Working Papers*, 372.
- Chen, S-L., and Kim, H., 2011, “Nonlinear Mean Reversion across National Stock Markets: Evidence from Emerging Asian Markets”, *International Economic Journal* 25(2), 239–250.
- Chiang, T.C., B. N. Jeon and H. Li (2007). “Dynamic correlation analysis of financial contagion: Evidence from Asian markets”, *Journal of International Money and Finance* 26(7), 1206-1228.
- Chien, M.-S., Lee, C-C., Hu, T-C. and Hu, H-T., 2015, “Dynamic Asian stock market convergence: Evidence from dynamic cointegration analysis among China and ASEAN-5”, *Economic Modelling* 51, 84–98.
- Chudik, A., Fratzscher, M., 2011. “Identifying the global transmission of the 2007–2009 financial crisis in a GVAR model”. *European Economic Review* 55 (3), 325–339.
- Dahlhaus, R. (1989). “Efficient parameter estimation for self-similar process”. *Annals of Statistics* 17: 1749-1766.
- de Brower, G. (1999). *Financial integration in East Asia*. Cambridge University Press.
- Feldstein, M., and Horioka, C. (1980). “Domestic saving and international capital flows”. *Economic Journal* 90, 314–329.
- Fung, L., Yu, I. -W. and Tam, C. -S. (2008). “Assessing the integration of Asian's equity and bond markets”. In Bank for International Settlements (Ed.), *Regional financial integration in Asia: Present and future*. 42. (pp. 1–37). Bank for International Settlements.

- Gil-Alana, L. A. (2000) “Mean reversion in the real exchange rates”, *Economics Letters* 69, 285-288.
- Grilli, V., and Milesi-Ferretti, G.M. (1995). “Economic effects and structural determinants of capital controls”. *IMF Staff Papers*, 42, 517–551.
- Gupta, R., and Guidi, F., 2012, “Cointegration relationship and time varying co movements among Indian and Asian developed stock markets”, *International Review of Financial Analysis* 21, 10–22.
- Hinojales, M. and C-Y. Park, 2011. “Stock market integration: Emerging East Asia’s experience” in: *The Dynamics of Asian Financial Integration: Facts and Analytics*, edited by M. Devereux, P. Lane, C-Y. Park, and S-J Wei, Asian Development Bank.
- Huyghebaert, N. and Wang, L., 2010, “The co-movement of stock markets in East Asia Did the 1997–1998 Asian financial crisis really strengthen stock market integration?” *China Economic Review* 21, 98–112.
- Kearney, C., and Lucey, B.M. (2004). “Equity market integration: Theory, evidence and implications”. *International Review of Financial Analysis* 13(5), 571–583.
- Kim, S. and Lee, J. -W. (2012). “Real and financial integration, real and financial integration in east Asia”. *Review of International Economics* 20(2), 332–349.
- Kim, S, Lee, J. -W. and Park C.- Y., 2011, “Emerging Asia: Decoupling or Recoupling”, *The World Economy* 34(1), 23-53.
- Kumar, M. and Persaud, A., 2002. “Pure contagion and investors’ shifting risk appetite: analytical issues and empirical evidence”. *International Finance* 5 (3), 401–436.
- Liu, L., 2013. “International stock market interdependence: are developing markets the same as developed markets?” *Journal of International Financial Markets, Institutions and Money* 26, 226–238.
- Loh, L. 2013, “Co-movement of Asia-Pacific with European and US stock market returns: A cross-time-frequency analysis”, *Research in International Business and Finance* 29, 1– 13
- Magud, N. and Reinhart, C. (2006). “Capital controls: An evaluation”. *NBER Working Paper*, 11973.
- Narayan S., Srikanthakumar, S. and Islam, S. Z, (2014), “Stock market integration of emerging Asian economies: Patterns and causes”, *Economic Modelling* 39, 19–31
- Park, C.-Y. (2013). “Asian capital market integration: theory and evidence”, *ADB working paper 351*, Asian Development Bank 2013
- Park, C. -Y. and Lee, J. -W. (2011). “Financial integration in emerging Asia: Challenges and prospects”. *Asian Economic Policy Review* 6, 176–198.

- Pauer, F., 2005, “Financial market integration and financial stability”, *Monetary Policy and The Economy* 2, 144–51
- Rughoo A. and K. You (2016), “Asian financial integration: Global or regional? Evidence from money and bond markets”, *International Review of Financial Analysis* 48, 419–434.
- Sharma, A. and Seth, N., 2012. “Literature review of stock market integration: a global perspective”. *Qualitative Research in Financial Markets* 4 (1), 84–122.
- Wang, J., Zhang, D., and Zhang, J., 2015, “Mean reversion in stock prices of seven Asian stock markets: Unit root test and stationary test with Fourier functions”, *International Review of Economics and Finance* 37, 157–164
- Wang, L., 2014, “Who moves East Asian stock markets? The role of the 2007–2009 global financial crisis”, *Journal of International Financial Markets, Institutions and Money* 28, 182–203.
- Wang, Q., Zhu, Y., Yang, L., and Mul, R. A. H., 2017, “Coupling detrended fluctuation analysis of Asian stock markets”, *Physica A* 471, 337–350.
- World Federation of Exchange, 2016, World Federation of Exchange Annual Statistical Guide 2016.
- Wu, L., Meng, Q. and Xu, K., 2015, “‘Slow-burn’ spillover and ‘fast and furious’ contagion: a study of international stock markets”, *Quantitative Finance* 15 (6), 933–958.
- Yu, I.-W., Fung, K.-P. and Tam, C.-S., 2010. “Assessing financial market integration in Asia Equity markets”. *Journal of Banking and Finance* 34, 2874–2885

Table 1: Estimates of d for the return differentials: Aggregate data (2000M1-2016M8)

i) Returns relative to the US			
	No det. Terms	an intercept	A linear time trend
CHINA	0.02 (-0.06, 0.12)	0.02 (-0.06, 0.12)	0.02 (-0.06, 0.12)
HONG KONG	-0.09 (-0.16, -0.01)	-0.09 (-0.16, -0.01)	-0.14 (-0.21, -0.03)
INDIA	-0.07 (-0.14, 0.03)	-0.07 (-0.14, 0.03)	-0.09 (-0.17, 0.02)
INDONESIA	0.09 (0.00, 0.21)	0.09 (0.00, 0.21)	0.09 (0.00, 0.21)
MALAYSIA	-0.03 (-0.13, 0.10)	-0.03 (-0.12, 0.10)	-0.06 (-0.17, 0.10)
PHILLIPPINES	-0.07 (-0.14, 0.04)	-0.07 (-0.15, 0.04)	-0.07 (-0.15, 0.04)
SINGAPORE	0.02 (-0.05, 0.12)	0.02 (-0.05, 0.12)	0.00 (-0.08, 0.11)
SOUTH KOREA	0.03 (-0.04, 0.13)	0.03 (-0.04, 0.13)	0.02 (-0.07, 0.13)
TAIWAN	-0.09 (-0.19, 0.05)	-0.09 (-0.19, 0.05)	-0.09 (-0.19, 0.05)
THAILAND	-0.05 (-0.13, 0.06)	-0.05 (-0.13, 0.06)	-0.06 (-0.15, 0.05)
ii) Returns relative to Japan			
	No det. Terms	an intercept	A linear time trend
CHINA	-0.01 (-0.09, 0.09)	-0.01 (-0.09, 0.09)	-0.01 (-0.09, 0.09)
HONG KONG	-0.04 (-0.12, 0.07)	-0.04 (-0.12, 0.07)	-0.05 (-0.14, 0.06)
INDIA	-0.04 (-0.13, 0.08)	-0.04 (-0.13, 0.08)	-0.06 (-0.16, 0.07)
INDONESIA	0.07 (-0.02, 0.19)	0.07 (-0.02, 0.19)	0.07 (-0.02, 0.19)
MALAYSIA	0.00 (-0.08, 0.11)	0.00 (-0.08, 0.11)	-0.01 (-0.09, 0.11)
PHILLIPPINES	-0.02 (-0.10, 0.12)	-0.02 (-0.11, 0.08)	-0.02 (-0.11, 0.08)
SINGAPORE	0.02 (-0.06, 0.13)	0.02 (-0.06, 0.13)	0.01 (-0.05, 0.13)
SOUTH KOREA	0.00 (-0.07, 0.10)	0.00 (-0.07, 0.10)	-0.01 (-0.10, 0.10)
TAIWAN	-0.09 (-0.18, 0.03)	-0.09 (-0.18, 0.03)	-0.09 (-0.18, 0.03)
THAILAND	0.01 (-0.08, 0.12)	0.01 (-0.08, 0.12)	0.00 (-0.09, 0.12)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. terms	an intercept	A linear time trend
CHINA	0.02 (-0.07, 0.12)	0.02 (-0.07, 0.12)	0.02 (-0.07, 0.13)
HONG KONG	-0.15 (-0.23, -0.05)	-0.15 (-0.23, -0.05)	-0.16 (-0.23, -0.05)
INDIA	-0.21 (-0.29, -0.10)	-0.21 (-0.29, -0.10)	-0.22 (-0.29, -0.10)
INDONESIA	-0.06 (-0.15, 0.07)	-0.06 (-0.16, 0.07)	-0.06 (-0.15, 0.07)
MALAYSIA	0.02 (-0.06, 0.13)	0.02 (-0.06, 0.13)	0.01 (-0.07, 0.12)
PHILLIPPINES	-0.01 (-0.11, 0.13)	-0.01 (-0.11, 0.13)	-0.03 (-0.14, 0.12)
SINGAPORE	-0.07 (-0.19, 0.07)	-0.07 (-0.19, 0.07)	-0.07 (-0.19, 0.07)
SOUTH KOREA	0.03 (-0.07, 0.16)	0.03 (-0.07, 0.16)	0.03 (-0.07, 0.16)
TAIWAN	-0.09 (-0.17, 0.03)	-0.09 (-0.17, 0.03)	-0.15 (-0.25, -0.01)
THAILAND	-0.11 (-0.17, -0.02)	-0.11 (-0.18, -0.02)	-0.11 (-0.18, -0.02)

Table 2a: Estimates of d for the return differentials: Aggregate data (2000M1-2007M12)

i) Returns relative to the US			
	No det. Terms	an intercept	A linear time trend
CHINA	0.07 (-0.03, 0.20)	0.07 (-0.03, 0.20)	0.05 (-0.03, 0.18)
HONG KONG	-0.12 (-0.23, 0.04)	-0.14 (-0.27, 0.04)	-0.26 (-0.45, -0.02)
INDIA	-0.12 (-0.22, 0.03)	-0.14 (-0.25, 0.03)	-0.20 (-0.33, -0.01)
INDONESIA	0.04 (-0.07, 0.219)	0.04 (-0.07, 0.20)	-0.02 (-0.14, 0.16)
MALAYSIA	-0.03 (-0.18, 0.19)	-0.03 (-0.18, 0.20)	-0.03 (-0.18, 0.20)
PHILLIPPINES	-0.14 (-0.24, 0.01)	-0.13 (-0.27, 0.01)	-0.22 (-0.37, -0.03)
SINGAPORE	-0.06 (-0.16, 0.11)	-0.06 (-0.18, 0.11)	-0.11 (-0.25, 0.08)
SOUTH KOREA	0.03 (-0.09, 0.20)	0.03(-0.09, 0.20)	0.03(-0.09, 0.20)
TAIWAN	-0.11 (-0.28, 0.09)	-0.11 (-0.27, 0.09)	-0.15 (-0.31, 0.09)
THAILAND	-0.07 (-0.17, 0.09)	-0.07 (-0.18, 0.09)	-0.07 (-0.18, 0.09)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	0.11 (0.01, 0.24)	0.10 (0.01, 0.24)	0.09 (0.00, 0.23)
HONG KONG	0.03 (-0.14, 0.28)	0.03 (-0.14, 0.28)	0.02 (-0.15, 0.28)
INDIA	-0.11 (-0.24, 0.08)	-0.11 (-0.27, 0.09)	-0.15 (-0.31, 0.06)
INDONESIA	0.04 (-0.09, 0.23)	0.04 (-0.10, 0.24)	0.00 (-0.15, 0.21)
MALAYSIA	0.01 (-0.12, 0.19)	0.01 (-0.11, 0.19)	0.01 (-0.11, 0.20)
PHILLIPPINES	-0.16 (-0.28, 0.02)	-0.17 (-0.31, 0.02)	-0.19 (-0.33, 0.01)
SINGAPORE	-0.03 (-0.18, 0.21)	-0.03 (-0.20, 0.21)	-0.03 (-0.20, 0.21)
SOUTH KOREA	-0.02 (-0.16, 0.20)	-0.02(-0.17, 0.20)	-0.01(-0.16, 0.20)
TAIWAN	-0.14 (-0.30, 0.06)	-0.14 (-0.30, 0.06)	-0.15 (-0.30, 0.06)
THAILAND	-0.07 (-0.19, 0.10)	-0.07 (-0.19, 0.10)	-0.07 (-0.20, 0.11)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. Terms	An intercept	A linear time trend
CHINA	0.10 (-0.01, 0.26)	0.10 (-0.01, 0.25)	0.10 (-0.01, 0.26)
HONG KONG	-0.16 (-0.26, -0.01)	-0.16 (-0.27, -0.01)	-0.19 (-0.30, -0.03)
INDIA	-0.29 (-0.39, -0.15)	-0.33 (-0.45, -0.14)	-0.34 (-0.46, -0.17)
INDONESIA	-0.03 (-0.16 0.16)	-0.09 (-0.17 0.16)	-0.05 (-0.20 0.15)
MALAYSIA	-0.08 (-0.24, 0.16)	-0.09 (-0.27, 0.16)	-0.09 (-0.27, 0.16)
PHILLIPPINES	-0.09 (-0.29, 0.17)	-0.09 (-0.28, 0.18)	-0.09 (-0.28, 0.18)
SINGAPORE	-0.09 (-0.27, 0.14)	-0.09 (-0.27, 0.14)	-0.09 (-0.28, 0.14)
SOUTH KOREA	0.07 (-0.07, 0.26)	0.07 (-0.06, 0.26)	0.07 (-0.06, 0.27)
TAIWAN	-0.13 (-0.26, 0.08)	-0.14 (-0.31, 0.08)	-0.15 (-0.34, 0.09)
THAILAND	-0.08 (-0.17, 0.01)	-0.08 (-0.17, 0.01)	-0.14 (-0.25, 0.02)

Table 2b: Estimates of d for the return differentials: Aggregate data (2008M1-2016M8)

i) Returns relative to the US			
	No det. Terms	An intercept	A linear time trend
CHINA	-0.04 (-0.15, 0.12)	-0.04 (-0.15, 0.12)	-0.04 (-0.15, 0.12)
HONG KONG	-0.10 (-0.22, 0.08)	-0.12 (-0.25, 0.09)	-0.16 (-0.32, 0.08)
INDIA	0.02 (-0.08, 0.17)	0.02 (-0.08, 0.17)	0.02 (-0.08, 0.17)
INDONESIA	0.16 (0.03, 0.36)	0.15 (0.03, 0.33)	0.13 (-0.02, 0.34)
MALAYSIA	-0.06 (-0.16, 0.10)	-0.06 (-0.17, 0.11)	-0.13 (-0.26, 0.08)
PHILLIPPINES	0.00 (-0.11, 0.15)	0.00 (-0.10, 0.15)	-0.06 (-0.18, 0.12)
SINGAPORE	0.09 (-0.01, 0.24)	0.10 (-0.01, 0.24)	0.06 (-0.06, 0.22)
SOUTH KOREA	-0.04(-0.13, 0.10)	-0.05(-0.15, 0.10)	-0.07 (-0.18, 0.09)
TAIWAN	-0.05 (-0.15, 0.09)	-0.06 (-0.16, 0.09)	-0.06 (-0.17, 0.09)
THAILAND	-0.04 (-0.15, 0.13)	-0.03 (-0.13, 0.13)	-0.16 (-0.34, 0.05)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	-0.14 (-0.23, 0.00)	-0.14 (-0.24, 0.00)	-0.14 (-0.23, 0.00)
HONG KONG	0.00 (-0.11, 0.16)	0.00 (-0.11, 0.16)	-0.06 (-0.20, 0.13)
INDIA	0.10 (-0.03, 0.28)	0.09 (-0.03, 0.27)	0.08 (-0.05, 0.26)
INDONESIA	0.14 (0.03, 0.30)	0.13 (0.03, 0.28)	0.10 (-0.03, 0.25)
MALAYSIA	0.02 (-0.08, 0.17)	0.02 (-0.07, 0.16)	-0.03 (-0.16, 0.15)
PHILLIPPINES	0.10 (0.00, 0.24)	0.09 (0.00, 0.23)	0.05 (-0.06, 0.21)
SINGAPORE	0.10 (0.00, 0.24)	0.09 (0.00, 0.23)	0.05 (-0.06, 0.21)
SOUTH KOREA	0.05 (-0.05, 0.19)	0.05(-0.05, 0.18)	0.02(-0.09, 0.18)
TAIWAN	-0.01 (-0.11, 0.14)	-0.01 (-0.11, 0.13)	-0.03 (-0.14, 0.13)
THAILAND	0.10 (-0.02, 0.28)	0.09 (-0.02, 0.26)	0.02 (-0.13, 0.23)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. Terms	An intercept	A linear time trend
CHINA	-0.06 (-0.17, 0.09)	-0.06 (-0.16, 0.09)	-0.11 (-0.25, 0.06)
HONG KONG	-0.08 (-0.17, 0.06)	-0.07 (-0.17, 0.06)	-0.10 (-0.21, 0.05)
INDIA	-0.06 (-0.15, 0.08)	-0.06 (-0.15, 0.08)	-0.12 (-0.24, 0.05)
INDONESIA	-0.17 (-0.36 0.07)	-0.14 (-0.27 0.07)	-0.17 (-0.32 0.07)
MALAYSIA	0.10 (0.00, 0.25)	0.10 (0.00, 0.25)	0.05 (-0.06, 0.22)
PHILLIPPINES	-0.10 (-0.22, 0.07)	-0.11 (-0.22, 0.07)	-0.11 (-0.24, 0.07)
SINGAPORE	-0.23 (-0.39, -0.01)	-0.23 (-0.39, -0.01)	-0.22 (-0.38, 0.00)
SOUTH KOREA	-0.17 (-0.31, 0.03)	-0.16 (-0.30, 0.03)	-0.17 (-0.31, 0.03)
TAIWAN	-0.29 (-0.37, -0.16)	-0.29 (-0.39, -0.16)	-0.55 (-0.56, -0.33)
THAILAND	-0.17 (-0.28-0.01)	-0.16 (-0.27-0.02)	-0.23 (-0.35 -0.03)

Table 3: Estimates of d for the return differentials: Industrial sector data (2000M1-2016M8)

i) Returns relative to the US			
	No det. terms	An intercept	A linear time trend
CHINA	-0.01 (-0.08, 0.08)	-0.01 (-0.08, 0.08)	-0.06 (-0.05, 0.04)
HONG KONG	-0.15 (-0.23, -0.04)	-0.15 (-0.23, -0.04)	-0.14 (-0.25, -0.05)
INDIA	0.04 (-0.04, 0.14)	0.04 (-0.03, 0.14)	0.05 (-0.03, 0.15)
INDONESIA	0.06 (-0.02, 0.16)	0.06 (-0.02, 0.16)	0.05 (-0.03, 0.16)
MALAYSIA	-0.06 (-0.15, 0.05)	-0.06 (-0.15, 0.05)	-0.08 (-0.17, 0.05)
PHILLIPPINES	-0.09 (-0.17, 0.02)	-0.09 (-0.17, 0.02)	-0.09 (-0.18, 0.02)
SINGAPORE	-0.04 (-0.11, 0.05)	-0.04 (-0.11, 0.05)	-0.06 (-0.13, 0.03)
SOUTH KOREA	0.06 (-0.01, 0.16)	0.06 (-0.01, 0.16)	0.02 (-0.07, 0.14)
TAIWAN	-0.02 (-0.12, 0.10)	-0.02 (-0.12, 0.10)	-0.02 (-0.12, 0.10)
THAILAND	-0.16 (-0.27, -0.05)	-0.17 (-0.28, -0.05)	-0.17 (-0.28, -0.05)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	0.01 (-0.06, 0.10)	0.01 (-0.06, 0.10)	-0.02 (-0.10, 0.08)
HONG KONG	-0.09 (-0.17, 0.03)	-0.09 (-0.18, 0.03)	-0.09 (-0.18, 0.03)
INDIA	0.03 (-0.06, 0.15)	0.03 (-0.06, 0.15)	0.04 (-0.05, 0.17)
INDONESIA	0.07 (-0.02, 0.18)	0.07 (-0.02, 0.18)	0.06 (-0.02, 0.18)
MALAYSIA	-0.05 (-0.14, 0.08)	-0.05 (-0.14, 0.08)	-0.05 (-0.15, 0.08)
PHILLIPPINES	-0.03 (-0.12, 0.09)	-0.03 (-0.12, 0.09)	-0.03 (-0.12, 0.09)
SINGAPORE	-0.02 (-0.10, 0.09)	-0.02 (-0.10, 0.09)	-0.03 (-0.11, 0.08)
SOUTH KOREA	0.02 (-0.06, 0.11)	0.02 (-0.05, 0.11)	-0.02 (-0.11, 0.09)
TAIWAN	-0.08 (-0.17, 0.03)	-0.08 (-0.17, 0.03)	-0.08 (-0.17, 0.03)
THAILAND	-0.17 (-0.26, -0.05)	-0.19 (-0.27, -0.05)	-0.18 (-0.28, -0.05)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. terms	An intercept	A linear time trend
CHINA	0.06 (-0.01, 0.16)	0.06 (-0.01, 0.16)	0.05 (-0.03, 0.16)
HONG KONG	-0.11 (-0.17, -0.02)	-0.11 (-0.18, -0.02)	-0.12 (-0.20, -0.03)
INDIA	0.02 (-0.08, 0.14)	0.02 (-0.08, 0.14)	0.02 (-0.07, 0.14)
INDONESIA	-0.04 (-0.13, 0.08)	-0.04 (-0.13, 0.08)	-0.04 (-0.13, 0.08)
MALAYSIA	0.00 (-0.08, 0.10)	0.00 (-0.08, 0.10)	-0.01 (-0.09, 0.10)
PHILLIPPINES	-0.04 (-0.12, 0.07)	-0.04 (-0.13, 0.08)	-0.06 (-0.15, 0.07)
SINGAPORE	-0.10 (-0.20, 0.03)	-0.10 (-0.20, 0.03)	-0.10 (-0.20, 0.03)
SOUTH KOREA	0.10 (0.01, 0.23)	0.10 (0.00, 0.24)	0.07 (-0.06, 0.23)
TAIWAN	-0.08 (-0.17, 0.03)	-0.07 (-0.14, 0.03)	-0.13 (-0.24, -0.01)
THAILAND	-0.13 (-0.19, -0.03)	-0.13 (-0.19, -0.03)	-0.16 (-0.23, -0.06)

Table 4a: Estimates of d for the return differentials: Industrial sector data (2000M1-2007M12)

i) Returns relative to the US			
	No det. Terms	An intercept	A linear time trend
CHINA	-0.02 (-0.14, 0.12)	-0.02 (-0.12, 0.12)	-0.03 (-0.14, 0.11)
HONG KONG	-0.21 (-0.33, -0.02)	-0.21 (-0.36, -0.02)	-0.36 (-0.51, -0.09)
INDIA	0.00 (-0.09, 0.13)	0.00 (-0.09, 0.13)	-0.07 (-0.16, 0.08)
INDONESIA	-0.06 (-0.15, 0.07)	-0.07 (-0.16, 0.07)	-0.13 (-0.26, 0.03)
MALAYSIA	-0.05 (-0.17, 0.12)	-0.05 (-0.17, 0.12)	-0.05 (-0.17, 0.12)
PHILLIPPINES	-0.18 (-0.28, -0.02)	-0.19 (-0.30, -0.02)	-0.26 (-0.42, -0.06)
SINGAPORE	-0.09 (-0.19, 0.03)	-0.10 (-0.20, 0.04)	-0.13 (-0.23, 0.02)
SOUTH KOREA	0.05 (-0.08, 0.18)	0.05 (-0.08, 0.17)	0.04 (-0.10, 0.17)
TAIWAN	0.00 (-0.14, 0.18)	0.00 (-0.14, 0.18)	0.04 (-0.20, 0.17)
THAILAND	-0.24 (-0.37, -0.05)	-0.24 (-0.37, -0.05)	-0.24 (-0.37, -0.05)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	0.08 (-0.02, 0.21)	0.07 (-0.02, 0.20)	0.07 (-0.03, 0.20)
HONG KONG	-0.08 (-0.28, 0.18)	-0.08 (-0.27, 0.18)	-0.10 (-0.30, 0.17)
INDIA	-0.01 (-0.11, 0.15)	-0.01 (-0.11, 0.15)	-0.07 (-0.19, 0.11)
INDONESIA	0.02 (-0.11, 0.23)	0.02 (-0.11, 0.21)	0.01 (-0.15, 0.21)
MALAYSIA	0.07 (-0.08, 0.27)	0.07 (-0.08, 0.27)	0.07 (-0.08, 0.27)
PHILLIPPINES	-0.13 (-0.27, 0.06)	-0.13 (-0.28, 0.06)	-0.16 (-0.32, 0.04)
SINGAPORE	-0.05 (-0.19, 0.15)	-0.06 (-0.20, 0.15)	-0.05 (-0.20, 0.15)
SOUTH KOREA	0.01 (-0.12, 0.19)	0.01 (-0.13, 0.20)	0.00 (-0.13, 0.19)
TAIWAN	-0.09 (-0.25, 0.14)	-0.08 (-0.20, 0.12)	-0.12 (-0.29, 0.09)
THAILAND	-0.27 (-0.42, -0.07)	-0.28 (-0.42, -0.07)	-0.28 (-0.42, -0.07)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. terms	An intercept	A linear time trend
CHINA	0.12 (0.01, 0.26)	0.11 (0.01, 0.25)	0.08 (-0.02, 0.24)
HONG KONG	-0.13 (-0.21, 0.00)	-0.15 (-0.24, 0.00)	-0.21 (-0.32, -0.05)
INDIA	0.00 (-0.11, 0.16)	0.00 (-0.12, 0.16)	-0.01 (-0.14, 0.16)
INDONESIA	-0.06 (-0.19, 0.10)	-0.06 (-0.19, 0.10)	-0.06 (-0.19, 0.10)
MALAYSIA	-0.02 (-0.13, 0.15)	-0.02 (-0.14, 0.15)	-0.08 (-0.22, 0.10)
PHILLIPPINES	-0.09 (-0.25, 0.11)	-0.10 (-0.25, 0.11)	-0.10 (-0.25, 0.11)
SINGAPORE	-0.10 (-0.22, 0.08)	-0.10 (-0.23, 0.08)	-0.18 (-0.35, 0.04)
SOUTH KOREA	0.15 (-0.02, 0.40)	0.15 (-0.02, 0.40)	0.15 (-0.03, 0.40)
TAIWAN	-0.12 (-0.28, 0.10)	-0.12 (-0.31, 0.10)	-0.12 (-0.29, 0.10)
THAILAND	-0.23 (-0.35, -0.07)	-0.25 (-0.36, -0.07)	-0.33 (-0.36, -0.11)

Table 4b: Estimates of d for the return differentials: Industrial sector data (2009M1-2016M8)

i) Returns relative to the US			
	No det. Terms	An intercept	A linear time trend
CHINA	-0.14 (-0.25, 0.03)	-0.14 (-0.26, 0.03)	-0.14 (-0.26, 0.03)
HONG KONG	-0.06 (-0.17, 0.10)	-0.07 (-0.18, 0.10)	-0.10 (-0.23, 0.10)
INDIA	0.08 (-0.04, 0.26)	0.08 (-0.04, 0.25)	0.08 (-0.04, 0.25)
INDONESIA	0.19 (0.07, 0.38)	0.19 (0.07, 0.33)	0.13 (0.00, 0.33)
MALAYSIA	-0.14 (-0.25, 0.04)	-0.16 (-0.29, 0.05)	-0.15 (-0.28, 0.05)
PHILLIPPINES	0.06 (-0.05, 0.23)	0.06 (-0.05, 0.21)	0.05 (-0.22, 0.21)
SINGAPORE	0.06 (-0.04, 0.21)	0.06 (-0.05, 0.21)	-0.05 (-0.09, 0.21)
SOUTH KOREA	-0.03 (-0.13, 0.16)	-0.03 (-0.16, 0.17)	0.03 (-0.21, 0.17)
TAIWAN	-0.03 (-0.14, 0.11)	-0.04 (-0.14, 0.11)	-0.04 (-0.15, 0.11)
THAILAND	-0.01 (-0.16, 0.21)	-0.01 (-0.14, 0.18)	-0.04 (-0.17, 0.18)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	-0.23 (-0.33, -0.07)	-0.24 (-0.36, -0.07)	-0.24 (-0.37, -0.07)
HONG KONG	-0.04 (-0.14, 0.12)	-0.04 (-0.14, 0.12)	-0.10 (-0.24, 0.08)
INDIA	0.07 (-0.07, 0.29)	0.07 (-0.07, 0.28)	0.07 (-0.07, 0.28)
INDONESIA	0.11 (0.01, 0.27)	0.11 (0.01, 0.25)	0.04 (-0.09, 0.21)
MALAYSIA	-0.16 (-0.26, -0.01)	-0.16 (-0.26, -0.01)	-0.19 (-0.31, -0.02)
PHILLIPPINES	0.11 (0.00, 0.28)	0.10 (0.00, 0.27)	0.04 (-0.12, 0.24)
SINGAPORE	0.03 (-0.07, 0.19)	0.03 (-0.07, 0.18)	-0.01 (-0.13, 0.16)
SOUTH KOREA	-0.03 (-0.12, 0.12)	-0.03 (-0.14, 0.12)	-0.05 (-0.18, 0.12)
TAIWAN	-0.08 (-0.16, 0.05)	-0.08 (-0.18, 0.05)	-0.11 (-0.22, 0.03)
THAILAND	0.01 (-0.15, 0.23)	0.01 (-0.12, 0.21)	-0.05 (-0.21, 0.19)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. terms	An intercept	A linear time trend
CHINA	-0.17 (-0.29, -0.21)	-0.16 (-0.26, -0.01)	-0.25 (-0.40, -0.05)
HONG KONG	-0.11 (-0.23, 0.04)	-0.11 (-0.23, 0.04)	-0.12 (-0.24, 0.04)
INDIA	-0.04 (-0.14, 0.13)	-0.04 (-0.15, 0.13)	-0.08 (-0.21, 0.11)
INDONESIA	0.01 (-0.11, 0.17)	0.01 (-0.11, 0.16)	-0.09 (-0.23, 0.11)
MALAYSIA	0.04 (-0.06, 0.20)	0.04 (-0.06, 0.19)	0.00 (-0.12, 0.17)
PHILLIPPINES	-0.05 (-0.16, 0.10)	-0.05 (-0.15, 0.10)	-0.09 (-0.22, 0.08)
SINGAPORE	-0.07 (-0.23, 0.16)	-0.07 (-0.23, 0.17)	-0.08 (-0.24, 0.17)
SOUTH KOREA	-0.04 (-0.20, 0.18)	-0.04 (-0.18, 0.17)	-0.04 (-0.18, 0.17)
TAIWAN	-0.30 (-0.39, -0.17)	-0.29 (-0.39, -0.17)	-0.34 (-0.45, -0.21)
THAILAND	-0.15 (-0.25, 0.04)	-0.16 (-0.29, 0.04)	-0.16 (-0.29, 0.04)

Table 5: Estimates of d for the return differentials: Consumer Goods sector data (2000M1-2016M8)

i) Returns relative to the US			
	No det. terms	An intercept	A linear time trend
CHINA	0.07 (-0.03, 0.21)	0.07 (-0.03, 0.20)	0.04 (-0.07, 0.18)
HONG KONG	0.06 (-0.02, 0.18)	0.06 (-0.02, 0.18)	0.03 (-0.06, 0.16)
INDIA	0.04 (-0.03, 0.14)	0.04 (-0.04, 0.14)	0.04 (-0.04, 0.14)
INDONESIA	0.14 (0.04, 0.27)	0.14 (0.04, 0.27)	0.14 (0.04, 0.27)
MALAYSIA	-0.02 (-0.09, 0.09)	-0.02 (-0.09, 0.09)	-0.02 (-0.10, 0.09)
PHILLIPPINES	0.05 (-0.05, 0.16)	0.05 (-0.05, 0.16)	0.05 (-0.05, 0.16)
SINGAPORE	0.05 (-0.04, 0.16)	0.05 (-0.04, 0.16)	0.00 (-0.12, 0.14)
SOUTH KOREA	0.00 (-0.09, 0.12)	0.00 (-0.09, 0.12)	-0.02 (-0.12, 0.12)
TAIWAN	0.04 (-0.06, 0.16)	0.04 (-0.06, 0.16)	0.04 (-0.06, 0.16)
THAILAND	0.08 (-0.01, 0.20)	0.08 (-0.01, 0.19)	0.07 (-0.02, 0.19)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	0.03 (-0.05, 0.14)	0.03 (-0.05, 0.13)	0.01 (-0.07, 0.11)
HONG KONG	0.04 (-0.03, 0.14)	0.04 (-0.03, 0.14)	0.03 (-0.05, 0.13)
INDIA	0.06 (-0.04, 0.18)	0.06 (-0.04, 0.18)	0.06 (-0.04, 0.19)
INDONESIA	0.14 (0.04, 0.28)	0.14 (0.04, 0.28)	0.14 (0.04, 0.28)
MALAYSIA	0.05 (-0.03, 0.15)	0.05 (-0.03, 0.15)	0.05 (-0.03, 0.15)
PHILLIPPINES	0.08 (0.00, 0.19)	0.08 (0.00, 0.19)	0.08 (0.00, 0.19)
SINGAPORE	0.03 (-0.04, 0.17)	0.05 (-0.04, 0.17)	0.02 (-0.09, 0.16)
SOUTH KOREA	0.03 (-0.05, 0.15)	0.03 (-0.05, 0.15)	0.03 (-0.06, 0.15)
TAIWAN	-0.01 (-0.10, 0.09)	-0.01 (-0.10, 0.09)	-0.01 (-0.10, 0.09)
THAILAND	0.13 (0.04, 0.24)	0.13 (0.04, 0.24)	0.12 (0.04, 0.24)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. terms	An intercept	A linear time trend
CHINA	0.11 (0.02, 0.22)	0.11 (0.02, 0.22)	0.10 (0.01, 0.21)
HONG KONG	-0.07 (-0.15, 0.03)	-0.07 (-0.15, 0.03)	-0.09 (-0.17, 0.02)
INDIA	0.03 (-0.07, 0.15)	0.03 (-0.07, 0.15)	0.03 (-0.07, 0.15)
INDONESIA	0.04 (-0.08, 0.22)	0.05 (-0.09, 0.22)	0.04 (-0.09, 0.22)
MALAYSIA	0.05 (-0.02, 0.15)	0.05 (-0.02, 0.15)	0.05 (-0.02, 0.15)
PHILLIPPINES	0.14 (0.03, 0.28)	0.14 (0.03, 0.28)	0.13 (0.02, 0.28)
SINGAPORE	-0.03 (-0.12, 0.10)	-0.03 (-0.12, 0.10)	-0.06 (-0.17, 0.08)
SOUTH KOREA	-0.02 (-0.12, 0.12)	-0.02 (-0.12, 0.12)	-0.02 (-0.12, 0.12)
TAIWAN	-0.02 (-0.10, 0.09)	-0.02 (-0.10, 0.09)	-0.06 (-0.16, 0.07)
THAILAND	0.07 (-0.02, 0.19)	0.07 (-0.02, 0.19)	0.07 (-0.02, 0.19)

Table 6a: Estimates of d for the return differentials: Consumer Goods sector data (2000M1-2007M12)

i) Returns relative to the US			
	No det. Terms	An intercept	A linear time trend
CHINA	0.05 (-0.09, 0.27)	0.05 (-0.09, 0.25)	0.03 (-0.11, 0.25)
HONG KONG	-0.08 (-0.20, 0.10)	-0.07 (-0.22, 0.10)	-0.06 (-0.24, 0.09)
INDIA	0.05 (-0.04, 0.20)	0.05 (-0.05, 0.21)	0.05 (-0.05, 0.20)
INDONESIA	0.12 (-0.01, 0.31)	0.13 (-0.01, 0.31)	0.10 (-0.04, 0.30)
MALAYSIA	-0.06 (-0.17, 0.09)	-0.06 (-0.17, 0.09)	-0.07 (-0.18, 0.07)
PHILLIPPINES	0.01 (-0.11, 0.17)	0.01 (-0.11, 0.17)	0.00 (-0.13, 0.16)
SINGAPORE	-0.09 (-0.19, 0.10)	-0.10 (-0.24, 0.11)	-0.12 (-0.27, 0.10)
SOUTH KOREA	-0.04 (-0.18, 0.19)	-0.04(-0.19, 0.19)	-0.03(-0.19, 0.21)
TAIWAN	0.03 (-0.09, 0.18)	0.03 (-0.09, 0.18)	0.01 (-0.10, 0.18)
THAILAND	0.02 (-0.09, 0.18)	0.02 (-0.09, 0.18)	-0.02 (-0.15, 0.18)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	0.04 (-0.07, -0.19)	0.03 (-0.07, -0.18)	0.01 (-0.10, -0.17)
HONG KONG	0.01 (-0.11, 0.18)	0.01 (-0.11, 0.18)	0.02 (-0.11, 0.18)
INDIA	0.06 (-0.05, 0.22)	0.07 (-0.05, 0.23)	0.08 (-0.04, 0.24)
INDONESIA	0.21 (0.04, 0.46)	0.21 (0.04, 0.46)	0.21 (0.03, 0.46)
MALAYSIA	0.04 (-0.08, 0.20)	0.04 (-0.08, 0.20)	0.04 (-0.07, 0.20)
PHILLIPPINES	-0.02 (-0.13, 0.14)	-0.02 (-0.13, 0.14)	-0.07 (-0.22, 0.12)
SINGAPORE	0.03 (-0.14, 0.26)	0.03 (-0.15, 0.26)	0.03 (-0.14, 0.26)
SOUTH KOREA	-0.03 (-0.18, 0.20)	-0.03 (-0.18, 0.20)	-0.02 (-0.17, 0.23)
TAIWAN	0.00 (-0.12, 0.17)	0.00 (-0.12, 0.17)	0.00 (-0.12, 0.16)
THAILAND	0.05 (-0.04, 0.17)	0.05 (-0.04, 0.17)	0.00 (-0.11, 0.15)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. terms	An intercept	A linear time trend
CHINA	0.15 (0.04, 0.27)	0.14 (0.04, 0.30)	0.12 (0.01, 0.29)
HONG KONG	-0.11 (-0.21, 0.03)	-0.11 (-0.21, 0.03)	-0.13 (-0.24, 0.02)
INDIA	0.00 (-0.12, 0.15)	0.00 (-0.12, 0.15)	0.00 (-0.12, 0.16)
INDONESIA	0.08 (-0.09, 0.34)	0.09 (-0.10, 0.34)	0.08 (-0.11, 0.34)
MALAYSIA	-0.03 (-0.15, 0.14)	-0.03 (-0.16, 0.14)	-0.03 (-0.16, 0.15)
PHILLIPPINES	0.09 (-0.03, 0.28)	0.10 (-0.03, 0.29)	0.01 (-0.16, 0.24)
SINGAPORE	-0.09 (-0.27, 0.16)	-0.09 (-0.27, 0.16)	-0.09 (-0.30, 0.15)
SOUTH KOREA	-0.02 (-0.15, 0.16)	-0.02 (-0.15, 0.16)	-0.05 (-0.22, 0.17)
TAIWAN	-0.01 (-0.15, 0.17)	-0.01 (-0.15, 0.17)	-0.01 (-0.15, 0.18)
THAILAND	0.09 (-0.01, 0.24)	0.09 (-0.01, 0.24)	-0.03 (-0.17, 0.19)

Table 6b: Estimates of d for the return differentials: Consumer Goods sector data (2008M1-2016M8)

i) Returns relative to the US			
	No det. Terms	An intercept	A linear time trend
CHINA	0.15 (0.00, 0.36)	0.14 (0.00, 0.34)	0.07 (-0.08, 0.30)
HONG KONG	0.18 (-0.05, 0.38)	0.18 (0.05, 0.36)	0.10 (-0.04, 0.31)
INDIA	-0.10 (-0.28, 0.11)	-0.09 (-0.24, 0.11)	-0.11 (-0.26, 0.10)
INDONESIA	0.17 (0.04, 0.35)	0.15 (0.04, 0.31)	0.09 (-0.04, 0.31)
MALAYSIA	0.05 (-0.06, 0.22)	0.05 (-0.0, 0.22)	0.01 (-0.13, 0.21)
PHILLIPPINES	0.08 (-0.04, 0.25)	0.07 (-0.04, 0.24)	0.04 (-0.10, 0.23)
SINGAPORE	0.06 (-0.04, 0.19)	0.06 (-0.04, 0.19)	0.04 (-0.06, 0.18)
SOUTH KOREA	0.07(0.03, 0.21)	0.07(-0.03, 0.2)	0.01 (-0.10, 0.16)
TAIWAN	0.12 (-0.05, 0.36)	0.11 (-0.05, 0.33)	0.08 (-0.10, 0.32)
THAILAND	0.13 (0.03, 0.28)	0.12 (0.03, 0.27)	0.05 (-0.07, 0.22)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	0.12 (-0.01, 0.31)	0.11 (-0.01, 0.29)	0.02 (-0.14, 0.24)
HONG KONG	0.08 (-0.03, 0.26)	0.08 (-0.03, 0.24)	-0.01 (-0.15, 0.19)
INDIA	0.06 (-0.12, 0.30)	0.06 (-0.12, 0.30)	0.04 (-0.14, 0.30)
INDONESIA	0.13 (0.02, 0.30)	0.12 (0.02, 0.28)	0.08 (-0.04, 0.26)
MALAYSIA	0.06 (-0.05, 0.21)	0.06 (-0.05, 0.21)	0.03 (-0.08, 0.20)
PHILLIPPINES	0.14 (0.03, 0.29)	0.13 (0.03, 0.29)	0.11 (-0.01, 0.27)
SINGAPORE	0.07 (-0.03, 0.22)	0.07 (-0.03, 0.22)	0.05 (-0.06, 0.21)
SOUTH KOREA	0.11 (0.01, 0.25)	0.11(0.02, 0.25)	0.08(-0.01, 0.23)
TAIWAN	0.01 (-0.12, 0.19)	0.01 (-0.12, 0.19)	-0.04 (-0.19, 0.17)
THAILAND	0.24 (0.11, 0.45)	0.23 (0.11, 0.43)	0.21 (0.06, 0.43)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. terms	An intercept	A linear time trend
CHINA	0.01 (-0.14, 0.23)	0.01 (-0.13, 0.22)	-0.01 (-0.16, 0.20)
HONG KONG	0.01 (-0.12, 0.19)	0.01 (-0.12, 0.20)	0.01 (-0.12, 0.19)
INDIA	0.13 (0.01, 0.33)	0.14 (0.02, 0.33)	0.07 (0.08, 0.30)
INDONESIA	-0.14 (-0.31, 0.11)	-0.13 (-0.28, 0.11)	-0.13 (-0.31, 0.13)
MALAYSIA	0.17 (0.06, 0.33)	0.16 (0.06, 0.32)	0.12 (0.00, 0.30)
PHILLIPPINES	0.09 (-0.08, 0.32)	0.09 (-0.09 0.31)	0.09 (-0.08 0.32)
SINGAPORE	-0.09 (-0.19, 0.06)	-0.08 (-0.18, 0.06)	-0.14 (-0.26, 0.03)
SOUTH KOREA	-0.13 (-0.26, 0.04)	-0.13 (-0.25, 0.04)	-0.13 (-0.25, 0.04)
TAIWAN	-0.14 (-0.23, 0.00)	-0.15 (-0.24, 0.00)	-0.23 (-0.36, -0.05)
THAILAND	0.01 (-0.14, 0.22)	0.01 (-0.13, 0.21)	-0.03 (-0.19, 0.21)

Table 7. Estimates of d for the return differentials: Financial sector data (2000M1-2016M8)

i) Returns relative to the US			
	No det. terms	An intercept	A linear time trend
CHINA	-0.03 (-0.11, 0.07)	-0.03 (-0.11, 0.07)	-0.06 (-0.14, 0.05)
HONG KONG	-0.07 (-0.14, 0.02)	-0.07 (-0.14, 0.02)	-0.08 (-0.15, 0.02)
INDIA	0.02 (-0.08, 0.15)	0.02 (-0.07, 0.15)	0.01 (-0.09, 0.14)
INDONESIA	0.13 (0.05, 0.23)	0.13 (0.05, 0.24)	0.13 (0.05, 0.24)
MALAYSIA	0.07 (-0.02, 0.20)	0.07 (-0.02, 0.20)	0.08 (-0.02, 0.21)
PHILLIPPINES	0.01 (-0.07, 0.12)	0.01 (-0.07, 0.12)	0.00 (-0.08, 0.11)
SINGAPORE	-0.02 (-0.08, 0.07)	-0.02 (-0.09, 0.07)	-0.02 (-0.09, 0.07)
SOUTH KOREA	0.01 (-0.07, 0.12)	0.01 (-0.07, 0.12)	0.00 (-0.08, 0.11)
TAIWAN	-0.03 (-0.13, 0.11)	-0.03 (-0.13, 0.11)	-0.03 (-0.13, 0.11)
THAILAND	-0.04 (-0.12, 0.06)	-0.04 (-0.12, 0.06)	-0.05 (-0.12, 0.06)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	0.03 (-0.04, 0.13)	0.03 (-0.04, 0.13)	0.01 (-0.08, 0.11)
HONG KONG	0.00 (-0.09, 0.13)	0.00 (-0.09, 0.13)	-0.01 (-0.11, 0.11)
INDIA	0.09 (-0.02, 0.23)	0.09 (-0.02, 0.23)	0.08 (-0.04, 0.22)
INDONESIA	0.09 (0.01, 0.21)	0.09 (0.01, 0.21)	0.09 (0.01, 0.21)
MALAYSIA	0.05 (-0.03, 0.16)	0.05 (-0.03, 0.16)	0.05 (-0.03, 0.16)
PHILLIPPINES	0.05 (-0.03, 0.13)	0.05 (-0.03, 0.13)	0.05 (-0.03, 0.13)
SINGAPORE	0.03 (-0.06, 0.15)	0.03 (-0.06, 0.15)	0.02 (-0.06, 0.14)
SOUTH KOREA	0.00 (-0.09, 0.12)	0.00 (-0.09, 0.12)	-0.01 (-0.11, 0.11)
TAIWAN	-0.04 (-0.13, 0.08)	-0.04 (-0.13, 0.08)	-0.04 (-0.13, 0.08)
THAILAND	-0.01 (-0.11, 0.10)	-0.01 (-0.11, 0.10)	-0.01 (-0.11, 0.10)
iii) Returns relative to the regional index for Asia (excluding Japan)			
	No det. terms	An intercept	A linear time trend
CHINA	0.05 (-0.03, 0.15)	0.05 (-0.03, 0.15)	0.04 (-0.04, 0.14)
HONG KONG	-0.06 (-0.13, 0.04)	-0.06 (-0.13, 0.04)	-0.06 (-0.13, 0.04)
INDIA	-0.06 (-0.17, 0.08)	-0.06 (-0.15, 0.07)	-0.06 (-0.18, 0.07)
INDONESIA	0.06 (-0.01, 0.21)	0.08 (-0.01, 0.21)	0.07 (-0.05, 0.19)
MALAYSIA	0.04 (-0.05, 0.16)	0.04 (-0.05, 0.16)	0.03 (-0.06, 0.15)
PHILLIPPINES	-0.04 (-0.12, 0.07)	-0.04 (-0.12, 0.07)	-0.09 (-0.20, 0.04)
SINGAPORE	-0.08 (-0.20, 0.10)	-0.08 (-0.20, 0.10)	-0.08 (-0.22, 0.10)
SOUTH KOREA	-0.03 (-0.13, 0.10)	-0.04 (-0.13, 0.10)	-0.04 (-0.14, 0.10)
TAIWAN	-0.12 (-0.21, 0.00)	-0.12 (-0.21, 0.00)	-0.14 (-0.24, 0.00)
THAILAND	-0.16 (-0.23, -0.07)	-0.16 (-0.23, -0.07)	-0.20 (-0.23, -0.10)

Table 8a. Estimates of d for the return differentials: Financial sector data (2000M1-2007M12)

i) Returns relative to the US			
	No det. Terms	An intercept	A linear time trend
CHINA	0.02 (-0.10, 0.17)	0.02 (-0.10, 0.17)	0.02 (-0.09, 0.17)
HONG KONG	-0.05 (-0.17, 0.14)	-0.05 (-0.18, 0.14)	-0.12 (-0.29, 0.12)
INDIA	0.04 (-0.09, 0.23)	0.04 (-0.11, 0.23)	0.00 (-0.16, 0.21)
INDONESIA	0.14 (0.01, 0.30)	0.13 (0.01, 0.30)	0.03 (-0.10, 0.24)
MALAYSIA	0.11 (-0.03, 0.32)	0.11 (-0.03, 0.32)	0.07 (-0.09, 0.34)
PHILLIPPINES	0.00 (-0.11, 0.14)	0.00 (-0.11, 0.14)	-0.16 (-0.32, 0.05)
SINGAPORE	-0.01 (-0.10, 0.12)	-0.01 (-0.11, 0.12)	-0.17 (-0.29, 0.01)
SOUTH KOREA	0.01 (-0.12, 0.19)	0.01 (-0.12, 0.19)	0.00 (-0.14, 0.18)
TAIWAN	-0.08 (-0.23, 0.14)	-0.07 (-0.22, 0.14)	-0.10 (-0.25, 0.13)
THAILAND	-0.09 (-0.21, 0.09)	-0.09 (-0.20, 0.09)	-0.11 (-0.23, 0.06)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	0.10 (-0.01, 0.26)	0.09 (-0.01, 0.26)	0.09 (-0.02, 0.26)
HONG KONG	0.07 (-0.10, 0.31)	0.07 (-0.09, 0.21)	0.07 (-0.09, 0.31)
INDIA	0.06 (-0.09, 0.26)	0.06 (-0.09, 0.26)	0.06 (-0.09, 0.25)
INDONESIA	0.13 (-0.02, 0.33)	0.13 (-0.02, 0.33)	0.06 (-0.09, 0.29)
MALAYSIA	0.05 (-0.06, 0.20)	0.05 (-0.06, 0.21)	0.05 (-0.06, 0.22)
PHILLIPPINES	-0.02 (-0.15, 0.16)	-0.02 (-0.15, 0.16)	-0.04 (-0.17, 0.15)
SINGAPORE	0.03 (-0.12, 0.27)	0.03 (-0.12, 0.27)	0.03 (-0.12, 0.27)
SOUTH KOREA	0.01 (-0.14, 0.24)	0.01 (-0.14, 0.24)	0.02 (-0.13, 0.24)
TAIWAN	-0.04 (-0.18, 0.16)	-0.04 (-0.18, 0.16)	-0.04 (-0.18, 0.16)
THAILAND	-0.10 (-0.23, 0.08)	-0.10 (-0.23, 0.08)	-0.10 (-0.23, 0.08)
iii) Returns relative to the Asia (excluding Japan)			
	No det. terms	An intercept	A linear time trend
CHINA	0.08 (-0.03, 0.21)	0.07 (-0.03, 0.21)	0.06 (-0.04, 0.21)
HONG KONG	-0.02 (-0.11, 0.13)	-0.02 (-0.12, 0.13)	-0.12 (-0.25, 0.06)
INDIA	-0.03 (-0.20, 0.18)	-0.03 (-0.19, 0.18)	-0.03 (-0.19, 0.18)
INDONESIA	0.12 (-0.03, 0.33)	0.11 (-0.03, 0.33)	0.06 (-0.11, 0.31)
MALAYSIA	0.08 (-0.08, 0.31)	0.08 (-0.08, 0.31)	0.07 (-0.08, 0.30)
PHILLIPPINES	-0.07 (-0.23, 0.15)	-0.06 (-0.22, 0.15)	-0.08 (-0.26, 0.15)
SINGAPORE	-0.03 (-0.21, 0.21)	-0.03 (-0.21, 0.21)	-0.02 (-0.20, 0.21)
SOUTH KOREA	0.01 (-0.11, 0.18)	0.01 (-0.11, 0.18)	0.01 (-0.11, 0.18)
TAIWAN	-0.12 (-0.23, 0.07)	-0.13 (-0.26, 0.07)	-0.18 (-0.35, 0.07)
THAILAND	-0.23 (-0.35, -0.07)	-0.23 (-0.33, -0.07)	-0.25 (-0.37, -0.07)

Table 8b: Estimates of d for the return differentials: Financial sector data (2009M1-2016M12)

i) Returns relative to the US			
	No det. Terms	An intercept	A linear time trend
CHINA	-0.20 (-0.31, -0.04)	-0.22 (-0.34, -0.05)	-0.24 (-0.36, -0.06)
HONG KONG	-0.13 (-0.25, 0.06)	-0.14 (-0.27, 0.06)	-0.19 (-0.35, 0.04)
INDIA	0.01 (-0.12, 0.21)	0.01 (-0.12, 0.21)	0.01 (-0.12, 0.21)
INDONESIA	0.11 (-0.05, 0.35)	0.11 (-0.05, 0.33)	0.08 (-0.10, 0.34)
MALAYSIA	-0.03 (-0.13, 0.13)	-0.03 (-0.13, 0.13)	-0.11 (-0.25, 0.10)
PHILLIPPINES	-0.05 (-0.19, 0.14)	-0.05 (-0.18, 0.13)	-0.06 (-0.20, 0.14)
SINGAPORE	-0.08 (-0.18, 0.06)	-0.08 (-0.18, 0.06)	-0.14 (-0.25, 0.02)
SOUTH KOREA	-0.07 (-0.17, 0.07)	-0.08 (-0.18, 0.07)	-0.09 (-0.20, 0.07)
TAIWAN	-0.13 (-0.24, 0.03)	-0.13 (-0.25, 0.03)	-0.14 (-0.26, 0.02)
THAILAND	-0.04 (-0.16, 0.15)	-0.04 (-0.15, 0.14)	-0.14 (-0.30, 0.09)
ii) Returns relative to Japan			
	No det. Terms	An intercept	A linear time trend
CHINA	-0.09 (-0.19, 0.07)	-0.08 (-0.19, 0.06)	-0.11 (-0.23, 0.06)
HONG KONG	0.03 (-0.09, 0.20)	0.03 (-0.08, 0.20)	0.00 (-0.13, 0.18)
INDIA	0.17 (0.03, 0.38)	0.17 (0.03, 0.37)	0.16 (0.02, 0.37)
INDONESIA	0.05 (-0.06, 0.21)	0.05 (-0.05, 0.19)	0.02 (-0.10, 0.18)
MALAYSIA	0.05 (-0.05, 0.19)	0.05 (-0.04, 0.19)	0.01 (-0.11, 0.16)
PHILLIPPINES	0.03 (-0.08, 0.19)	0.03 (-0.08, 0.18)	0.02 (-0.10, 0.18)
SINGAPORE	0.07 (-0.03, 0.21)	0.07 (-0.03, 0.20)	0.04 (-0.07, 0.19)
SOUTH KOREA	0.02 (-0.08, 0.16)	0.02 (-0.08, 0.15)	0.00 (-0.10, 0.15)
TAIWAN	-0.08 (-0.17, 0.06)	-0.07 (-0.17, 0.06)	-0.10 (-0.21, 0.04)
THAILAND	0.08 (-0.03, 0.26)	0.07 (-0.03, 0.24)	0.03 (-0.10, 0.22)
iii) Returns relative to the Asia (excluding Japan)			
	No det. terms	Anintercept	A linear time trend
CHINA	-0.28 (-0.41, -0.09)	-0.27 (-0.36, -0.08)	-0.32 (-0.4, -0.10)
HONG KONG	-0.12 (-0.25, 0.06)	-0.12 (-0.24, 0.06)	-0.14 (-0.26, 0.05)
INDIA	-0.10 (-0.24, 0.07)	-0.11 (-0.25, 0.08)	-0.15 (-0.29, 0.07)
INDONESIA	-0.20 (-0.39, 0.05)	-0.18 (-0.33, 0.05)	-0.22 (-0.40, 0.04)
MALAYSIA	0.07 (-0.04, 0.23)	0.07 (-0.03, 0.22)	0.04 (-0.08, 0.20)
PHILLIPPINES	-0.13 (-0.23, 0.01)	-0.15 (-0.27, -0.05)	-0.16 (-0.27, 0.00)
SINGAPORE	-0.30 (-0.46, -0.05)	-0.31 (-0.50, -0.01)	-0.29 (-0.47, -0.01)
SOUTH KOREA	-0.25 (-0.40, -0.01)	-0.24 (-0.40, -0.01)	-0.27 (-0.44, -0.01)
TAIWAN	-0.27 (-0.37, -0.11)	-0.26 (-0.35, -0.11)	-0.31 (-0.46, -0.12)
THAILAND	-0.16 (-0.30, 0.05)	-0.14 (-0.26, 0.05)	-0.29 (-0.40, -0.01)

Table 9: Estimates comparison across subsamples for the Aggregate data

Aggregate Data						
	Against US		Against Japan		Against Asia regional index	
	1 st subs.	2 nd subs.	1 st subs.	2 nd subs.	1 st subs.	2 nd subs.
CHINA	0.07	-0.04	0.11	-0.14	0.10	-0.06
HONG KONG	-0.26	-0.12	0.03	-0.06	-0.16	-0.10
INDIA	-0.20	0.02	-0.15	0.10	-0.33	-0.06
INDONESIA	-0.02	0.13	0.00	0.10	-0.09	-0.17
MALAYSIA	-0.03	-0.13	0.01	-0.03	-0.09	0.10
PHILLIPPINES	-0.22	-0.06	-0.19	0.05	-0.09	-0.11
SINGAPORE	-0.11	0.06	-0.03	0.05	-0.09	-0.23
SOUTH KOREA	0.03	-0.07	-0.02	0.05	0.07	-0.17
TAIWAN	-0.11	-0.05	-0.14	-0.01	-0.14	-0.55
THAILAND	-0.07	-0.16	-0.07	0.02	-0.14	-0.23

Table 10: Estimates comparison across subsamples for the Industrials sector

Industrial sector						
	Against US		Against Japan		Against Asia	
	1 st subs.	2 nd subs.	1 st subs.	2 nd subs.	1 st subs.	2 nd subs.
CHINA	-0.02	-0.14	0.07	-0.24	0.12	-0.25
HONG KONG	-0.36	-0.10	-0.08	0.10	-0.21	-0.11
INDIA	-0.07	0.08	-0.07	0.07	-0.01	-0.04
INDONESIA	-0.13	0.13	0.01	0.04	-0.06	-0.09
MALAYSIA	-0.05	-0.16	0.07	-0.16	-0.08	0.04
PHILLIPPINES	-0.26	0.05	-0.13	0.04	-0.09	-0.05
SINGAPORE	-0.13	-0.05	-0.05	-0.01	-0.18	-0.07
SOUTH KOREA	0.05	0.03	0.01	-0.03	0.15	-0.04
TAIWAN	0.00	.03	-0.09	-0.08	-0.12	-0.30
THAILAND	-0.24	-0.04	-0.27	-0.05	-0.33	-0.16

Table 11. Estimate comparison across subsamples for the Consumer Goods sector

Consumption sector						
	Against US		Against Japan		Against Asia	
	1 st subs.	2 nd subs.	1 st subs.	2 nd subs.	1 st subs.	2 nd subs.
CHINA	0.05	0.07	0.03	0.02	0.15	0.01
HONG KONG	-0.07	0.10	0.01	-0.01	-0.11	0.01
INDIA	0.05	-0.09	0.06	0.06	0.00	0.07
INDONESIA	0.12	0.17	0.21	0.08	0.08	-0.13
MALAYSIA	-0.06	0.01	0.04	0.06	-0.03	0.17
PHILLIPPINES	0.01	0.08	-0.02	0.14	0.01	0.09
SINGAPORE	-0.10	0.04	0.03	0.07	-0.09	-0.14
SOUTH KOREA	-0.04	0.01	-0.03	0.11	-0.02	-0.13
TAIWAN	0.03	0.12	0.00	0.01	-0.01	-0.23
THAILAND	0.02	0.05	0.05	0.24	-0.03	0.01

Table 12. Estimate comparison across subsamples for the Financial sector

Financial sector						
	Against US		Against Japan		Against Asia	
	1 st subs.	2 nd subs.	1 st subs.	2 nd subs.	1 st subs.	2 nd subs.
CHINA	0.02	-0.20	0.10	-0.09	0.08	-0.28
HONG KONG	-0.12	-0.19	0.07	0.03	-0.12	-0.12
INDIA	0.00	0.01	0.06	0.17	-0.03	-0.10
INDONESIA	0.03	0.11	0.06	0.05	0.06	-0.18
MALAYSIA	0.11	-0.11	0.05	0.01	0.08	0.07
PHILLIPPINES	-0.16	-0.06	-0.02	0.03	-0.07	-0.15
SINGAPORE	-0.17	-0.14	0.03	0.07	-0.03	-0.31
SOUTH KOREA	0.01	-0.09	0.01	0.02	0.01	-0.24
TAIWAN	-0.08	-0.13	-0.04	-0.07	-0.18	-0.27
THAILAND	-0.09	-0.14	-0.10	0.03	-0.23	-0.29

Figure 1. Stock market index for Asia (MSCI AC Asian Index) (1996M10-2016M8)



Note: Countries in the MSCI AC Asian Index include: China, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand.