DO DIFFERENT SECTORS AFFECT EQUITY RISK PREMIUMS IN EMERGING MARKETS? EVIDENCE FROM ASIA

1. Ali Fayyaz Munir
Department of Commerce and Finance, Government College University Lahore, Pakistan.

2.Naveed ul Hassan
Department of Commerce and Finance, Government College University Lahore, Pakistan.

3.*Ali Raza Elahi
Department of Commerce and Finance, Government College University Lahore, Pakistan.

4. Safyan Majid
Department of Commerce and Finance, Government College University Lahore, Pakistan.

ABSTRACT

This paper explores intricacies of the higher equity risk premia of emerging Asian economies within the context of industrial composition. The conventional ex-post empirical analysis is executed to scrutinize the impact of industries on the country's stock performance, diverging from the contemporary literature on finance, which was restricted to "total market indexes." By utilizing the DataStream's Total Return Indices (TRIs) data of emerging market industries, this study highlights the contribution of various industries towards higher equity risk premiums across prominent Asian emerging countries. The study unearths several salient empirical findings. Primarily, the study confirms the "high-volatile high-performance nature" in conjunction with the time-varying dynamics of excess returns for emerging markets at the industry level. Secondly, the study's findings identify the industries accountable for the most significant contribution to higher stock premia of emerging markets at both the country and dynamic context levels. Thirdly, we observe that certain industries demonstrate greater exposure to global factors than others. It is, therefore, argued that these observations provide a crucial indication for international portfolio diversification. The investigation of diversification opportunities due to the impact of global factors on country indexes, and the existence of some industries that offer little but advantageous insurance components provide valuable insights for the higher equity premia of emerging markets. The overall study findings suggest that foreign portfolio investors must not only diversify across countries but also across industries to generate augmented returns in emerging stock markets.

Keywords: Emerging Stock Premia; Industrial Excess Returns; Time-dependent Performances; Asian Emerging Markets

https://doi.org/10.56249/ijbr.03.01.45
* Corresponding author.
E-mail address: alirazaelahi@gcu.edu.pk (Ali Raza Elahi)

1 Introduction

The Equity Risk Premium (ERP) is undoubtedly one of the most significant and commonly used components in various economic and finance models. It is a vital element in corporate finance, asset pricing and other fields of finance. While the ERP's value and utility is unambiguous, attempts to empirically measure the ERP have faced several challenges. Most of the empirical studies provide ERP estimation results based mainly on United States, and sporadically in more advanced economies. However, the above stated problems mostly depend on the unavailability of the data in relatively “exotic” or “younger” equity markets. For instance, data is available on the U.S. equity market as of 1871. On the contrary, the time series data on emerging equity markets in only available from 80's. A major theoretical finding in economic literature, focusing on the U.S. market, shows that the long-term average ERP exceeds its expected level and does not reflect what the theory of equilibrium predicts. Mehra and Prescott (1985) and Mehra (2003) reveal that the ERP exceeded 6 per cent per annum for the United States during the period 1889-1978. On this field of research, Benartzi and Thaler (1995) and Campbell and Cochrane (1999) argue that high ERP is a mandatory condition to encourage agents to invest in equity markets. What about the risk premia of emerging markets?

The studies on the dynamic nature of emerging stock premia has gained significant attention in the recent financial literature (see e.g., Bekaert & Harvey, 1995, 1997; Bekaert et al., 1998; Bekaert & Harvey, 2000; Salomons & Grootveld, 2003; de Jong & de Roon, 2005; Donadelli & Prosperi, 2011, 2012; Bai & Green, 2020; Damodaran, 2020) with the common observation being that the emerging stock markets recompense investors with higher returns and offer better diversification advantage (see e.g., Claessens et al., 1995; Barry et al., 1997). Given that the emerging markets are supposed to be extra risky, while the investors require more compensation for bearing the extra risk. In line with this last statement, Salomons and Grootveld (2003) find that equity risk premium in emerging markets is significantly higher than in developed markets. They also claim that the extent to which emerging stock markets reward investors varies through time. The current literature now focuses on the influence of global integration process on excess returns in emerging markets. The existing literature provides evidence of a positive and strong comovement between real economic cycles and international stock markets (see e.g., Bekaert et al., 1998; Bekaert & Harvey, 2000; Henry, 2000; Donadelli & Prosperi, 2011; Boubakri et al., 2016; Sharma et al., 2019). However, how emerging markets have been able to achieve such

returns while being heavily exposed to international cycles is yet to establish in the literature. We attempt to fill this gap in literature by providing an ex-post empirical analysis on industry-by-industry and on macro-areas equity premia in emerging market context.

It can be proclaimed based on some limited studies that the performances of emerging industries confer an advantage in generating excess premia, providing the benefits of portfolio diversification and preserving the consumption smoothing motive of households (Griffin & Andrew Karolyi, 1998; Campa & Fernandes, 2006; Miguel Almeida Ferreira & Ferreira, 2006; Baele & Inghelbrecht, 2009; Bai et al., 2012; Azeem et al., 2018). This paper sought to enhance the existing literature on a similar subject in two ways. Firstly, the study provides a novel verifiable viewpoint based on unique dataset of industries in emerging economies, which is contrary to numerous empirical studies that usually employ the "Total Market Indexes". Similarly, "Industry Indices" are used to analyse the dynamic performances of emerging excess returns at the country level. The industry-based analysis subsequently provides information on the origin of the observed emerging stock premia. Secondly, the significance of the observed findings is explained in the context of mean-variance analysis of portfolio diversification and consumption-based capital asset pricing model (CCAPM). As expected, the study findings reveal that the industries in emerging economies are globally integrated, while emerging stocks in some countries and certain industries confer diversification benefits and allow consumption smoothing motive consistent with recent literature (De Nicolò & Juvenal, 2014; Bai & Green, 2020).

The overall findings of this study have two important implications. Firstly, we discover that that certain industrial investments offer a constant portfolio diversification advantage across countries. For example, the emerging industries such as Technology, Consumer Services, and Health Care sectors in the recent technological era offer an innovative portfolio composition than recommended by the simple country-targeted analysis. Secondly, the heterogeneity of industries' exposure to the global market factors is also established. This paper makes a significant contribution to our knowledge of the increased equity risk premia in prominent emerging Asian economies, especially by exploring the complex link between stock performance and industrial mix. Rather than following the traditional focus on "total market indexes, "the study conducts a comprehensive ex-post empirical examination using data from DataStream's Total Return Indices (TRIs). The results show a strong correlation between industries and the higher stock risk

premiums seen in well-known Asian developing nations. The study highlights the dynamics of excess returns over time and highlights the high-volatile, high-performance nature of developing markets at the industry level. Additionally, it identifies particular industries that have made the most contributions to increasing stock premia at the national and dynamic context levels. The identification of industries that are more susceptible to global forces than others emphasizes how important it is to diversify your portfolio internationally. Essentially, the study emphasizes how important it is for international portfolio investors hoping to increase their returns in emerging stock markets to diversify their holdings across industries as well as between nations.

The subsequent sections of the paper are organized in the following manner. Literature review is provided in Section two. Section three reports the data and methodology used in this study along with the empirical results relating to some stylized facts about international excess stock returns, fundamental work representing the results and figures of time-varying industry-by-industry return spread analysis, the Capital Asset Pricing Model (CAPM) based estimations of the country-wise industry average spread, and finally the global integration impact on higher emerging market premia with emphasis on international stock market cycles and co-movements. Finally, Section four provides conclusions and policy recommendations.

2 Literature Review

Much of the latest literature relating to emerging stock market returns focused on the relative significance of country versus industry impacts. The notion that country influences appear to overshadow sector impacts (i.e. the diversification with cross-country portfolios is more advantageous in a risk-return setting than cross-industry) is backed by a significant part of recent literature (Campbell et al., 2001; Miguel A. Ferreira & Gama, 2005; Bai & Green, 2010; Munir et al., 2020). The last decade witnessed an increasing attention towards understanding the important factors that interpret the changing nature of emerging stock returns with few studies dedicated to the observation of cross-country dynamics of industries' returns. Therefore, this paper sought to investigate the significance of industries' performance in understanding the higher stock premia of emerging markets. Although, there exist many empirical findings in recent literature but those are mostly found to be deficient due to limited observations or wholesome observation of the market index.

Roll (1992) observed the importance of the industry component, suggesting the correlation of stocks of the same industries but different countries. Therefore, it is glaring that a relationship exists between countries with comparable industry composition of equity markets; in other words, industry composition is vital in understanding the stock market association. In contrast, Serra (2000) identified country-specific factors as the main stimulant responsible for the changing state of individual stock returns of an emerging market, while the industry composition of indices do not affect the cross-market correlations. She claims that geographical portfolio diversification dominates domestic industrial portfolio diversification in context of risk mitigation. This is further supported by Ang et al. (2009) whose study revealed that the cross-market correlation was unaffected by industrial composition, but rather by country effects. In other sense, the country-specific variables determine the indices in emerging markets and the correlation across markets is not influenced by the industry composition of indices. Their position was further justified by the observation of the non-correlation between future average returns and lagged idiosyncratic volatility across a wide sample of global developed markets. Similarly, it was discovered that there was no significant difference between negative spread in returns of stocks with high and low idiosyncratic volatility in international markets and the U.S. stocks, resulting in the conclusion of the non-effect of diversifiable factors.

Contrary to above discussion about country effects, Cavaglia et al. (2000) found that industry variables were more relevant than country variables during 1990s, indicating that diversification across sectors could mitigate risk more than the diversification among countries. Her et al. (2002) derived the similar findings for the study period 1999 to 2000. Brooks and Del Negro (2002) observed the impact of industry on a regional scale and concluded that cross-industries diversification is more advantageous than the countries diversification. By using firm-level data from 1990 to 2002 for 27 emerging and 23 developed stock markets, Brooks and Del Negro (2004) observed that the increase in comovement witnessed during the ending period of 1990, representing a temporary trend caused by the IT bubble. They investigate the evolution of industry and country effects over time beyond the telecommunication, media and technology sectors, and reveal that the magnitude of global industry impacts does not increase significantly. Therefore, they concluded that the diversification across countries is still profitable in terms of risk-return (Munir, Shaharuddin, et al., 2022; Munir, Sukor, et al., 2022). In comparison, Phylaktis and Xia (2006) and Bai and Green (2020) demonstrate that the effects of industry are

still dominant compared to country, but the cross-country diversification in emerging economies is more efficient than cross-industry diversification. Eiling et al. (2012), in a similar vein, revealed that international stock returns in the G7 countries were mainly induced by two risk factors: industry and currency. Our study contributes to the existing literature by evaluating the role of industries towards higher emerging market premia in some prominent Asian emerging stock markets by using the sector-based data.

3 Methodology and Empirical Findings

This study examines the performances of the selected industries across emerging countries by employing the Total Return Indices (TRIs) data of countries and industries obtained from Global Equity Indices section of DataStream.[1] For every country, mostly ten or lower industry TRIs were available, monthly total return indices running from January 1997 (or later) to December 2017 denominated in US dollars (dividends are included). The selected industries include: Basic Material, Consumer Goods, Consumer Services, Oil & Gas, Health Care, Industries, Financials, Telecom, Technology and Utilities. The complete industry-based TRIs of eight Asian emerging markets are gathered for overall analysis. The sample countries include: China, India, Indonesia, Korea, Malaysia, Pakistan, Philippines and Thailand. We claim that these selected emerging markets represent the target stock markets for many international investors. Among the G7 countries, we set United States market as benchmark market against which the performance is compared. The stock returns of industry i for country k are calculated as follows:

$$R^{i}_{k,t+1} = \frac{GEI\ TR^{i}_{k,t+1} - GEI\ TR^{i}_{k,t}}{GEI\ TR^{i}_{k,t}} \quad (1)$$

Where,

GEI TR = The value of Thompson Reuters Global Equity Indices at time t and t+1

The excess return is calculated by deducting the risk-free rate from Eq. 1. The related excess return is defined by Eq. 2:

$$ER^{i}_{k,t+1} = R^{i}_{k,t+1} - R^{f}_{t} \quad (2)$$

[1] Global Equity Indices of DataStream are divided into the following six levels. Level 1 represents the main market index which encompasses all the industry sectors in every country. Level 2 breaks the overall market into ten industries comprising all sectors within every group in a country. Finally, level 3 to 6 distribute the level 2 classification in more details sectors.

Where the one-month T-bill rate is used as a proxy for risk-free rate obtained from the data library of Fama and French (F&F), while k represents the equity market.

Description 1: The excess spread of returns for industry i is defined as the return difference between the developing market k and the developed U.S market:

$$Spread^{i}_{k,t+1} = ER^{i}_{k,t+1} - ER^{i}_{US,t+1} \quad (3)$$

Table 1 shows the summary statistics of 8 equity markets' excess returns. The mean (first line), standard deviation (second line) and Sharpe ratio (third line) of each country sample from Jan 1997 (or later) to Dec 2017 are calculated. This is followed by the average spread result (as stated in Description 1) for each emerging market k in the fourth line. As anticipated, a higher industry-based excess returns of emerging markets are observed as compared to the benchmark US stock market, despite the existence of positive average spread across both industries and countries (i.e. longitudinal and vertical averages of line four in Table 1). This study asserts that the negative numbers, in some rare cases, are largely either state or sample dependent.

Table 1:Summary Statistics

Country	Energy	B. Mats	Con. Gds	Con. Svs	H. Care	Indus	Financ	Utilities	Telecom	Techno
US	0.68	0.71	0.66	0.89	0.70	0.77	0.59	0.60	0.43	0.85
	5.70	6.42	3.72	7.09	3.96	5.29	5.67	4.43	5.90	7.55
	11.87	11.08	17.85	12.58	17.66	14.49	10.48	13.52	7.23	11.26
China	1.10	1.52	1.73	3.00	2.99	1.38	1.11	1.01	0.95	0.99
	12.44	13.52	12.81	12.25	11.34	12.51	10.71	10.28	8.67	10.26
	8.87	11.21	13.52	24.53	26.38	11.02	10.41	9.81	10.97	9.66
	0.43	0.80	1.07	2.11	2.29	0.61	0.52	0.41	0.52	0.14
India	1.21	1.61	1.42	n/a	1.34	1.40	1.54	1.10	0.86	2.80
	9.35	10.21	6.86	n/a	6.37	9.42	9.70	9.33	9.96	12.66
	12.96	15.75	20.75	n/a	21.05	14.81	15.91	11.74	8.61	22.09
	0.54	0.90	0.76	n/a	0.64	0.63	0.95	0.50	0.44	1.95
Indonesia	2.99	1.10	1.70	n/a	1.62	2.38	0.66	1.77	1.55	6.78

	27.17	11.64	9.68	n/a	10.68	11.19	10.26	11.77	10.71	21.22
	11.01	9.49	17.59	n/a	15.16	21.27	6.40	15.04	14.49	31.93
	2.31	0.39	1.04	n/a	0.92	1.61	0.06	1.17	1.12	5.93
Korea	1.67	1.34	1.36	n/a	2.42	1.41	0.69	0.57	0.98	1.19
	11.45	9.50	10.03	n/a	12.94	11.89	10.79	8.89	10.65	15.05
	14.55	14.14	13.60	n/a	18.69	11.81	6.42	6.45	9.23	7.92
	0.99	0.63	0.70	n/a	1.72	0.64	0.10	-0.02	0.55	0.34
Malaysia	0.72	0.20	0.44	n/a	2.74	0.21	0.67	0.46	0.62	4.83
	6.75	8.72	8.52	n/a	8.50	7.10	8.93	7.06	8.07	11.81
	10.60	2.35	5.18	n/a	32.26	2.99	7.53	6.60	7.71	40.90
	0.04	-0.50	-0.22	n/a	2.04	-0.55	0.08	-0.13	0.19	3.98
Pakistan	1.62	1.58	2.31	n/a	1.61	1.31	2.00	1.35	1.01	n/a
	10.19	9.01	8.87	n/a	10.03	8.95	10.75	12.12	12.01	n/a
	15.96	17.59	26.08	n/a	16.06	14.71	18.60	11.13	8.39	n/a
	0.95	0.87	1.65	n/a	0.91	0.55	1.41	0.75	0.58	n/a
Philippines	0.43	0.80	0.73	0.90	n/a	1.00	0.61	0.89	0.71	2.07
	12.64	15.57	7.44	10.45	n/a	10.17	7.75	10.52	7.75	14.88
	3.39	5.16	9.79	8.63	n/a	9.78	7.88	8.45	9.15	13.94
	-0.25	0.09	0.07	0.01	n/a	0.23	0.02	0.30	0.29	1.22
Thailand	1.19	1.15	1.09	n/a	1.27	1.73	0.58	0.93	1.01	1.51
	10.14	12.17	10.23	n/a	7.50	11.49	11.58	8.16	11.96	13.67
	11.73	9.44	10.66	n/a	16.91	15.06	5.08	11.43	8.53	11.03
	0.51	0.44	0.43	n/a	0.57	0.96	-0.01	0.33	0.59	0.66

Note: This table provides the descriptive statistics which are calculated for ten diverse industries in 8 emerging economies. For every economy, the first two lines present the mean value and standard deviations of excess returns for the industry. The third line provides the average Sharp

ratio. In case of emerging markets only, the last / fourth line reports the average value of spread which is the difference between excess returns of emerging and US stock market. Monthly data is used to estimate the values that are reported in percentage form. The sample period extends from Jan 97 (or later) – Dec 17.

Description 2: The individual country's average spread of industries is expressed as follows:

$$Country\ Avg\ Spread^{k} = \frac{1}{I}\sum_{i=1}^{I}\left\{\frac{1}{T}\sum_{t=1}^{T} Spread_{t}^{k}\right\}_{i} \qquad (4)$$

where i denotes an industry, and k represents an emerging economy.

Table 2 displays the average spreads of emerging stock markets. In agreement with the recent literature's observations on the performances of emerging stock markets, this study reports superior performance of emerging market stocks as compared to that of the US stocks. As an instance, the emerging countries' industrial average spread exhibits positive values in all of the 8 emerging stock markets from January 1997 to December 2017. The positive industrial spread ranges from a minimum of 2.61% in Philippines to a maximum of 19.42% in Indonesia. China, India, Korea, Malaysia, Pakistan and Thailand show an annual spreads equivalent to 10.69%, 9.71%, 7.53%, 6.56%, 11.51% and 5.99%, respectively. This higher and positive return spread of the emerging countries proposes the possibilities of disentangling the industry-by-industry effects.

Table 2: Country-by-Country Average Spread of Stock Markets

Country	Average (All Industries)	Country	Average (All Industries)
China	10.69	Malaysia	6.56
India	9.71	Pakistan	11.51
Indonesia	19.42	Philippines	2.61
Korea	7.53	Thailand	5.99

Note: This table provides the country-by-country average spread of stock markets. Averages are computed with the help of Eq. 4 ($Country\ Avg\ Spread^{k} = \frac{1}{I}\sum_{i=1}^{I}\left\{\frac{1}{T}\sum_{t=1}^{T} Spread_{t}^{k}\right\}_{i}$). The results are presented in percentage form on an annual basis. The sample period ranges from Jan 97 (or later) – Dec 17.

Description 3: The industry-wise average return spread of each country is expressed as follows:

$$Industry\ Avg\ Spread^{i} = \frac{1}{K}\sum_{k=1}^{K}\left\{\frac{1}{T}\sum_{t=1}^{T} Spread_{t}^{i}\right\}_{k} \quad (5)$$

In Eq. 5, i denotes an industry, and k represents an emerging economy.

Table 3 provides the study findings based on Description 3 for eight selected emerging markets. The average return spread is discovered to be positive in all industries for all the emerging economies, with the Technology industry recording the highest spread. The technology industry for the last fifteen years has always dominated all other industries across emerging countries particularly in East-Asian region; thereby, suggesting the main contributor towards the higher equity premia of Asian emerging markets. By observing extreme consciousness of the sensitivity of the sample and state on the result, and being fully aware of the time-varying nature of the average emerging excess returns; an industry-wise analysis is conducted in time-varying manner. Fig. 2 (Appendix) demonstrates the dynamics of average industries excess returns calculated per unit of risk (i.e. rolling sharp ratios) for the following markets: USA, China, India, Indonesia, Korea, Malaysia, Pakistan, Philippines and, Thailand. It is worth noting that the US industries were assigned the black dashed line in all the graphs. Although, the patterns of the Sharpe ratios exhibit no differences across countries and industries, but the emerging market values remain very unstable in all industries. Therefore, the stock markets' structure in emerging economies is volatile, consequently requiring sustainable compensation. Despite a better overall performance of technology industry, its corrected risk per unit is higher compared to other industries. The significant success is also attributed to the health care and consumer services industries having an average of 15.59% and 12.72%, respectively.

Table 3: Average Spread of Emerging Industries

Industry	Average (All Emerging Markets)	Industry	Average (All Emerging Markets)
Energy	8.28	Industrials	7.02
Basic Materials	5.43	Financials	4.69
Consumer Goods	8.22	Utilities	4.94
Consumer Services	12.72	Telecom	6.43
Health Care	15.59	Technology	24.37

Note: This table presents the emerging industries' average spread. Averages of industries are computed with the help of Eq. 5 ($Industry\ Avg\ Spread^{i} = \frac{1}{K}\sum_{k=1}^{K}\left\{\frac{1}{T}\sum_{t=1}^{T} Spread_{t}^{i}\right\}_{k}$). The results are presented in percentage form on an annual basis. The sample period ranges from Jan 97 (or later) – Dec 17.

3.2 Rolling Alpha Spreads of Industries

The analysis is further enriched via the assessment through standard one-factor asset pricing model as formulated by Lintner and Sharpe. The following linear regression as employed by Jensen et al. (1972); and suggested by the Capital Asset Pricing Model (CAPM) is considered:

$$ER_{i,t}^{k} = \alpha_{i}^{k} + \beta_{i,mkt}^{k}\left(ER_{mkt,t}\right) + \epsilon_{t} \qquad (6)$$

To validate the CAPM, a significance test was performed on the intercepts of Eq. 6 by employing an asset-by-asset approach. Also, the coefficients α_{i}^{k} and $\beta_{i,mkt}^{k}$ are calculated through an established econometric technique with a 60-months rolling sample over the sample period between January 1997 (or later) to December 2017; where the excess return of the market is extracted from the data library of Fam and French.[2]

The computed coefficient α_{i}^{k} remains a constant value widely used in finance for the calculation of asset and fund managers' performance. This estimates the average difference between the observed returns on an asset, and the value complying to the CAPM.

Description 4: The computed $\hat{\alpha}$ average return spread is denoted by:

$$Alpha\ Avg\ Spread_{i}^{k^{e}} = \left(\frac{1}{W}\sum_{w=1}^{W}\hat{\alpha}_{i,w}^{USA}\right) - \left(\frac{1}{W}\sum_{w=1}^{W}\hat{\alpha}_{i,w}^{k^{e}}\right) \qquad (7)$$

Where i represents the industry, k denotes the emerging country and w defines the window in which the intercept α is estimated.

[2] By applying the simple econometric approach i.e. OLS method, the values of the coefficients α_{i}^{k} and $\beta_{i,mkt}^{k}$ are computed in the following manner:

$$\hat{\beta}_{i}^{k} = \frac{\hat{\sigma}_{i,mkt}^{k}}{\hat{\sigma}_{mkt}^{2}}, \qquad \hat{\alpha}_{i}^{k} = \bar{z}_{i}^{k} - \hat{\beta}_{i}^{k}\bar{z}_{mkt}$$

Where, $\bar{\mathcal{Z}}_{i}^{k}$ and $\bar{\mathcal{Z}}_{mkt}$ represent the sample averages of excess returns for industry *i* to industry *k* and market portfolio. Whereas, $\bar{\sigma}_{i,mkt}^{k}$ denotes the covariance of two returns, while $\bar{\sigma}_{mkt}^{2}$ represent the market sample covariance.

Table 4 reports the results based on Description 4 at country and industry level. Malaysia, Pakistan and Indonesia record the highest rolling average Jensen's alpha spreads of 1.058, 1.483 and 1.524, respectively on a country level. However, on the industry level, the technology industry recorded the highest alpha in Malaysia and Indonesia; Health care sector in Malaysia, Korea and China; Consumer Goods and Basic Material industries in Pakistan, India and China; and the Telecom industry in Philippines and Thailand. The results are sample sensitive, but our results coincide with the outcomes recorded in Table 2.

Table 4: Average Rolling Alpha Spreads of Industries

	CHINA	INDIA	INDONESIA	MAL	KOR	PAK	PHIL	THAI
Energy	0.667	0.706	2.441	0.687	0.889	1.346	0.396	0.795
Basic Material	1.005	1.154	0.695	0.024	0.892	1.594	1.121	0.612
Cons. Goods	1.250	1.039	1.501	0.388	0.725	2.166	0.518	0.763
Cons. Svs	0.479	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Health Care	1.904	0.857	1.527	2.071	1.938	1.348	-0.749	1.146
Industrials	0.996	1.019	1.433	0.171	0.939	1.158	0.828	1.101
Financials	0.995	1.388	0.775	0.899	0.573	2.316	0.766	0.850
Utilities	0.661	0.660	0.780	0.080	0.059	0.988	0.697	0.719
Telecom	0.479	0.693	1.541	0.783	0.573	0.951	0.692	1.189
Technology	0.430	1.608	3.028	4.418	0.667	n/a	1.903	1.482
Average	0.887	1.014	1.524	1.058	0.806	1.483	0.686	0.962
Minimum	0.430	0.660	0.695	0.024	0.059	0.951	-0.749	0.612
Maximum	1.904	1.608	3.028	4.418	1.938	2.316	1.903	1.482

Note: This table provides the Average Rolling Alpha Spread of the overall industries. We consider the U.S equity market as benchmark. The Intercept of Eq. 6 is calculated through OLS by applying a rolling sample period of 60 months. The sample period ranges between Jan 97 (or later) – Dec 17.

3.3 International Cycles and Stock Market Comovements

Several studies have increasingly expressed interest in observing the behavior of emerging stock returns triggered by global market integration.[3] In the same vein, a similar study is considered for this paper, but in an advanced and dynamic nature as indicated in Fig. 1. We still observe reasonable support through the principal component analysis that the emerging markets are becoming more integrated, consequently suggesting an association between the real and financial integration processes. Such a relationship might yield uncertainties that could favor a comprehensive well-diversified and guaranteed dynamic portfolio allocation.

The combined analyses of Figs. 3 and 4 (in Appendix) suggest declassification of certain industries as "high-beta industries" which is inconsistent with the previously verified regularities on country indexes.[4] These industries are constantly discovered to pay less than the market average excess returns in a few countries. The number of Betas in the Energy, Telecom and Utilities industry have always been less than one; especially in Malaysia, Pakistan and Philippines. This is evident from the commencement of the analysis that emerging betas are less than one in all the emerging economies (even negative in some cases). The practical implication lies in our empirical regularities which suggest the exploration of diversification opportunities due to the impact of global factors on country indexes, and the existence of some industries that proffer little but advantageous insurance components.[5]

[3] See e.g., Bekaert (1995), Donadelli and Prosperi (2012) and Carrieri et al. (2007).
[4] See e.g., Salomons and Grootveld (2003)
[5] See e.g., Mehra (2012) for more information on consumption-based models of asset pricing.

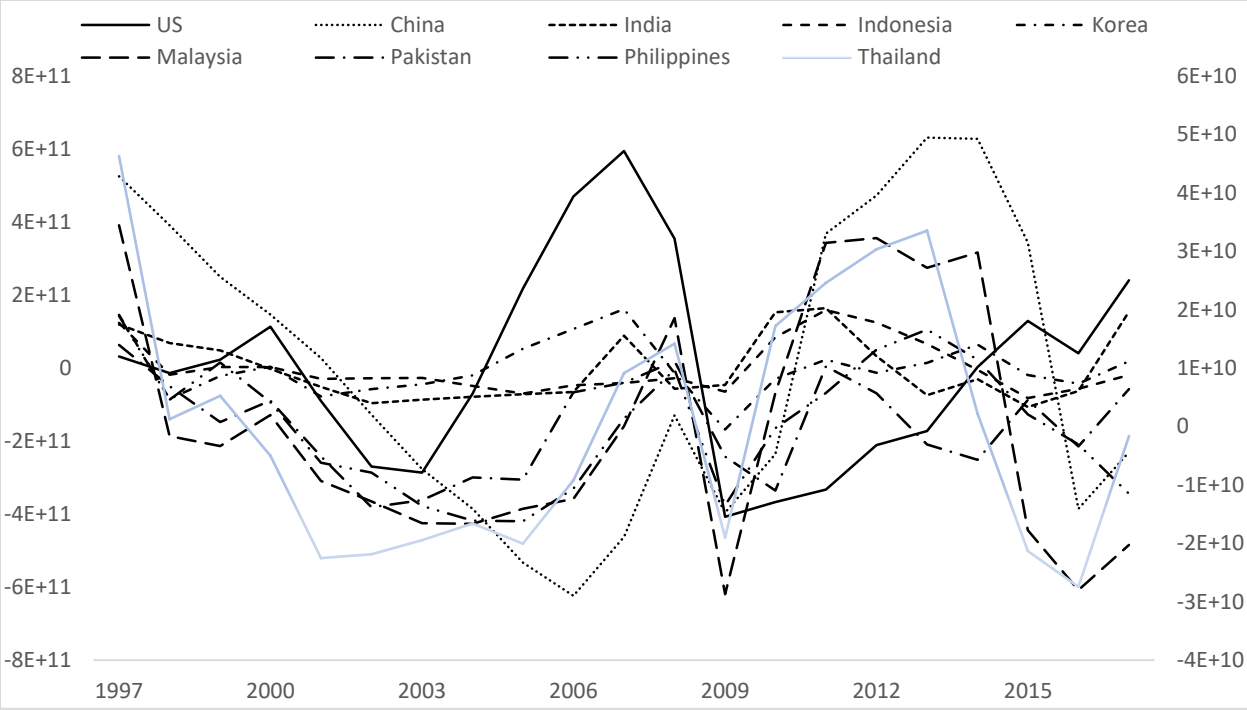


Figure 1: **International Business Cycles and stock market comovements:** The cyclical components of annual GDP time-series (in current price, US$) are derived through Hodrick-Prescott (1997) methodology. The sample period ranges from Jan 97 (or later) – Dec 17. **Data Source:** World Bank

4 Conclusion

Although, it is well known that the average equity risk premia in emerging markets is considerably higher than the developed markets, the key factors for this condition remain highly debated, adding to the uncertainty of the investment strategy. The common wisdom says that the emerging equity markets reward investors for inherent risks in the shape of higher average returns. The literature also demonstrates that the return distribution structure of emerging stock markets is highly instable. In other terms, in developing markets, equity risk premia appears to be less stable over time than in advanced markets. In other terms, the equity risk premia in emerging equity markets appears to be more volatile over time as compared to developed equity markets. Instable industrial structures, transaction costs, political instability and illiquidity are found to be the potential causes of instability and higher compensation. From the past two decades, the studies of emerging stock markets have earned increased attention from many scholars and practitioners, especially after economic and financial liberalizations. Emerging

markets are popular for their higher returns, higher volatility and time-varying moments in empirical regularities. This study consequently improves the existing literature by presenting time-dependent industry-by-industry analysis, from which three significant results are observed. Firstly, the payment of excess equity premia by emerging markets to active international investors is largely influenced by some industries than others. Secondly, some industries are discovered to still incorporate diversification benefits in addition to insurance features. Finally, the exploration of diversification opportunities due to the impact of global factors on country indexes, and the existence of some industries that proffer little but advantageous insurance components provide valuable insights for the higher equity premia of emerging markets. In summary, the dynamics of coefficients of correlation between the developing as well as U.S industrial equity market returns, return comovement of world equity portfolios, and uncertainty of economic policy suggest that cross-industry portfolio diversification advantages are negligible. The study findings not only provide significant contribution to the existing inconclusive empirical literature on the implications for investment decisions in emerging stock markets, but also have significant implications for our understanding of the evolving development of financial integration in emerging stock markets. In other words, it is pertinent for foreign portfolio investors to not only diversity across countries but also across industries in order to generate higher returns in emerging stock markets. For firms in emerging stock markets, it is imperative to take into consideration the country-specific risk and systematic risk associated with emerging markets while calculating the cost of capital. Finally, future research on subject matter can be conducted to investigate the behavior of industrial composition in frontier markets. Moreover, it would be interesting to see the variation of results if the studies apply relatively a long period data in emerging stock markets. Additionally, future studies might also explore alternative approaches for calculating time-varying betas such as random walk model or random parameter model. The current study has limitations even if it makes great progress in explaining the complexity of increased equity risk premia in emerging Asian economies. While traditional ex-post empirical studies are helpful, they cannot completely capture the spectrum of dynamic market behaviors. While validating significant trends, the study's emphasis on the "high-volatile high-performance nature" of the industries may oversimplify the complex elements affecting stock performance. Moreover, the study's breadth is restricted by its sole reliance on DataStream's Total Return Indices (TRIs) data, which may cause it to overlook details that may

be shown by a larger dataset or other data sources. In the future, studies may focus on how the industrial mix behaves in frontier markets, offering a more thorough knowledge of developing economies. Further research on the effects of high frequency data sets on developing stock markets may also provide light on the historical development of equity risk premia. The robustness of results might potentially be improved by investigating different methods for computing time-varying betas, such as the random walk model or random parameter model. In the end, this study clarifies important points and establishes the foundation for further research that might deepen and improve our understanding of these complex linkages.

References

Ang, A., Hodrick, R. J., Xing, Y., & Zhang, X. (2009). High idiosyncratic volatility and low returns: International and further U.S. evidence. *Journal of Financial Economics, 91*(1), 1-23.

Azeem, A., Fayyaz, A., & Jadoon, A. K. (2018). Economic value addition implications: A study of the Pakistani banking industry. *Pakistan Business Review, 19*(4), 892-907.

Baele, L., & Inghelbrecht, K. (2009). Time-varying Integration and International diversification strategies. *Journal of Empirical Finance, 16*(3), 368-387.

Bai, Y., & Green, C. J. (2010). International diversification strategies: Revisited from the risk perspective. *Journal of Banking & Finance, 34*(1), 236-245.

Bai, Y., & Green, C. J. (2020). Country and industry factors in tests of Capital Asset Pricing Models for partially integrated emerging markets. *Economic Modelling, 92*, 180-194.

Bai, Y., Green, C. J., & Leger, L. (2012). Industry and country factors in emerging market returns: Did the Asian crisis make a difference? *Emerging Markets Review, 13*(4), 559-580.

Barry, C. B., Peavy, J. W., & Rodriguez, M. (1997). *Emerging stock markets: Risk, return, and performance*: Research Foundation of the Institute of Chartered Financial Analysts.

Bekaert, G., Erb, C. B., Harvey, C. R., & Viskanta, T. E. (1998). Distributional characteristics of emerging market returns and asset allocation. *Journal of Portfolio Management, 24*(2), 102-+.

Bekaert, G., & Harvey, C. R. (1995). Time-varying world market integration. *The Journal of Finance, 50*(2), 403-444.

Bekaert, G., & Harvey, C. R. (1997). What matters for emerging equity market investments. *Emerging markets quarterly, 1*(2), 17-46.

Bekaert, G., & Harvey, C. R. (2000). Foreign Speculators and Emerging Equity Markets. *The Journal of Finance, 55*(2), 565-613.

Benartzi, S., & Thaler, R. H. (1995). Myopic Loss Aversion and the Equity Premium Puzzle*. *The Quarterly Journal of Economics, 110*(1), 73-92.

Boubakri, S., Couharde, C., & Raymond, H. (2016). Effects of financial turmoil on financial integration and risk premia in emerging markets. *Journal of Empirical Finance, 38*, 120-138.

Brooks, R., & Del Negro, M. (2002). *International Stock Returns and Market Integration: A Regional Perspective, Federal Reserve Bank of Atlanta*. Retrieved from

Brooks, R., & Del Negro, M. (2004). The rise in comovement across national stock markets: market integration or IT bubble? *Journal of Empirical Finance, 11*(5), 659-680.

Campa, J. M., & Fernandes, N. (2006). Sources of gains from international portfolio diversification. *Journal of Empirical Finance, 13*(4), 417-443.

Campbell, & Cochrane, John H. (1999). By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior. *Journal of Political Economy, 107*(2), 205-251.

Campbell, Lettau, M., Malkiel, B. G., & Xu, Y. (2001). Have Individual Stocks Become More Volatile? An Empirical Exploration of Idiosyncratic Risk. *The Journal of Finance, 56*(1), 1-43.

Cavaglia, S., Brightman, C., & Aked, M. (2000). The Increasing Importance of Industry Factors. *Financial Analysts Journal, 56*(5), 41-54.

Claessens, S., Dasgupta, S., & Glen, J. (1995). Return behavior in emerging stock markets. *The World Bank Economic Review, 9*(1), 131-151.

Damodaran, A. (2020). Equity Risk Premiums: Determinants, Estimation and Implications-The 2020 Edition. *Estimation and Implications-The*.

de Jong, F., & de Roon, F. A. (2005). Time-varying market integration and expected returns in emerging markets. *Journal of Financial Economics, 78*(3), 583-613.

De Nicolò, G., & Juvenal, L. (2014). Financial integration, globalization, and real activity. *Journal of Financial Stability, 10*, 65-75.

Donadelli, M., & Prosperi, L. (2011). The equity risk premium: Empirical evidence from emerging markets. *Available at SSRN 1893378*.

Donadelli, M., & Prosperi, L. (2012). On the role of liquidity in emerging markets stock prices. *Research in Economics, 66*(4), 320-348.

Eiling, E., Gerard, B., Hillion, P., & de Roon, F. A. (2012). International portfolio diversification: Currency, industry and country effects revisited. *Journal of International Money and Finance, 31*(5), 1249-1278.

Ferreira, M. A., & Ferreira, M. Â. (2006). The Importance of Industry and Country Effects in the EMU Equity Markets. *European Financial Management, 12*(3), 341-373.

Ferreira, M. A., & Gama, P. M. (2005). Have World, Country, and Industry Risks Changed over Time? An Investigation of the Volatility of Developed Stock Markets. *The Journal of Financial and Quantitative Analysis, 40*(1), 195-222.

Griffin, J. M., & Andrew Karolyi, G. (1998). Another look at the role of the industrial structure of markets for international diversification strategies. *Journal of Financial Economics, 50*(3), 351-373.

Henry, P. B. (2000). Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices. *The Journal of Finance, 55*(2), 529-564.

Her, J.-F., Sy, O., & Tnani, M. Y. (2002). Country, Industry, and Risk Factor Loadings in Portfolio Management. *The Journal of Portfolio Management, 28*(4), 70.

Jensen, M. C., Black, F., & Scholes, M. S. (1972). The capital asset pricing model: Some empirical tests.

Mehra, R. (2003). *The equity premium: Why is it a puzzle?* (0898-2937). Retrieved from

Mehra, R. (2012). Consumption-Based Asset Pricing Models. *Annual Review of Financial Economics, 4*(1), 385-409.

Mehra, R., & Prescott, E. C. (1985). The equity premium: A puzzle. journal of Monetary Economics, v. 15, n. 2. In: Mar.

Munir, A. F., Shaharuddin, S. S., & Sukor, M. E. A. (2020). Long-term, short-term and time-varying profitability of reversals: the role of market state and volatility. *International Journal of Economics and Business Administration (IJEBA)*, *8*(2), 501-520.

Munir, A. F., Shaharuddin, S. S., Sukor, M. E. A., Albaity, M., & Ismail, I. (2022). Financial liberalization and the behavior of reversals in emerging market economies. *International Journal of Emerging Markets*, *17*(6), 1565-1582.

Munir, A. F., Sukor, M. E. A., & Shaharuddin, S. S. (2022). Adaptive market hypothesis and time-varying contrarian effect: Evidence from emerging stock markets of South Asia. *SAGE Open*, *12*(1), 21582440211068490.

Phylaktis, K., & Xia, L. (2006). Sources of firms' industry and country effects in emerging markets. *Journal of International Money and Finance*, *25*(3), 459-475.

Roll, R. (1992). Industrial Structure and the Comparative Behavior of International Stock Market Indices. *The Journal of Finance*, *47*(1), 3-41.

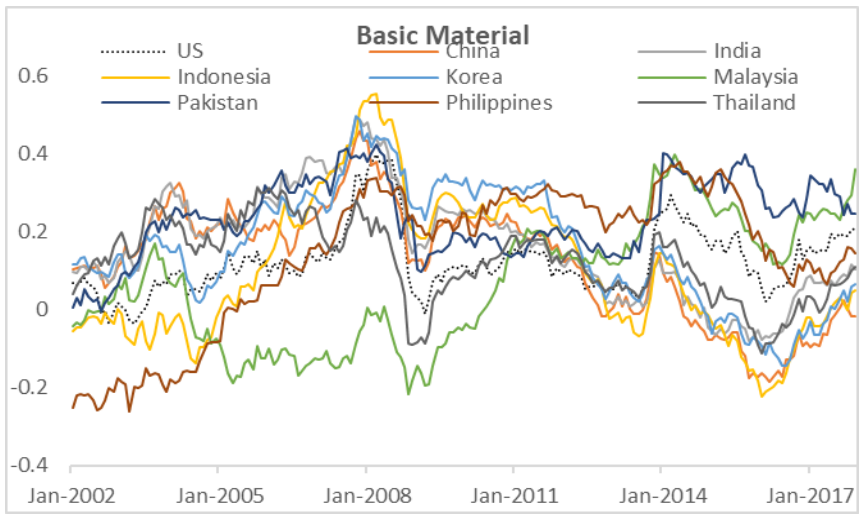
Salomons, R., & Grootveld, H. (2003). The equity risk premium: emerging vs. developed markets. *Emerging Markets Review*, *4*(2), 121-144.

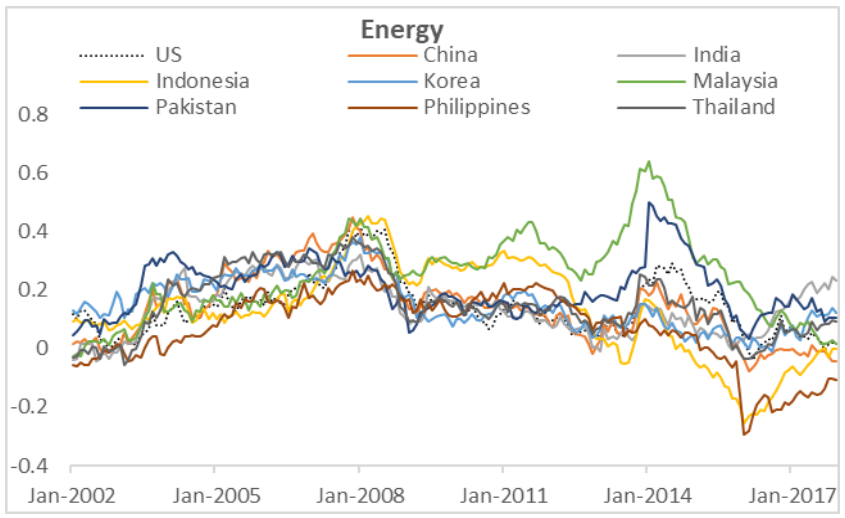
Serra, A. P. (2000). Country and industry factors in returns: evidence from emerging markets' stocks. *Emerging Markets Review*, *1*(2), 127-151.

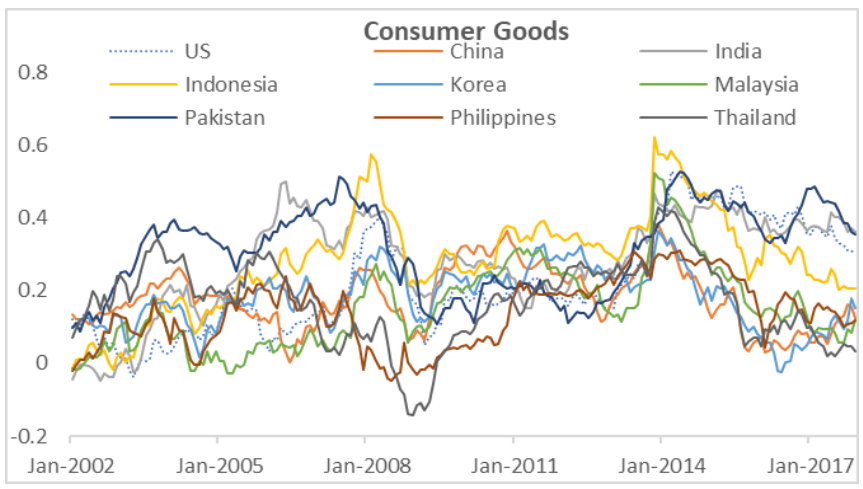
Sharma, S. S., Thuraisamy, K., Madyan, M., & Laila, N. (2019). Evidence of price discovery on the Indonesian stock exchange. *Economic Modelling*, *83*, 2-7.

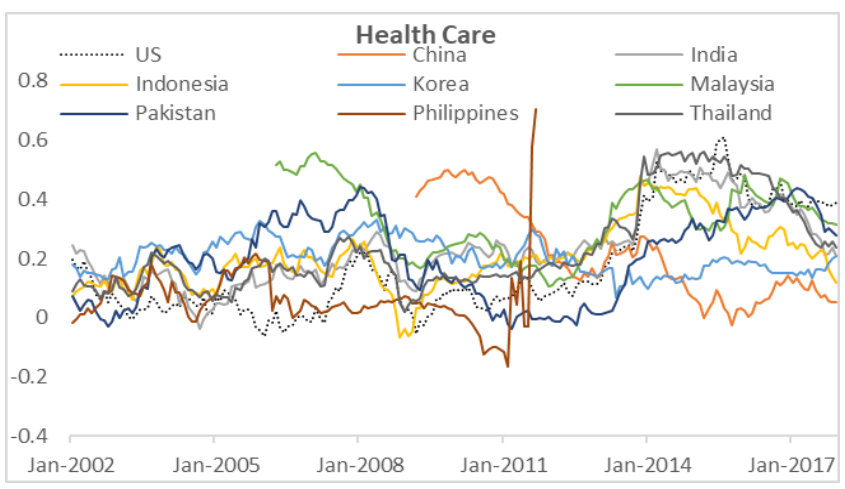
Appendix

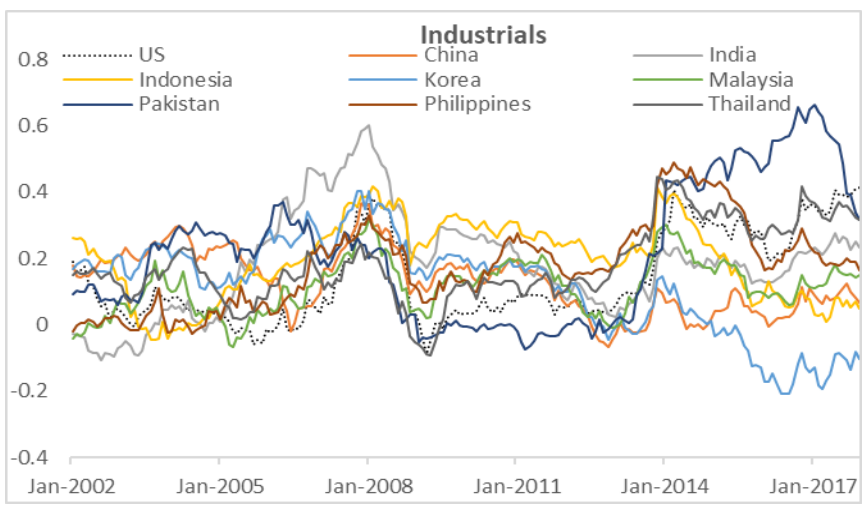
Rolling Sharp Ratio

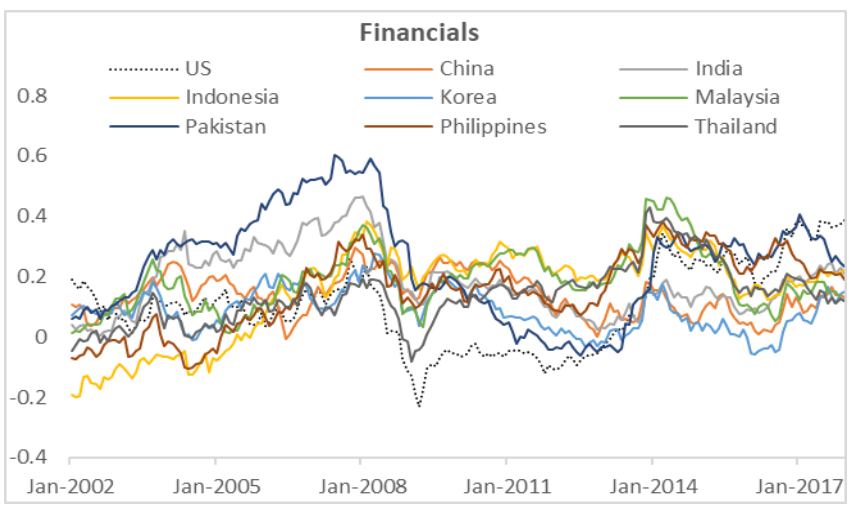


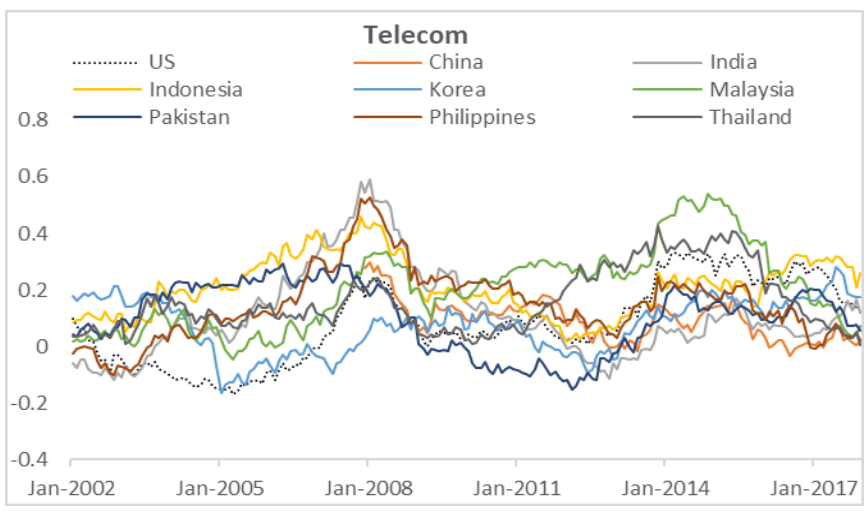


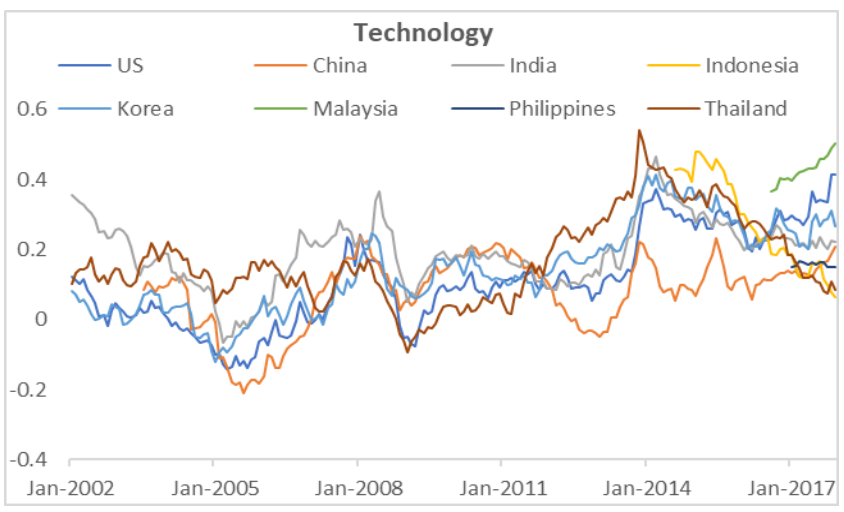












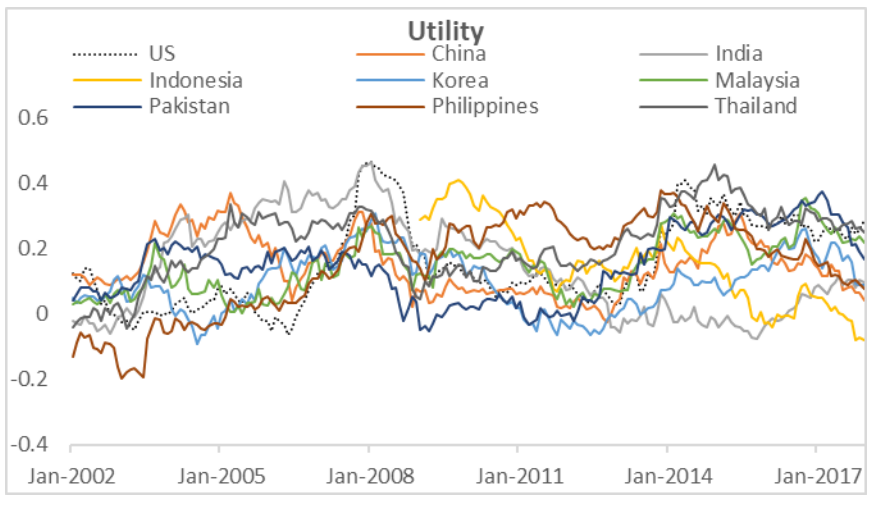
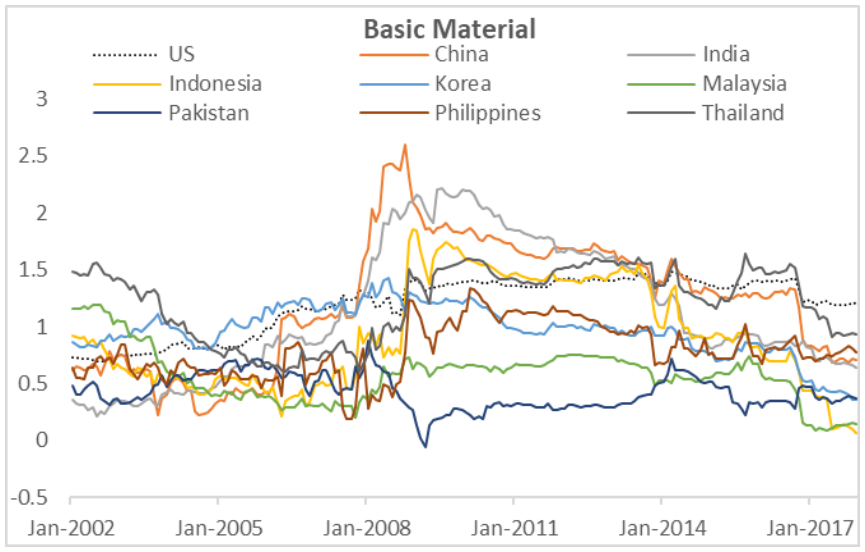
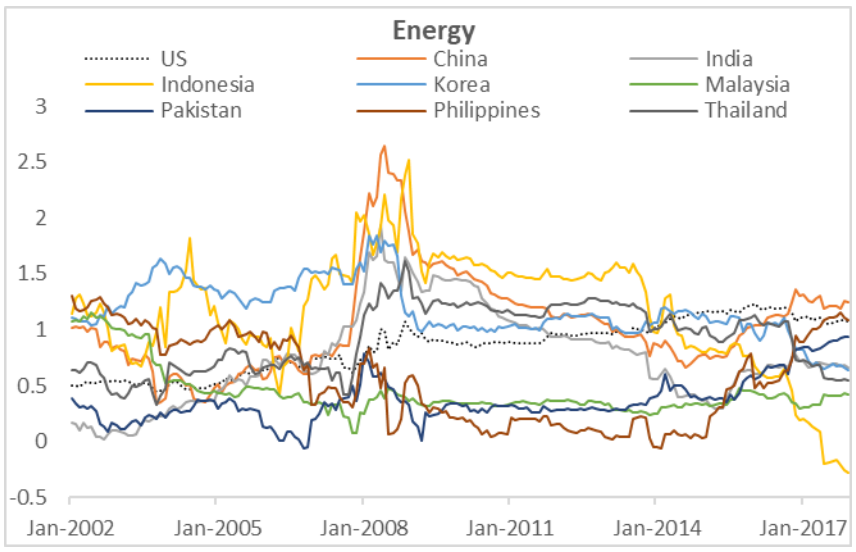
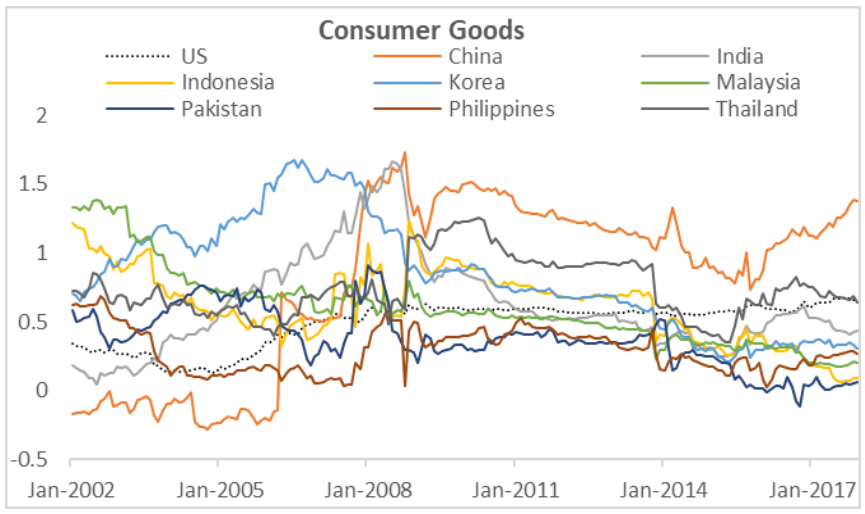


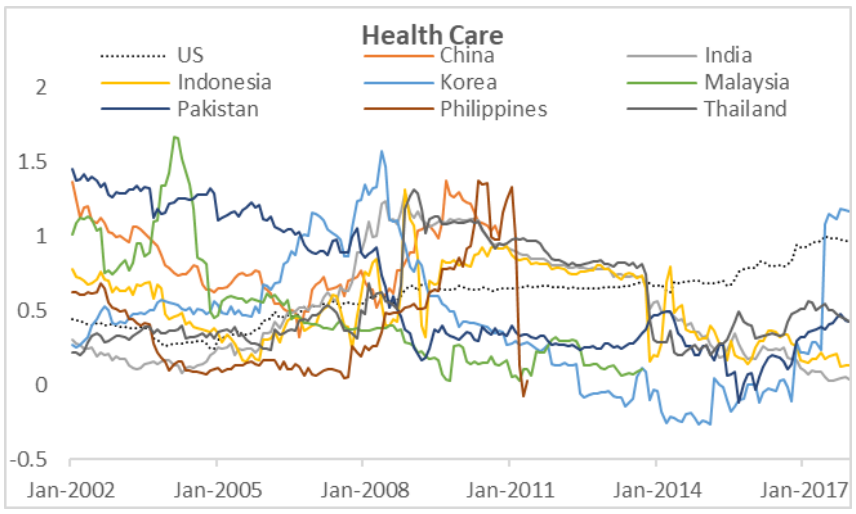
Figure 2: Rolling Sharp Ratio: The figure depicts the industry-wise sharp ratios. Sharp ratios are calculated by dividing the excess returns of each industry to its standard deviation, estimated through a 60-month rolling window of the sample. Formally, $ShRatio = (Returns^{i}_{k,w} - R^{f}_{t})/(Sd^{i}_{k,w})$, where w represents the 60-month window through the ratio is calculated. The analysis period ranges from Jan 97 (or later) – Dec 17.

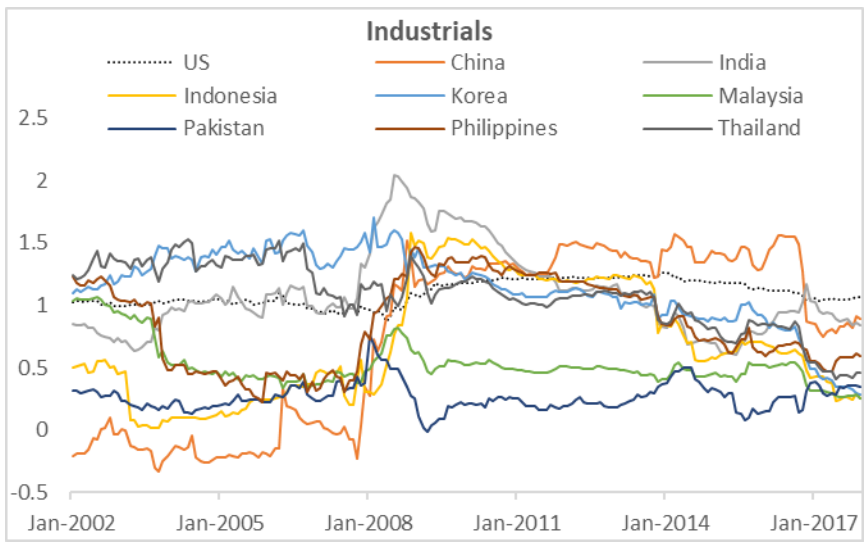
Rolling Betas

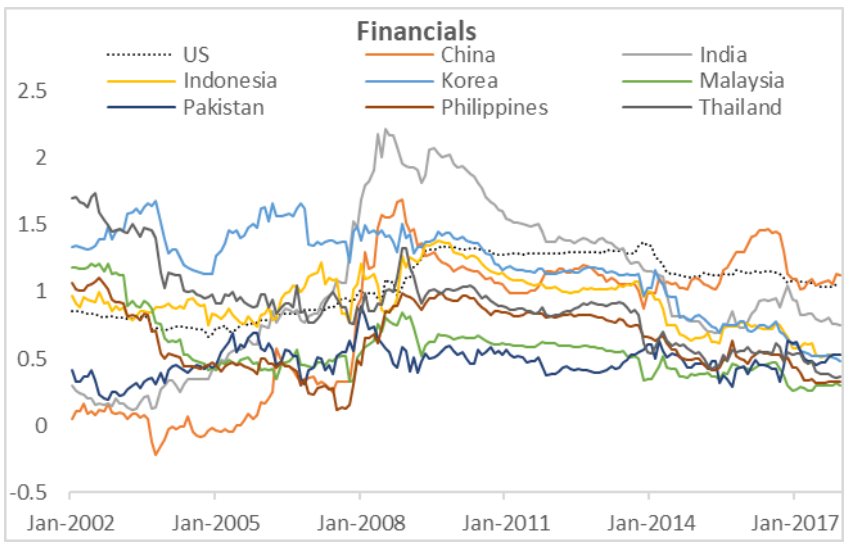


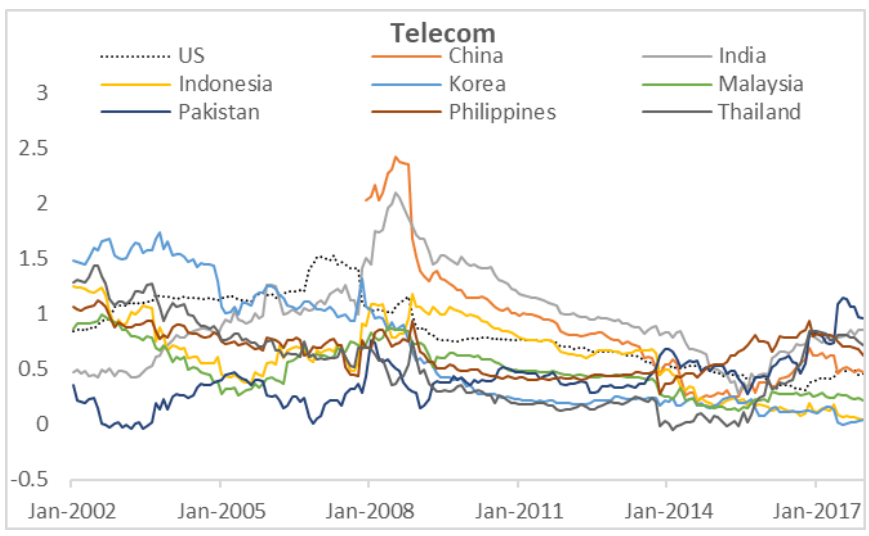


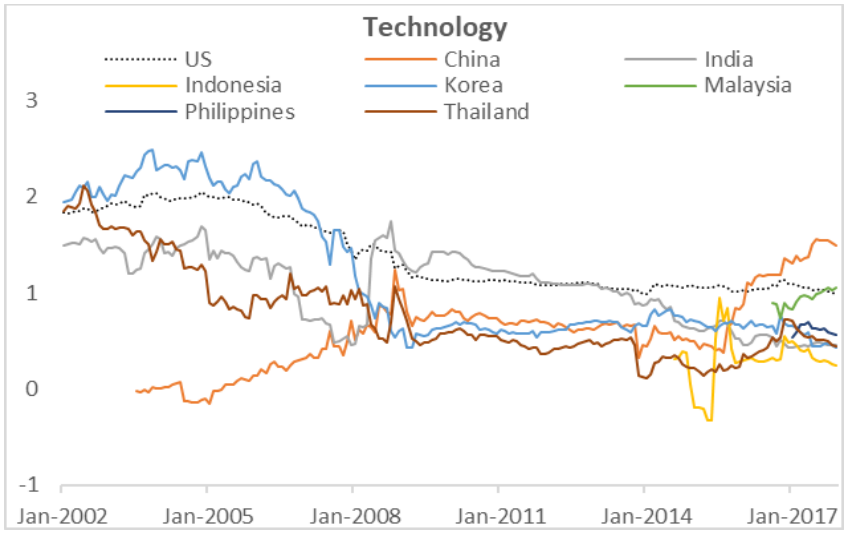












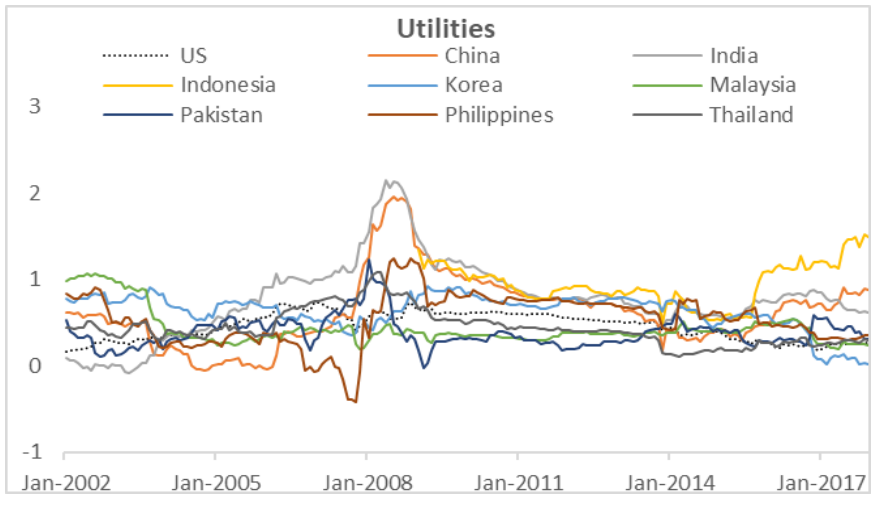
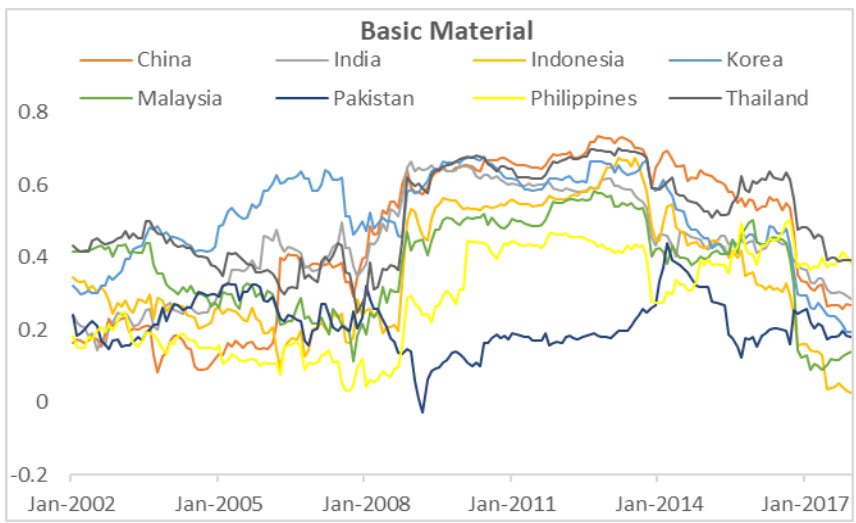
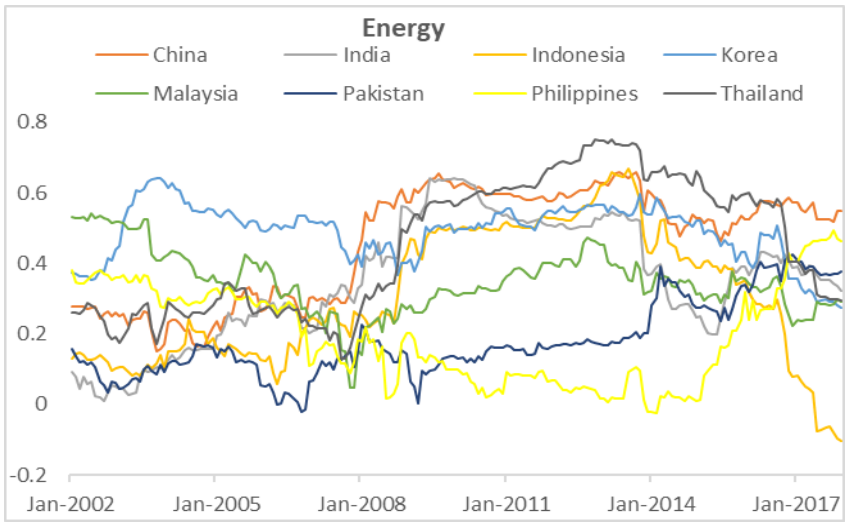
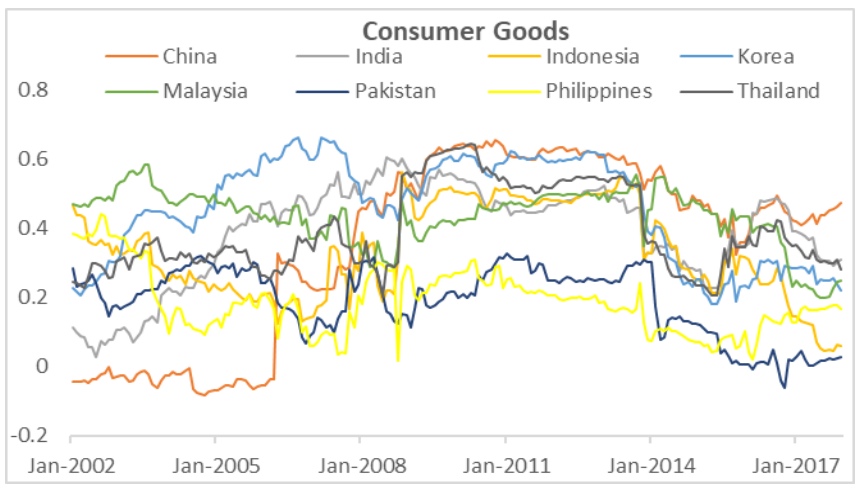


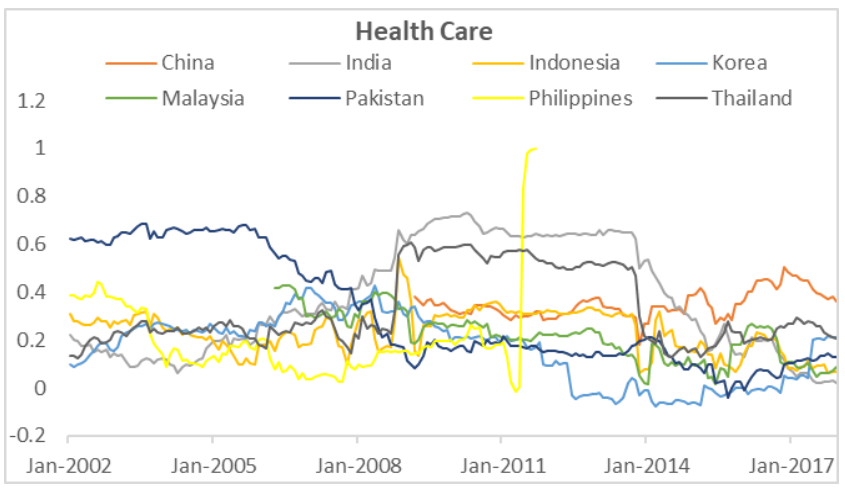
Figure 3: Rolling Beta: This figure presents the industry-wise rolling Betas (by utilizing the single factor model). The Betas of Eq. 6 are computed through OLS regression by using a 60-month rolling period sample. The analysis period ranges from Jan 97 (or later) – Dec 17.

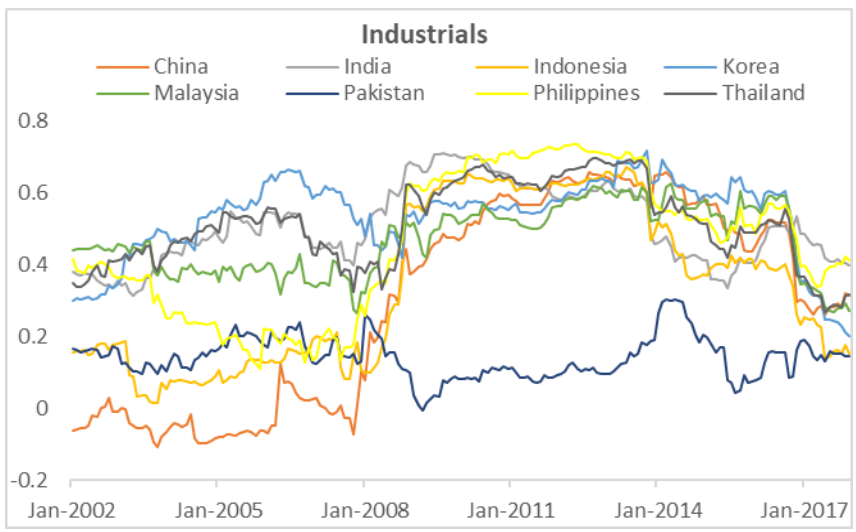
International Co-movements

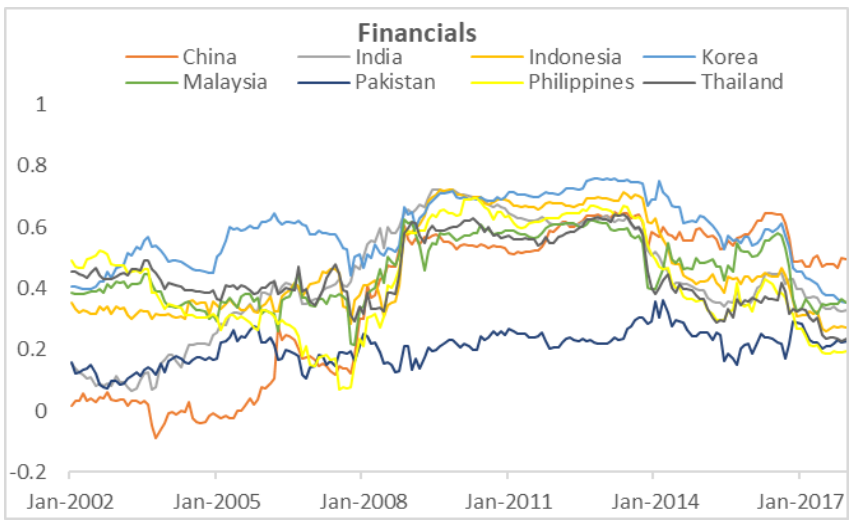


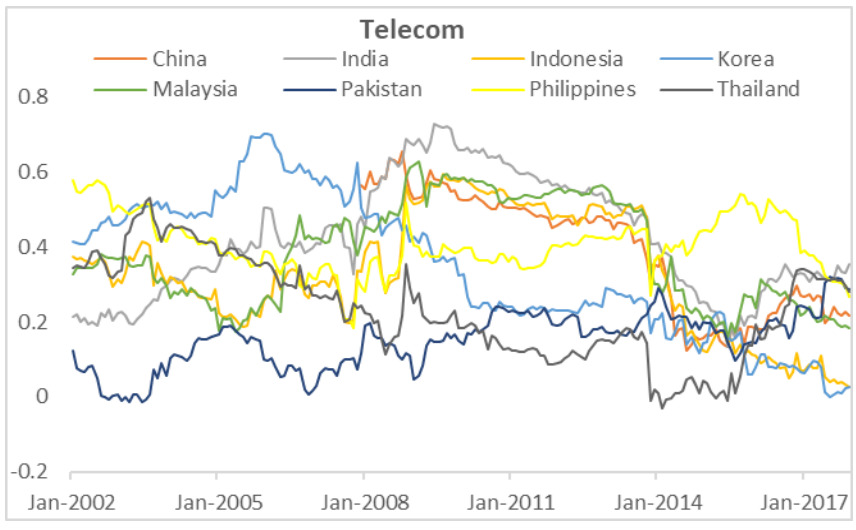


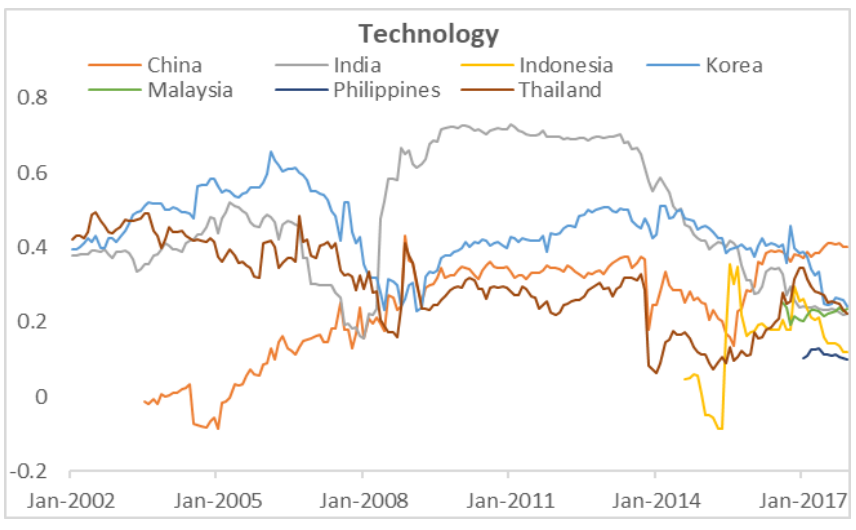












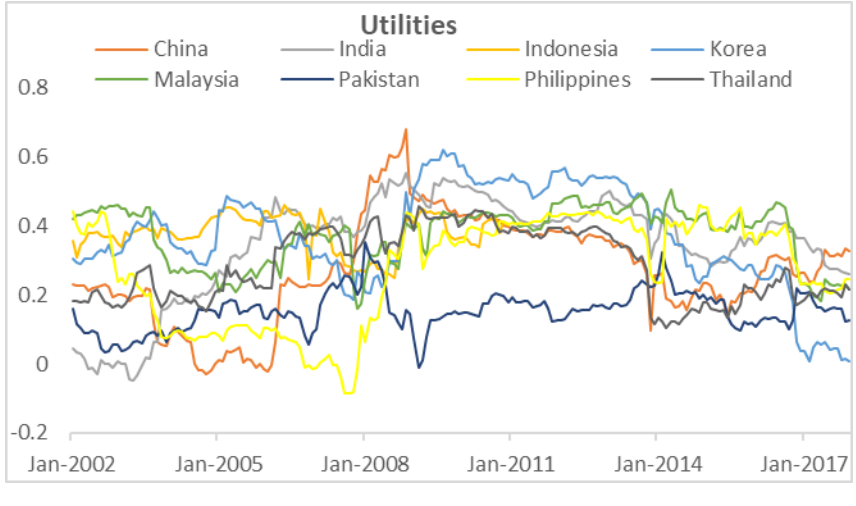


Figure 4: International comovement: This figure depicts the industry-wise rolling period correlation coefficient. These coefficients of correlation are calculated by applying a 60-month rolling period. The US equity market is considered as benchmark for our analysis. The analysis period ranges from Jan 96 (or later) – Dec 17.