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Understanding emerging market equity risk premia: Industries, governance and macroeconomic policy uncertainty☆

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ABSTRACT

The average equity risk premium (ERP) in emerging markets is well-known to be significantly higher than in developed markets. But, key reasons for this remain unclear, contributing to investment strategy uncertainty. Here, we use industry-level data for 19 emerging market countries across three regions of the world to first examine the contribution of each industrial stock market to the extra premium paid by emerging markets to international investors from 1995 to present, and then to explore the relative importance of country-level governance and macroeconomic policy uncertainty in explaining both national and regional industry-by-industry ERP behavior. We conduct separate analyses for the *emerging market crises* period of 1995–2002, and the post-crises period of 2003–2012. Based on both static and dynamic approaches, we find that some industries indeed perform consistently better than others. In particular: (i) the healthcare and basic materials industries mostly contributed to the extra premium paid by the Asian stock market; and (ii) the East European and Latin American stock markets' extra performances were largely driven by the utilities and consumer services industries, respectively. However, our cross-sectional analyses suggest that country-level governance indicators are not strongly correlated with either national or industry-level returns, with the exception of the consumer goods industry. Lastly, using both rolling-window and DCC-GARCH frameworks,

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we find that correlations between industrial stock market excess returns and a measure of global economic policy uncertainty are consistently negative, and follow similar patterns. Our empirical evidence as a whole suggests that industrial stock markets are more highly related both within and across countries and regions than has been suggested previously. Contrary to much existing empirical work, our results therefore suggest there is currently little space in emerging markets to exploit cross-industry portfolio diversification benefits.

1. Introduction and motivations

During the last three decades the emerging market asset pricing and international finance literature has largely focused on the following five issues: (i) the behavior of the emerging markets ERP (i.e. performance measurements); (ii) the predictability of emerging stock markets excess returns (i.e. local vs global information variables, country effects vs industry effects); (iii) the effects of financial liberalization on emerging stock prices, cost of capital and expected returns; (iv) the global integration process in emerging stock markets (i.e. *de jure* vs *de facto* integration, country institutional quality, disaster risks); (v) the effects of macroeconomic shocks on emerging economies.[1]

Although the average ERP in emerging markets is well-known to be significantly higher than in developed markets, the major reasons for this situation remain widely debated, which contributes to investment strategy uncertainty. A conventional wisdom is that emerging markets compensate investors for the inherent risks in terms of high average returns. It is also largely accepted that the structure of the return distribution of emerging markets is potentially unstable. In other words, ERP tends to be less stable through time in emerging markets than in developed markets. Illiquidity, transaction costs, shaky industrial structures, and political instability have often been seen as potential sources of higher compensation and instability.[2] However, existing work has yet to achieve consensus around major drivers of higher ERP in emerging markets.

In this paper we examine the behavior of emerging stock market excess returns in an industry-by-industry context, with an aim to clarify the roles of different industrial stock markets in generating higher emerging markets' ERP. We then undertake a simple assessment of the relationship between governance indicators and average stock market performances on an industry basis, to determine the extent to which country-level governance factors may additionally explain variations in emerging economy industrial stock markets' average excess returns. Lastly, we use a novel dataset on macroeconomic policy uncertainty to examine the co-movement between the global economic policy uncertainty and the emerging industrial stock market average excess returns.[3] The remainder of the introduction section presents a brief review of findings from existing literature for each of these issues, followed by a summary of our major findings.

Much of the recent research around emerging market returns focuses on the relative importance of country vs industry effects. A large part of this literature supports the idea that country effects tend to dominate industry effects (i.e. cross-country diversification is more beneficial than cross-industry in a risk-return framework). Serra (2000) finds that emerging markets' returns are mainly driven by country factors and that cross-market correlation is not affected by the industrial composition of the indices. She argues that geographical diversification dominates, in terms of risk reduction, domestic industrial diversification. Alternatively, Cavaglia et al. (2000) find that industry factors are more

[1] See Bekaert and Harvey (1995, 1997), Bekaert et al. (2007), Bilson et al. (2001), Brooks and Del Negro (2002, 2004), Chambet and Gibson (2008), De Jong and De Roon (2005), Donadelli (2013a,b), Donadelli and Prosperi (2012a,b), Grootveld and Salomons (2003), Harvey (1995), Henry (2000), Jayasuriya (2005), Phylaktis and Xia (2006), Samarakoon (2011), Serra (2000), among others.

[2] See Bekaert et al. (2007), Domowitz et al. (1997), and Donadelli and Prosperi (2012b), among others.

[3] Throughout the paper we use the terms ERP or average excess returns interchangeably.

important than country factors in the late 1990s, and suggest that diversification across industries might provide greater risk reduction than diversification across countries. For the period 1999–2000, L'Her et al. (2002) obtain a similar result. Brooks and Del Negro (2004), at firm level, using data from January 1990 to February 2002 for 23 developed and 27 emerging markets, observe that the rise in co-movement observed during the late 1990s represent a temporary phenomenon associated with the IT bubble. They explore the evolution over time of country and industry effects outside of the technology, media and telecommunications sectors, and find that there is no significant rise in the importance of global industry effects. They conclude that cross-country diversification is still risk-return beneficial. In contrast, Phylaktis and Xia (2006) show that the industry effects are still dominated by the country effects, suggesting that diversification across countries, especially across emerging economies, is more efficient that diversification across industries.

The removal of capital and trade barriers in the last two decades has also motivated several studies which focus on the impact of more liberalized economies on stock prices. Several empirical studies have shown that liberalization has decreased the cost of capital (i.e. expected returns), increased foreign direct investment (FDI), and decreased/increased stock market volatility.[4] There also exists a large body of the literature that examines the dynamic linkages between emerging and developed markets in the pre- and post- liberalizations periods.[5] While a large part of the literature in the preceding decade treated financial liberalization as a one shot event (i.e. once a stock market becomes liberalized it immediately becomes integrated), most recent studies find that financial liberalization and global integration are not simultaneous processes in emerging markets. For example, Claus and Lucey (2012) examine equity market integration in the Asian Pacific region for the period April–May 2006 and find that financial market liberalization is a necessary but not sufficient condition for stock market integration. In the spirit of Pukthuanthong and Roll (2009), Donadelli (2013b) studies the dynamics of the global integration process across emerging markets. Using monthly data from January 1988 to December 2011, he shows that the *de jure* and the *de facto* integration are not synchronized. Bekaert et al. (2011) apply a new measure of integration to 69 countries over a sample period of more than 20 years. They find that emerging markets continue to display levels of segmentation above the U.S. benchmark, while developed countries have been effectively integrated since 1993. They also find that financial and trade openness, a country's political risk profile, its stock market development, and the U.S. corporate credit spread (a measure of global risk aversion) are statistically and economically significant in explaining the variation in segmentation.

A third line of inquiry has examined the extent to which cross-country ERP differences relate to macro-level indicators of good governance and country stability (such as differences in government and corporate transparency, government effectiveness, rule of law, political stability and corruption), as well as to higher exposure to global macroeconomic risks. Diamond and Verrecchia (1991), among others, have argued that a reduction in informational asymmetry can increase the investment from large investors and hence reduce the cost of capital for the firm. Bushee and Noe (2000) report a positive association between corporate transparency and the volatility of the firm's stock price. Ng and Qian (2004) find that corporate governance is worse in more corrupt countries, lowering firms' values. Ng (2006) observes that corruption is associated with higher borrowing cost for the firm, lower stock valuation, and worse corporate governance. Gelos and Wei (2006) show that higher corruption decreases investment from foreign investors. Diamonte et al. (1996) show that changes in political risk have larger impact on returns in emerging markets than in developed markets. They also observe that emerging markets have become politically safer over the period 1985–1995. They conclude by arguing that changes in political risk can be used to predict emerging stock returns. In the spirit of Barro (2006), Prosperi (2012) empirically shows that ERP is heavily affected by information frictions deriving from institutional aspects such as corruption, rule of law and quality of government. He finds that the higher degree of corruption in some emerging markets have forced international investors to ask for a higher average ERP.

[4] See Bekaert and Harvey (2000), Henry (2000), and Jayasuriya (2005).

[5] See Arshanapalli and Doukas (1993), Chen et al. (2002), Hamao et al. (1990), Masih and Masih (1997), Kasa (1992), and Ozdemir et al. (2009), among many others.

Methodological constraints could also play a role in persisting uncertainty over key drivers of emerging market ERP, in that much of the existing work does not go beyond national level analyses to examine potentially different contributions across industries, nor does it take into account the potential for different drivers of performance across two clearly divergent eras of contrasting emerging market activity before and after 2003 (i.e. emerging market crises). Our research here aims to go beyond these methodological limitations in two ways. First, we employ both static and dynamic elementary modeling approaches to examine the contribution of 10 different industrial stock markets to the higher emerging average ERP observed across emerging economies during the last two decades. To do so, we use an extensive range of data from national and emerging industrial stock markets by focusing on industrial stock market excess returns for 19 emerging countries and three regions. Our approach augments existing work, because while much of the existing literature has been devoted to using industry factors to explain variation across emerging market stock returns, little attention has been paid to understanding variation in industries' behavior *per se*. Similarly, existing studies on financial market linkages and financial integration have been mostly based on a single market or a single geographical group of markets (e.g. markets in East Europe, or in Latin America, or in Southern Asia).[6] In addition, the literature around predicting emerging stock returns has mainly focused on national stock market indices. Here, we use a standard performance analysis to explicitly examine the role of industrial stock market indices in generating the observed higher emerging markets' ERP.

Second, we conduct separate analyses for what we term the *emerging market crises* period of January 1995 to December 2002, and the post-crises period from January 2003 to June 2012, in order to test for potentially different drivers of excess returns across the two eras. This explicit focus on both the emerging market crises period and the post-crises period is relatively unique, because most previous emerging market studies tend to focus either on the post-liberalizations period (early 1990s and onwards), or they uniformly analyze data across the period available. We argue that this is potentially problematic, because the emerging-crises period spans a time of much volatility due to several systemic banking crises in emerging economies, with repercussions for emerging stock market performances and the relative importance of different performance drivers during this period.[7] In contrast, the post-crises period includes an increasing degree of real and financial *de facto* integration, an increasing co-movement between international stock market returns, and rare but notable economic and political events in developed countries (e.g. subprime mortgage crisis and the European sovereign debt crisis). We argue that efforts to understand more universally applicable drivers of emerging market ERP should treat these two eras separately, and focus primarily on the post-crises period.

In terms of our major findings, we find via both static and dynamic approaches that: (i) the healthcare and basic materials industries have mostly contributed to the extra premium paid by the Asian stock market; (ii) the East European and Latin American stock markets' extra performances have been largely driven by the utilities and consumer services industries, respectively; (iii) average emerging industrial stock market performances are lower than the US industrial stock market performances over the crisis period (i.e. January 1995–December 2002). In a dynamic context, at the industry level, we also show that the importance of the world equity index in explaining variation in national and industrial stock market excess returns is increasing in the post-crises period. That is, the percentage of variance in monthly excess returns explained by the world equity portfolio is increasing over time.[8] Our examination of the role of country level governance in explaining varying industrial ERP returns finds only weak evidence for a negative relationship between governance indicators and average stock market performance. However, we do find a statistically significant relationship between the consumer goods industrial stock markets and governance indicators. In contrast, we show that the dynamic unconditional and conditional correlations of global policy uncertainty and emerging industrial stock market returns are consistently negative. We observe that such correlations follow a similar patterns both in the US and in the emerging economies, suggesting particular implications for

[6] See Claus and Lucey (2012), Goldberg and Veitch (2010), Kenourgios and Samitas (2011), and Hatemi-J (2012).
[7] For a detailed discussion on banking crises in emerging markets, see Joyce (2011).
[8] A similar result can be found in Bilson et al. (2001), Donadelli and Prosperi (2012b), and Goldberg and Veitch (2010).

Table 1
Geographic distribution of the countries in the sample.

Asia	Latin America	East Europe	Middle East	Africa	Advanced
China	Brazil	CzRep	Turkey	South Africa	United States
India	Argentina	Hungary			
Malaysia	Chile	Poland			
Pakistan	Colombia	Russia			
Phil	Mexico				
Sri Lanka	Peru				
Thailand					

both country and industry portfolio diversification strategies. In addition, we find that increased stock market volatility increases policy uncertainty and dampens both US and emerging industrial stock market returns.

The paper is organized as follows. Section 2 describes the data and presents a preliminary analysis of the data. Section 3 examines the emerging ERP in an industry-by-industry context. Section 4 studies the relationship between governance indicators, and industrials stock market excess returns. Section 5 discusses findings related to the co-movement between US economic policy uncertainty and industrial stock markets. Section 6 concludes.

2. Data and summary statistics

2.1. The stock excess returns

We download ten industrial stock market indices from Datastream Global Equity Indices (DGEI) for 20 national markets. The sample includes 19 emerging countries (see Table 1), as well as the United States, which we use for comparisons in some of our analyses. Emerging countries follow the IFC country classification (see IFC, 1999).[9] The full list of countries is illustrated in Table 1. The ten industrial stock market indices are from level 2 of DGEI, and include the following sectors: Basic Materials, Consumer Goods, Consumer Services, Financials, HealthCare, Industrials, Oil&Gas, Technology, Telecommunications and Utilities.[10] The sample period spans December 1994 (or later, depending on availability) through June 2012. Details are given in Table A.1, which lists the countries and industries, the time period, the identity of the index for each industry in each country and its Datastream mnemonic. All indices are monthly total return indices, that is, total monthly returns are measured as the capital change of an industrial index plus the dividend yield. To negate the influence of domestic inflation, all returns are measured in US$ (i.e. returns only retain US inflation). Therefore, we assume that returns are viewed from the perspective of an international investor rather than a local one. Since measured in US$, excess returns are in excess of the one-month Treasury bill rate, provided by the Kennet French Data Library.[11] Formally,

$$ExR^{i}_{k,t} = \left(\frac{DGEI^{i}_{k,t}}{DGEI^{i}_{k,t-1}} - 1 \right) - R^{f}_{t} \tag{2.1}$$

where $DGEI^{i}_{k,t}$ is the total return index of industry i in country k at time t, and R^{f}_{t} represents our US-based risk free rate proxy. The proxy chosen for the world market index is the MSCI World Index.[12] Therefore,

[9] The IFC defines an emerging market as a country that meets one of two criteria: (i) the market is located in a low- or middle-income economic region; (ii) market's investable market capitalization is low relative to its most recent GDP figures. The IFC classifies as emerging markets the following countries: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Peru, Philippines, Poland, Portugal, Russia, Saudi Arabia, Slovakia, South Africa, Sri Lanka, Taiwan, Thailand, Turkey, Venezuela and Zimbabwe.

[10] Level 2 equates to the Industry Classification Benchmark (ICB) industry level, dividing the total market into ten Industries and covers all the sectors within each group in each region or country. Source: Datastream.

[11] The one-month T-bill rate is publicly available at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library/.

[12] The same proxy has been used by Ferson and Harvey (1994), Harvey (1995), Bilson et al. (2001) and Donadelli and Prosperi (2012a).

the US dollar return of the MSCI world equity market in excess of the one-month T-bill rate represents the word equity market excess return (i.e. the market factor). In addition to our analyses of country-by-country industrial data, we also aggregate our country data across three major regions of the world represented in our dataset: Asia, which includes China, India, Malaysia, Pakistan, Philippines, Sri Lanka, and Thailand; the Eastern Europe region, which includes Czech Republic, Hungary, Poland and Russia; and the Latin American countries, which comprise Argentina, Brazil, Chile, Colombia, Mexico, and Peru. We then construct regional industry portfolios following the geographic distribution presented in Table 1. Formally,

$$IndPort^{i}_{j,t} = \frac{1}{K}\sum_{k=1}^{K} DGEI^{i}_{k_j,t} \tag{2.2}$$

where $DGEI^{i}_{k_j,t}$ denotes the total return index of industry i in country k and region j, K is the total number of countries in region j, and $1/K$ represents the weight.

2.2. Data on governance and global economic policy uncertainty

Our governance data (Appendix A) are drawn from The World Bank's Worldwide Governance Indicators (WGI), which compiles annual indicators of governance for 215 countries over the period 1996–2011. The WGI project is a widely used source of standardized, country-level governance data comprised of aggregate indicators of the following six broad dimensions of governance: Control of Corruption, Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, and Rule of Law. In this paper we employ four out of six available governance indicators (i.e. control of corruption, governance effectiveness, political stability and regulatory quality). Data on economic policy uncertainty are from Baker et al. (2013). They construct indices aimed at measuring policy-related economic uncertainty in the United States, Europe, Canada and China. The indices are based on three components: (i) newspaper coverage of policy-related economic uncertainty; (ii) the number of federal tax code provisions set to expire in future years, and (iii) a measure of disagreement among economic forecasters as a proxy for uncertainty.[13] We employ the US monthly "main" macroeconomic uncertainty index for our analyses, using data from January 1995 to June 2012.

2.3. Summary statistics

Table A.2 provides summary statistics for average excess returns for the ten industrial stock markets. We report aggregate results by industry for each region of world, and for the full sample period as well as the crises and post-crises periods. Tables A.4 and A.5 report summary statistics for the four governance measures and for the global economic policy uncertainty index. Here we briefly highlight four broad findings of interest, before turning to the results related to emerging industrial stock markets, and the relationship between emerging stock markets and country-level governance and macroeconomic policy uncertainty. First, the ERP in emerging markets indeed tends to be significantly higher than in developed markets over the last 15 years. As shown in Table A.3, column 2, 17 out of 19 emerging stock markets deliver higher average ERP than the US stock market over the period January 1995–June 2012 (i.e. full sample). Only Argentina and Philippines display lower average excess returns. Second, the ERP in emerging markets is largely higher than in the US market over the period January 2003–June 2012 (see column 4 of Table A.3). The annual cross-country average ERP is 22.57%. Third, this trend is in contrast with that of the crises period (i.e. January 1995–December 2002), where the ERP is negative in nine out of 19 emerging stock markets, and lower than developed country average ERP in 15 out of 19 emerging markets (see column 3 of Table A.3). Such results suggest and confirm that the emerging market risk-adjusted performance (i.e. excess return per unit of risk) has been largely

[13] The economic policy uncertainty indices are publicly available at http://www.policyuncertainty.com/. Additional details on the methodology can be found in Baker et al. (2013).

affected by domestic shocks (i.e. systemic bank crises in emerging market countries). As additional evidence of this, Fig. A.1 reports the dynamics of the Sharpe ratios for ten industrial stock markets in Asia, East Europe, Latin America, and the US. Our figure clearly shows that during the late1990s and early 2000s emerging industries' performances are weaker than the US industrial stock market risk-adjusted performances. In contrast, emerging industries strictly dominate US industries approximately starting from 2003. The sharp decline in the technology and telecommunications in the US is also evident here, as a consequence of the IT bubble. Fourth, as shown in Table A.4, we highlight that average values for four of the country-level governance indicators (control of corruption, government effectiveness, political stability and absence of violence, and regulatory quality) are higher in the US than in emerging economies both in the crises and post-crises periods, as might be expected. However, the political stability governance indicator is weaker for the US, and it has largely decreased in the post-crises period (i.e. from 0.73 to 0.23). Last, we observe that global economic policy uncertainty sharply increases during periods of crises (see Fig. A.2). Macroeconomic policy uncertainty seems to follow a decreasing path over the period 2003–2007. We also observe that the average macroeconomic policy uncertainty is lower over the emerging market crises period than the post-crises period (see Table A.5), which is marked by much market volatility in the US. All of these points serve to justify our analytical focus in this paper on what we term the post-crises period (January 2003 to June 2012), a period of greater emerging market stability with increasing real and financial market openness, bilateral trade across economies, and average ERP – hence serving as a more appropriate benchmark period to understand key drivers of average excess return behavior and international linkages.

3. Emerging stock market excess returns: understanding variations by industry

3.1. The world CAPM: a static analysis

The Capital Asset Pricing Model (CAPM) has been widely used in the financial literature during the last two decades for a range of applications, such as estimating the cost of capital for firms and evaluating the performance of managed portfolios. The CAPM also represents a standard approach for estimating the risk of a national stock market with respect to a "market index" (e.g. world market index), and this is the approach that we use in our analysis here to determine the industries which contribute the most to emerging country unexpected average excess returns. The Sharpe-Lintner version of the CAPM says that the expected value of an asset's excess return can be completely explained by its expected CAPM risk premium (i.e. quantity of risk, β, times the market price of risk, $R_m - R^f$). This implies that the Jensen's alpha, the intercept term in the time series regression, is zero for each asset

$$ExR^i_{k,t} = \alpha_i + \beta_{i,m}(R_{m,t} - R^f_t) + \epsilon^i_{k,t} \tag{3.1}$$

where i denotes the industry and k the country (or region).

We estimate Eq. (3.1) for ten industries across each of 19 emerging stock market, three regional industry-based portfolios (Asia, Latin America and East Europe) and the US stock market, in a static context. In line with one of the main purposes of this study, we estimate the world CAPM over the following three time horizons: (i) full period (i.e. January 1995–June 2012); (ii) crises period (i.e. January 1995–December 2002); (iii) post-crises period (i.e. January 2003–June 2012). Tables (B.1)–(B.3) report estimation results of Eq. (3.1) for the Asian, East European and Latin American industry portfolios. Tables (B.4)–(B.23) report country-by-country estimation results.[14] At the industry level, we confirm some existing empirical findings and also provide some new insights. Our main empirical findings are as follows.

First, our sub-sample analysis confirms that the beta is time-varying. We observe that the crises beta is lower than the post-crises beta in ten out of ten Asian industries, in ten out of ten Eastern

[14] Estimation results at the regional level (Tables (B.1)–(B.3)) and at the country level (Tables (B.4)–(B.23)) are available at the following url: ~~http://mdonadelli.altervista.org/DP2013_RIBF_Appendix.pdf~~. See also Donadelli and Persha (2013). https://sites.google.com/site/michdonadelli/research

European industries and in eight out of nine Latin American industries.[15] It is worth mentioning that the beta has decreased only in the telecommunications stock market in Latin America. The latter suggests that the higher beta during the crises period has been mainly driven by the IT bubble of the mid and late 1990s.[16]

Second, for the crises period, we find that the industry beta is not always statistically significant, meaning that emerging industrial stock markets have been weakly exposed to global risk factors. In particular, the world equity portfolio excess return does not explain variation in excess returns in the following industries (region): consumer goods, consumer services, oil&gas, utilities – (Asia); consumer goods, consumer services, industrials – (East Europe); and healthcare, industrials, oil&gas – (Latin America). In contrast, for the US, the beta is statistically equal to zero only in one industrial stock market, utilities (see Table B.4). At the country level, the beta is rarely statistically significant.[17] Results seem to confirm empirical evidence on the low cross-country returns correlation. Some of these studies claim that such low correlation resulted from the diverse industrial structures in each country that are mirrored by different industrial composition of their stock market indices.[18] Bilson et al. (2001) estimate multiple beta models to explain variation in 20 emerging national stock markets. Employing monthly data from February 1985 to December 1997, they find that the world market beta is statistically different from zero (at the 5% level) in 10 out of 20 emerging stock markets. Ferson and Harvey (1994), focusing on 18 developed national equity markets, find that the market portfolio is by far the most important factor from the perspective of explaining variance.

Third, for the crises period, we find that the intercept across regional industries is always statistically equal to zero (i.e. the null hypothesis of $\alpha = 0$ is not rejected). We find that in those cases where the beta is statistically significant, then the world CAPM holds. In other words, our results suggest that during the crises period, emerging industrial stock markets do not show unexpected excess returns (i.e. abnormal returns). In contrast, for the post-crises period, we get statistically different from zero (and positive) intercepts across all industries in Asia and Latin America. In the East Europe region, the null hypothesis is rejected in five out of ten industries (i.e. basic materials, consumer goods, financials, oil&gas and utilities).[19] As expected, the US industrial stock markets does not deliver unexpected average excess returns. The null, $\alpha = 0$, is not rejected in eight out of ten industrial stock markets. Different from zero alphas (at the 10% level) are found for the oil&gas and utilities industries. At the country level, estimation results tend to be similar (see Tables (B.4)–(B.23)).

Fourth, we find that the explanatory power of the world equity portfolio largely increases in the post-crises period. For the Asian region, we find that our single global risk factor can explain, ex-post, between 0.8% and 8.7% percent of the variance of the monthly industrial stock market excess returns over the crises period (i.e. January 1995–December 2002), and between 23% and 40% over the post-crises period i.e. January 2003–June 2012). For the East European region, the world equity market explains between 0.6% and 19% over the crises period, and between 35% and 50% over the post-crises period. For the Latin American region, it explains between 0.05% and 15.2% over the crises period, and between 18% and 37% over the post-crises period. The R^2s estimates suggest two additional insights: (i) the highest R^2 in the crises period is for the Telecommunications and Technology industrial stock markets in all regions, suggesting that the IT bubble matters;[20] (ii) the R^2 are, one average, relatively high.[21] At the country level, we also observe improved explanation of the monthly equity excess

[15] Note that the limited number of observations for the technology industry in Latin America allows us to report estimation for the post-crises period only, where we have 75 observations (i.e. April 2006–June 2012).

[16] Brooks and Del Negro (2004), exploring the dynamics of country and industry effects outside of the technology, media and telecommunications (TMT) sectors, find similar results. They also argue that there is no reason to think that greater integration should be confined to a narrow set of sectors.

[17] We find evidence of statistically different from zero beta across industrial stock markets in the following countries: Thailand, Argentina, Brazil, Chile, Mexico, Hungary, Turkey, South Africa.

[18] See, for example, Roll (1992) and Heston and Rouwenhorst (1994).

[19] At the national level, Donadelli and Prosperi (2012b) find similar results.

[20] Highest estimated R^2 (crises sample): Telecommunications, 8.7% (Asia); Telecommunications and Technology, 19% and 10%, respectively (East Europe); Telecommunications, 15.2% (Latin America).

[21] Bilson et al. (2001), for example, find that the $\overline{R}^2$ of a multi-factor macro economic model ranges from a minimum of −1% (Venezuela and Colombia) to a maximum of 38% (Indonesia).

returns. In contrast, and not surprisingly, we found that the improvement in the R^2 across the US industrial stock markets is lower.

We briefly note three additional findings. First, the post-crises industry betas seem to be higher across emerging markets than in the US, offering further support for the dual focus on crises and post-crises periods throughout our analyses. Second, the East European region presents the highest cross-industry beta in the post-crises period. Third, in Asia, Latin America and in the US, the basic materials industry presents the highest beta.

Table A.2 sums up our major findings regarding industry by industry contributions to emerging market average excess returns. Our findings based on the world CAPM static analysis suggest that the basic materials and the healthcare industries in Asia, the financial and utilities industries in East Europe, and the basic materials and consumer services industries in Latin America, have mainly driven the observed higher emerging ERP over the post-crises period. As mentioned above, the world CAPM is always rejected at the 1/5-percent significance level across Asian and Latin American industrial stock markets, and mostly rejected at the 5/10-percent significant level across East European industries. In other words, the one-factor model produce sizable pricing errors (i.e. unexpected excess returns). In line with the highest industrial stock market average performances estimated across the three regions, we find that the basic material and financials industries in Asia; the basic materials, oil&gas and utilities industries in East Europe; and the basic materials and consumer services industries in Latin America, carry the highest pricing errors (i.e. alphas). This is clear from Fig. 1, which plots the actual average excess returns against the CAPM predicted excess returns (on the horizontal axis) for the crises (left column) and post-crises (right column) periods.

3.2. The world CAPM: a dynamic approach

Our analysis across the crises and post-crises sub-samples confirms that the parameters of the regression model tend to vary over time. As a result, we also employ a dynamic approach (i.e. rolling window estimation technique) in order to gain a more comprehensive understanding of industrial stock market activity over time. We use this dynamic approach to supplement the static results reported above with a time-varying understanding of differences in the behaviors of the ten industrial stock markets in relation to average excess returns. We employ a rolling 5-year in-sample window as a reasonable trade-off between reducing error in the estimation of the relations between stock returns and our choice variables and permitting regime switches in those relations.[22] In practice, to capture the dynamics of the average unexpected excess return (i.e. Jensen's alpha), the quantity of risk (i.e. beta) and the percent of the variance of the industrial monthly excess returns explained by the world market portfolio (i.e. R^2), we estimate Eq. (3.1) using a rolling window of 60 months.[23] Estimated values for the regional industry-based portfolios are plotted in Fig. 2.

Our results, in line with the static analysis reported in Section 3.1, reinforce our two main empirical findings: (i) emerging betas are heavily time-varying and increase through time; (ii) the percentage of variance in monthly industrial stock market excess returns explained by the world equity portfolios increases over time, that is, it tends to be higher over the post-crises period.[24] We also note that emerging industrial stock markets have started to deliver higher unexpected excess returns approximately after the first NBER-dated recession date (i.e. during the post-crises period), and cross-industry estimated values seem to follow a similar path in all regions.[25] This phenomenon is exacerbated in the post-Lehman world, suggesting a higher degree of integration both within and across regions. Third, we confirm that healthcare and basic materials industries in Asia, the utilities and financials

[22] For a detailed discussion on the proper size of a rolling window, see Pesaran and Timmermann (2002).

[23] The number of observations per estimation is 60, and there are 150 estimation windows in total. For example, the first estimation window is January 1995–December 1999, the second is February 1995–January 2000, and the final estimation window is July 2007–June 2012.

[24] Using national stock market indices, Donadelli and Prosperi (2012a) obtain a similar result.

[25] At the country level, we obtain similar dynamics. Country-by-country estimation results are available upon request.

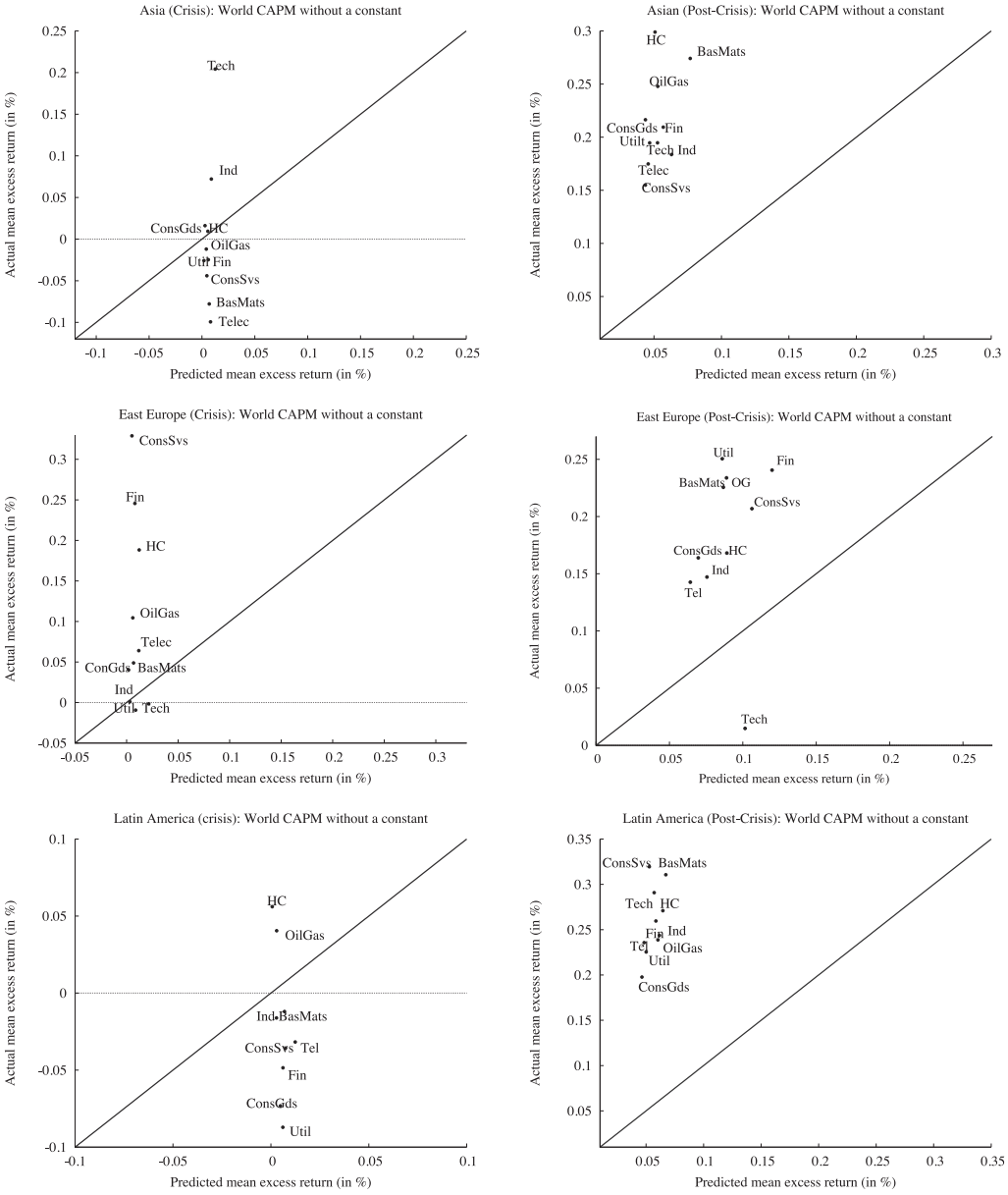

Fig. 1. This figure plots actual vs predicted excess returns for ten industry portfolios.

industries in East Europe, and the consumer services and technology industries in Latin America, have mostly contributed to the extra ERP paid by emerging markets to international investors during the last ten years. Results are clear from Table 2 which reports the three highest industry average unexpected excess returns (i.e. alphas) in the Asian, East European and Latin American stock markets for the post-crises period.

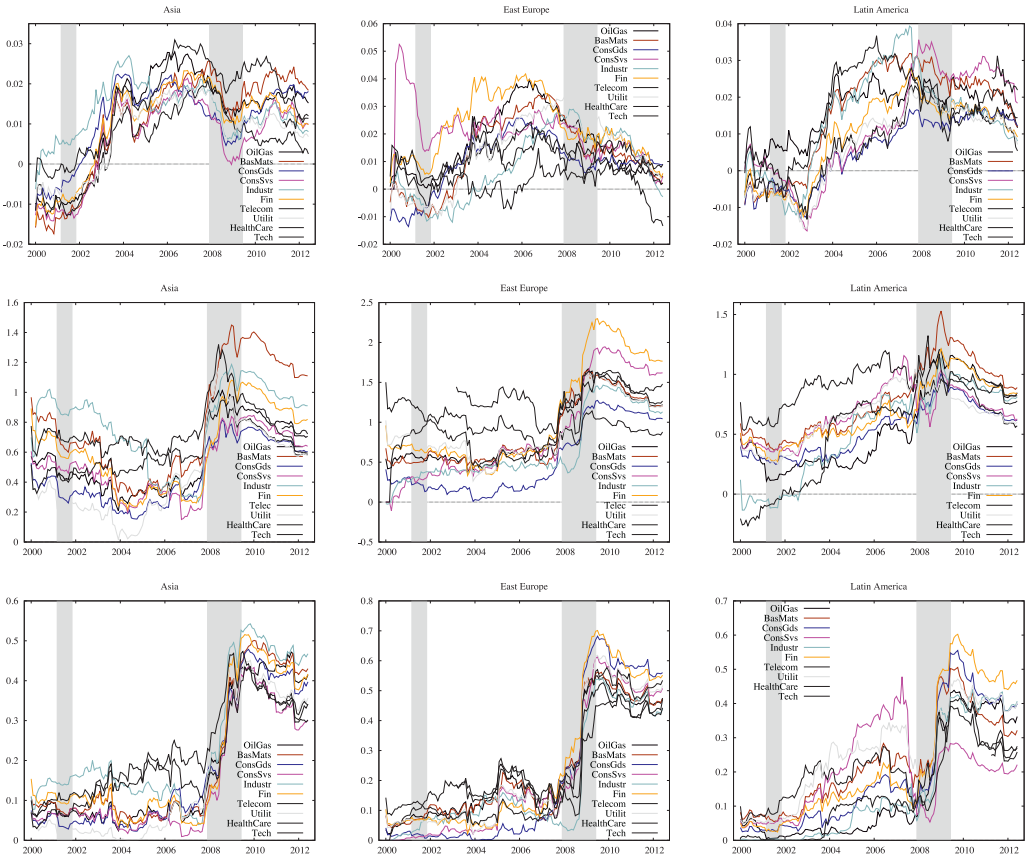

Fig. 2. This figure reports the dynamics of the intercept (top panel), beta (middle panel) and R^2 (bottom panel) for ten industrial stock markets in three regions (i.e. Asia, East Europe and Latin America). Alpha, betas and R^2s are estimated, via Eq. (3.1), employing a rolling 5-year (i.e. 60 months) in-sample window. Standard errors are Newey and West (1987, 1994). Regional industry portfolios are constructed as in Eq. (2.2). The sample goes from January 1995 through June 2012.

Table 2
This table reports the three highest industry average unexpected excess returns (i.e. alphas) in Asia, East Europe and Latin America for the post-crises period. Estimated alphas are averaged over the number of windows included in the period January 2003–June 2012. The percentage of statistically significant alphas are reported in parenthesis. *Notes*: the number of windows in the technology industry in Latin America is 15.

Asia		East Europe		Latin America	
HealthCare	0.244 (0.84)	Utilities	0.208 (0.56)	ConsSvs	0.329 (0.96)
BasMats	0.233 (0.58)	Financials	0.193 (0.29)	Technology	0.298 (1.00)
Oil&Gas	0.192 (0.86)	Oil&Gas	0.155 (0.29)	BasMats	0.279 (0.82)

4. Country-level governance and ERP variation

Governance issues feature prominently in the global finance literature as explanatory variables for a range of market and firm-level performance outcomes, hence a brief assessment of the role of country-level governance in explaining industrial excess returns is also warranted here. Much existing empirical work around governance has demonstrated that the quality of governance in a country affects its ability to benefit from foreign direct investments (FDI) and international capital flows. In particular, it has been observed that FDI tends to choose countries with strong governance indicators

(i.e. low corruption, strong government effectiveness, high political stability). For example, Wei (2000) finds that a rise in the corruption level in a host country reduces inward FDI, while Globerman and Shapiro (2003) find the US FDI is more likely to be directed to countries with more transparent markets and higher government effectiveness. However, far fewer studies examine the impact of governance indicators on international stock prices, and this body of work, which also tends to be more recent, is characterized by much less consensus. On one end of the spectrum are several empirical papers that argue for a negative relationship between country governance factors, investment flows and market returns, suggesting that investors preferentially target and expect higher returns in countries with lower transparency and other measures of quality of governance. On the other are theoretical arguments backed by their own set of empirical findings which suggest that improvements in country governance are associated with increasing ERP. For example, Low et al. (2011) find empirical support for higher ERPs in countries with lower governance quality while Aggarwal and Goodell (2011) find the opposite relationship.

Our governance analysis here follows a theoretical framework which holds that governance indicators such as corruption, government effectiveness, political stability and regulatory quality might affect investors' information set (see Lau et al., 2012; Prosperi, 2012). By extension, countries displaying poor governance indicators might also have higher barriers to information. In such countries, investors pay a higher cost to be informed, and therefore require higher compensation. In other words, countries with a lower quality of government could be expected to deliver, on average, higher ERP. Fig. 3 reports the scatter plots of the country average unexpected excess returns against each of four country-level governance indicators over the post-crises period. Plots in Fig. 3 informally suggest that the relationship between governance indicators and national stock markets' extra performances is weakly negative.

To more formally assess the relationship between average emerging market industrial ERP and indicators of country-level governance, we also use simple ordinary least squares (OLS) regressions with one observation per country over the post-crises period. Following Edison et al. (2002), our cross-sectional OLS analysis uses monthly ERP data and annual governance indicators averaged over 2003–2012, such that there is one observation per country across each variable in the model, and heteroskedasticity-consistent standard errors. The basic set of regressions takes the form:

$$ERP_i = \alpha + \beta_i QoG + \epsilon_i \tag{4.1}$$

where the dependent variable, ERP, equals average equity risk premium in industry i across emerging countries, QoG is one of the governance indicators discussed in Section 2.[26] As discussed in the introduction, our analysis over the period 2003–2012 avoids the introduction of potential confounding factors stemming from the emerging market country domestic shocks of the late1990s and early 2000s, and to focus on testing the relationship between these factors of interest during a period characterized by an increasing *de facto* global integration.[27]

Table 3 presents the regression results. Specifically, the set of regressions simply include the average cross-country industrial ERP and our four governance indicators (i.e. control of corruption, government effectiveness, political stability and absence of violence, regulatory quality). Although Fig. 3 suggests a weakly negative relationship between country unexpected average excess returns and measures of governance (i.e., higher unexpected excess returns in countries with weaker measures of governance), the empirical findings in Table 3 suggest that nine out of ten industrial stock markets are not sensitive to the quality of governance. Our OLS results are consistent with existing cross-country regression empirical findings around a negative relationship with governance only for the consumer goods industry average ERP. [28] These industry-level results are perhaps not unexpected, since in countries with weak governance and corruption, these realities may be taken into account as known and ongoing phenomena that are simply factored into the strategy of undertaking day-to-day business. We also

[26] Note that our specification leads to consistent estimations.

[27] See De Jong and De Roon (2005), and Donadelli (2013b).

[28] We obtain similar results once we control for education (i.e. country average years of schooling). Data on average years of schooling are from the Barro-Lee data set (and freely available at http://www.barrolee.com/data/dataexp.htm). Estimation results are available upon request.

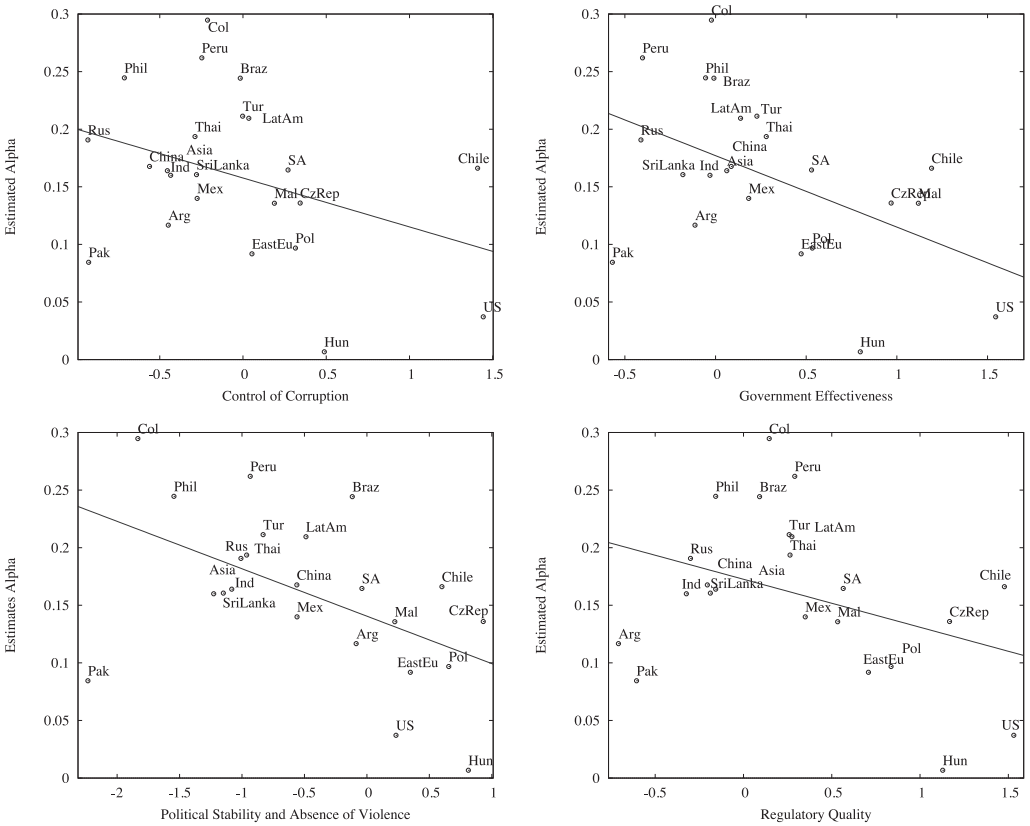

Fig. 3. Average unexpected excess returns vs governance indicators (post-crises). Countries' average unexpected excess returns (on the vertical axis) are average over industry-by-industry estimated alphas in each stock market in the post-crises period (i.e. average of column 8 of Tables (B.4)–(B.23)). Governance indicators (on the horizontal axis) are averaged over 2003–2011. *Notes*: governance indicators range from −2.5 (weak) to 2.5 (strong).

argue that the impact of weak governance indicators may be diluted across countries' businesses, hence may not produce shock-effects.

5. Implications for portfolio diversification: assessing the role of macroeconomic policy uncertainty and global co-movements

Our results in Section 3 suggest that certain industries drive the higher observed emerging market ERP, although the particular industries vary by region. On the surface, this finding could suggest a potential portfolio performance benefit towards industry diversification in a risk-return framework (rather than country diversification). To explore this further we augment our earlier analyses with an assessment of the extent to which emerging market industries' returns are independent of each other, and of broader global political and market uncertainties. This objective also follows from recent literature which points out that international stock market scandals as well as local and global political shocks might largely affect emerging stock prices. Early works examining the impact of local risk sources on emerging stock returns find that changes in political risk heavily affect emerging stock returns. In particular, it has been shown that political risk represents a more important determinant of stock returns in emerging than in developed markets (see Diamonte et al., 1996). In addition, Diamonte et al. (1996) document that during the mid 1980s and early 1990s, political risk has decreased in

Table 3
This table reports the estimation results of Eq. 4.1. Both industrial stock market data and governance data are averaged over the post-crises period (i.e. 2003–2012). Standard errors (reported in square brackets) are Newey and West (1987, 1994).

Industry	Intercept	*Corrup*	R^2	Intercept	*GovEff*	R^2	Intercept	*PolStab*	R^2	Intercept	*RegQ*	R^2
BasMats	2.237***	−0.507	0.069	2.472***	−0.747	0.124	2.039***	−0.540*	0.214	2.401***	−0.394	0.049
	[0.225]	[0.411]		[0.254]	[0.455]		[0.233]	[0.303]		[0.260]	[0.412]	
ConsGds	1.617***	−0.404**	0.144	1.788***	−0.557***	0.235	1.547***	−0.235**	0.138	1.808***	−0.569***	0.346
	[0.118]	[0.157]		[0.126]	[0.21]		[0.140]	[0.107]		[0.100]	[0.141]	
ConsSvs	1.960***	0.153	0.006	2.044***	−0.514	0.056	1.898***	−0.077	0.004	1.904***	0.152	0.006
	[0.224]	[0.392]		[0.337]	[0.627]		[0.221]	[0.330]		[0.272]	[0.387]	
Fin	1.906***	−0.24	0.074	2.017***	−0.377**	0.157	1.833***	−0.201*	0.147	1.986***	−0.204	0.065
	[0.090]	[0.153]		[0.111]	[0.157]		[0.091]	[0.103]		[0.113]	[0.129]	
HC	2.162***	0.195	0.008	1.968***	0.706	0.08	2.206***	0.125	0.007	2.110***	0.126	0.003
	[0.303]	[0.429]		[0.326]	[0.432]		[0.355]	[0.352]		[0.375]	[0.493]	
Industr	1.661***	−0.452	0.076	1.916***	−0.856*	0.226	1.511***	−0.425	0.184	1.832***	−0.441	0.085
	[0.181]	[0.369]		[0.254]	[0.475]		[0.160]	[0.300]		[0.239]	[0.363]	
OilGas	1.945***	−0.079	0.005	1.939***	0.068	0.003	1.876***	−0.155	0.056	1.928***	0.106	0.011
	[0.125]	[0.161]		[0.158]	[0.214]		[0.129]	[0.167]		[0.157]	[0.225]	
Tech	1.521***	−0.311	0.027	1.849***	−0.852	0.131	1.335***	−0.764**	0.313	1.820***	−0.772	0.178
	[0.291]	[0.430]		[0.335]	[0.335]		[0.277]	[0.329]		[0.313]	[0.569]	
Telec	1.595***	−0.11	0.007	1.653***	−0.202	0.019	1.565***	−0.088	0.012	1.624***	1.624	0.002
	[0.149]	[0.259]		[0.213]	[0.384]		[0.144]	[0.200]		[0.173]	[0.251]	
Util	1.885***	0.13	0.009	1.855***	0.059	0.001	1.853***	−0.031	0.001	1.797***	0.286	0.05
	[0.173]	[0.345]		[0.217]	[0.405]		[0.188]	[0.266]		[0.207]	[0.315]	

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

emerging markets and increased in developed markets.[29] Nevertheless, emerging economies have become more integrated. We use a newly introduced measure that quantifies global economic policy uncertainty to examine the dynamic co-movements between emerging industrial stock market excess returns and US economic policy uncertainty. To achieve this goal, we employ two different time-varying measures of co-movement between macroeconomic policy uncertainty and industrial stock market excess returns. First, we estimate correlations using a 5-year (i.e. 60 months) in-sample window. Second, we adopt the dynamic conditional correlation (DCC) model of Engle (2002). It is largely accepted that the latter has several advantages compared to a standard rolling window. On one side, the DCC is not influenced by the so-called ghost feature, that is, a shock does not last for many periods. As a result, the ghost feature can induce an apparent stability in correlations. This is clear from Figs. C.2–C.3 which plot the dynamic unconditional and conditional correlations between the industrial stock market returns and the macroeconomic policy uncertainty index, respectively. In addition, the use of the DCC does not require us to set a fixed window span, thus we avoid the undesirable loss of observations implied via this method. The dynamics of the correlations – computed using both procedures – and its implications for portfolio allocation strategies comprise our primary interests in this section.

5.1. Methodology

Let $y_t = [x_t, r_{1,t}, \ldots, r_{10,t}]'$ be the 11×1 vector containing the US monthly economic policy uncertainty index, x_t, and the ten industrial stock market excess returns, $r_{1,t}, \ldots, r_{10,t}$.[30]

Rolling-window:
Let C_t be the 11×11 correlation matrix between variables in y_t, the dynamic unconditional correlation matrix is simply given by

$$C_{t,W} = \frac{1}{W}\sum_{j=1}^{W} C_{t-j} \tag{5.1}$$

where t denotes the time in which the correlation matrix is estimated, and W is the window-length. As anticipated, W plays a smoothing factor role determining the shape of the estimation.

DCC-GARCH:
The conditional mean equations are represented by:

$$A(L)y_t = \epsilon_t, \tag{5.2}$$

where $\epsilon_t | \Xi_{t-1} \sim N(0, H_t)$ and $t = 1, \ldots, T$. A is a matrix of coefficients, L the lag operator and ϵ_t is the vector of innovations based on the information set, Ξ, available at $t-1$. The conditional variance-covariance matrix H_t takes the following form:

$$H_t = D_t R_t D_t, \tag{5.3}$$

where $D_t = diag(h_{1,t}^{1/2}, \ldots, h_{N,t}^{1/2})$ is a 11×11 matrix containing the standard deviations estimated via GARCH(1,1) and R_t is the time-varying correlation matrix. The elements of D_t follow a univariate process, thus can be written as follows,

$$h_{i,t} = w_i + \sum_{p=1}^{P_i} \alpha_{i,p} \epsilon_{i,t-p}^2 + \sum_{q=1}^{Q_i} \beta_{i,q} h_{i,t-q}, \qquad i = 1, \ldots, 11. \tag{5.4}$$

[29] For a detailed discussion on the impact of US political shocks in US fundamentals, see Bloom (2009).

[30] The augmented Dickey-Fuller test (ADF) with just a constant suggests that all excess returns are stationary, while US economic policy uncertainty contains a unit root. In contrast, the ADF test with a constant and a trend suggests that the US economic policy uncertainty index is trend stationary (i.e. the null hypothesis of a unit root process is rejected). The ADF test is available upon request. A similar result can be found in Antonakakis et al. (2012).

Engle (2002) proposes the following correlation structure:

$$Q_t = \left(1 - \sum_{k=1}^{K} a_k - \sum_{l=1}^{L} b_l\right)\overline{Q} + \sum_{k=1}^{K} a_k(\epsilon_{t-k}\epsilon_{t-k}) + \sum_{l=1}^{L} b_l Q_{t-l} \tag{5.5}$$

$$R_t = Q_t^{*-1} Q_t Q_t^{*-1}$$

where $\overline{Q}$ is the unconditional variance-covariance matrix, and Q_t^* is a diagonal matrix containing the standard deviation of the diagonal elements in Q_t. The above structure implies that R_t is a correlation matrix. Elements in R_t are then represented by the time-varying conditional correlations, $\rho_{ij} = q_{ij,t}/\sqrt{q_{ii,t}q_{jj,t}}$.

5.2. Estimation results

Figs. C.2–C.3 reports the dynamics of the unconditional and conditional correlation coefficients between the US economic policy uncertainty index and the excess returns of ten industrial stock markets in four different regions, respectively. We identify the following empirical regularities: (i) the dynamic conditional correlations of US policy uncertainty and industrial stock market excess returns are consistently negative, both in emerging and US industrial stock markets; (ii) during recession periods, the unconditional and conditional correlations largely increased; (iii) recessions appear to increase policy uncertainty and dampen US and emerging industrial stock market returns; (iv) the dynamic conditional and unconditional cross-industry correlations follow a similar path, especially over the past five years (2007–2012).

Taken as a whole, our conditional and unconditional results strongly suggest that industrial stock market prices tend to move together. Fig. C.1, which reports the dynamic unconditional correlations between the excess return of the world equity index and the regional industry portfolio excess returns, confirm these general results. We observe an increasing trend in correlations across industrial stock market excess returns in all regions. As expected, we find negative or low correlations just at the beginning of the sample (see left-hand side of plots in Fig. C.1), that is, during the crises period. This has clear implications for portfolio investment strategy, because it is largely accepted that correlations critically determine the success of diversification in the portfolio strategy. In practice, we suggest that the presence of highly correlated stock dramatically reduces any potential diversification gains. Contrary to existing empirical studies, which are mainly based only on the post-liberalizations era, which in turn includes emerging market crises, our results suggest that there is currently little space in emerging markets to exploit cross-industry diversification benefits.

6. Conclusion

Over the last twenty years, and especially after liberalization,[31] emerging stock markets have captured the attention of many scholars as well as many practitioners. Emerging markets' empirical regularities are well known (e.g. high returns, high volatility, time-varying moments). Using industry-level data for 19 emerging stock markets across three regions and over two different sub-periods (i.e. crises and post-crises), country governance indicators, and a newly introduced measure of economic policy uncertainty, we improve the existing literature in four main directions. First, we show that some industries contribute more than others in determining the extra premia paid by emerging markets to international investors. In particular: (i) the healthcare and basic materials industries have mostly contributed to the extra premium paid by the Asian stock market; (ii) the East European and Latin American stock markets' extra performances have been largely driven by the utilities and consumer services industries, respectively; (iii) average emerging industrial stock market performances are lower than the US industrial stock market performances over the emerging market crises period.

[31] For a detailed discussion on equity market liberalizations, see Henry (2000) and Bekaert (1995).

Second, country-level governance indicators do not explain the cross-section of emerging industrial stock market excess returns during the post-crises period, with the exception of the consumer goods industrial stock market. An alternative explanation, which stems from recent macro-finance literature in an asset pricing consumption-based context, could be that much of the higher emerging average ERP may be explained by higher emerging consumption growth rate volatility (Bansal et al., 2013). Third, we show that the time-varying unconditional and conditional correlations between emerging and US industrial stock market returns and policy uncertainty are consistently negative, suggesting that a higher economic policy uncertainty lowers stock prices. While some emerging markets might still display some degrees of segmentation, their national as well as industrial stock markets seem to follow developed stock markets' dynamics. In all, the dynamics of the correlation coefficients between emerging and US industrial stock market returns and world equity portfolio return and economic policy uncertainty suggests that cross-industry diversification benefits are negligible. While "crises period findings" point out that portfolios diversification benefits might still be exploited, "post-crises findings" show that industrial stock markets are internationally related, thus, lowering the probability to reduce portfolio risk through cross-industry diversification. In contrast to Brooks and Del Negro (2004), our findings also suggest that the rise in the co-movement across international stock markets of the mid- and late-1990s do not represent a temporary phenomenon (see Figs. C.1–C.3). As documented here and elsewhere, correlations between international stock markets are increasing over time, especially in the last decade (Carrieri et al., 2007; Donadelli, 2013b). We argue that such results, especially in the post-crises period, are mainly driven by balance sheet linkages among international investors and financial institutions across countries.

Appendix A. Data description and summary statistics

A.1. Financial data

See Table A.1

A.2. Quality of government data

The Worldwide Governance Indicators:

- **Control of corruption**: Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interests;
- **Government effectiveness**: Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies;
- **Political stability and absence of violence**: Reflects perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism;
- **Regulatory quality**: Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

Table A.1
Datastream Global Equity Indices (DGEI). *Notes*: Details on the industrial stock market indices (Table A.1) are available at the following url: ~~http://mdonadelli.altervista.org/DP2013_RIBF_Appendix.pdf~~. See also Donadelli and Persha (2013).

Series name	Code (Mnemonic)	Period
...		
...		

https://sites.google.com/site/michdonadelli/research

Note: Estimate of governance (ranges from approximately −2.5 (weak) to 2.5 (strong) governance performance). Sample: 1996–2011.

Source: World Bank – Governance Indicators.

Economic policy uncertainty:

- Monthly US Economic Policy Uncertainty Index (Sample: January 1995–June 2012)

Data description and methodology can be found at the following link:
http://www.policyuncertainty.com/methodology.html
http://www.policyuncertainty.com/media/BakerBloomDavis.pdf

A.3. Summary statistics

See Tables A.2 and A.3.
See Fig. A.1.
See Table A.4
See Fig. A.2.
See Table A.5.

Table A.2
Industrial stock market average excess returns. Average values are annualized and expressed in percentage points. The *full* sample goes from January 1995 (or later) through June 2012. The *crises* sample goes from January 1995 (or later) through December 2002. The *post-crises* sample goes from January 2003 through June 2012.

Industry	BasMats	ConsGds	ConsSvs	Financ	HC	Industr	OilGas	Telec	Tech	Utilit
United States										
Full	9.10	5.96	7.69	7.64	7.98	9.69	11.07	4.80	11.22	6.63
Crises	4.25	4.68	7.12	13.47	10.02	10.59	7.47	2.27	13.16	2.50
Post-Crises	13.18	7.04	8.16	2.73	6.26	8.93	14.11	6.92	9.60	10.11
Emerging (All)										
Full	15.25	11.85	16.21	14.90	20.78	13.44	15.78	11.81	19.25	12.03
Crises	1.02	0.45	−1.42	4.84	4.43	1.17	6.25	0.47	15.92	−4.31
Post-Crises	27.62	20.11	23.37	23.23	26.65	20.65	23.41	19.49	18.62	22.43
Asia										
Full	11.33	12.49	6.41	10.22	22.69	13.69	13.32	7.59	19.71	9.53
Crises	−7.77	1.61	−4.37	−2.45	8.28	8.16	−0.40	−9.82	19.79	−2.28
Post-Crises	27.42	21.64	15.48	20.89	28.04	18.35	24.78	17.42	19.22	19.49
East Europe										
Full	17.30	13.57	27.00	25.26	15.23	11.01	19.17	11.51	−0.87	15.37
Crises	13.13	3.58	40.47	28.21	18.81	−5.19	14.28	7.27	−7.09	−11.25
Post-Crises	22.51	16.32	20.69	24.05	13.94	15.34	23.40	14.24	1.50	25.09
Latin America										
Full	16.30	7.34	20.05	11.91	18.05	13.39	15.21	12.55	27.89	8.42
Crises	−1.20	−7.35	−23.01	−4.47	13.06	−6.40	4.05	−3.18	na	−9.11
Post-Crises	31.04	19.71	31.98	24.39	22.69	25.99	22.80	22.78	27.89	22.59
Africa and Middle East										
South Africa										
Full	11.80	17.40	12.34	11.36	12.48	10.54	15.17	25.39	na	na
Crises	2.21	9.41	−7.97	−0.55	−3.94	−1.71	11.12	19.08	na	na
Post-Crises	19.88	24.12	29.45	21.39	26.31	20.86	18.58	29.99	na	na
Turkey										
Full	27.80	21.94	23.56	27.79	36.86	24.94	22.98	24.57	40.33	31.65
Crises	17.54	20.86	26.68	23.65	−38.08	26.64	24.55	24.38	50.31	35.28
Post-Crises	36.45	22.85	20.94	31.29	55.92	23.50	21.66	24.73	31.93	28.59

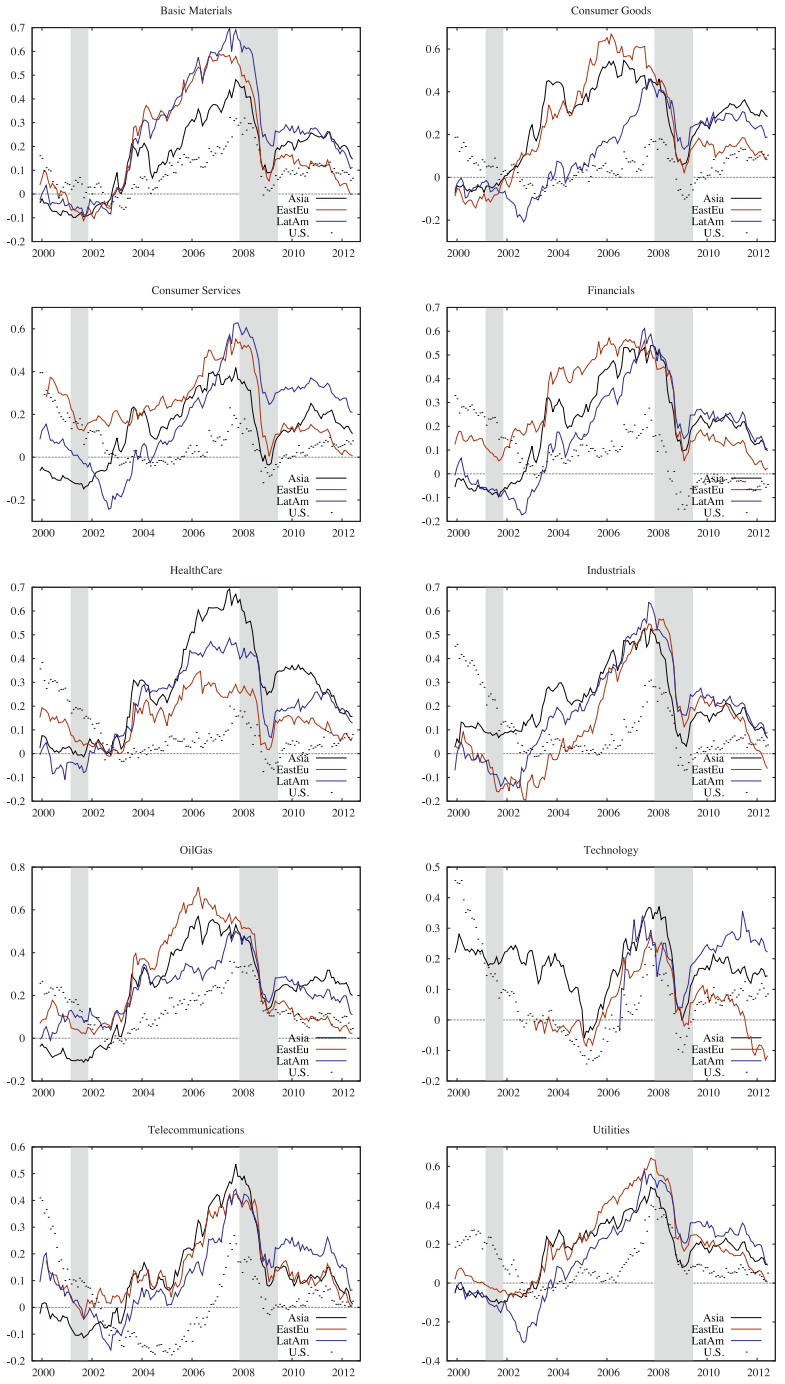

Fig. A.1. This figure reports the dynamics of the Sharpe ratio for ten industrial stock markets in three regions (i.e. Asia, East Europe and Latin America) and in the US. The Asian, East European and Latin American industry portfolios are constructed as in Eq. (2.2). The Sharpe ratio – computed as the ratio between the average excess return and the standard deviation – is computed using a rolling 5-year in-sample window. The sample period goes from January 1995 (or later) through June 2006.

Table A.3
Cross-industry national stock market average excess returns. Average values are annualized and expressed in percentage points. The *full* sample goes from January 1995 (or later) through June 2012. The *crises* sample goes from January 1995 (or later) through December 2002. The *post-crises* sample goes from January 2003 through June 2012.

Country	Full	Crises	Post-Crises
United States	8.18	7.55	8.70
Asia			
China	21.25	13.92	23.51
India	13.90	1.97	23.94
Malaysia	11.22	2.00	17.56
Pakistan	10.18	7.59	12.35
Philipp	6.33	−21.27	29.58
Sri Lanka	10.05	−0.22	17.81
Thailand	11.37	−3.88	24.19
Latin America			
Argentina	6.02	−6.46	16.52
Brazil	18.00	−17.00	29.39
Chile	10.36	−4.06	20.44
Colombia	16.66	−11.56	34.23
Mexico	13.81	4.84	21.32
Peru	19.44	−0.36	29.06
East Europe			
CzRep	13.78	5.75	20.53
Hungary	9.08	7.17	9.75
Poland	12.15	-3.57	18.61
Russia	29.02	41.57	26.36
Middle East and Africa			
South Africa	14.56	3.46	23.82
Turkey	28.24	21.18	29.79

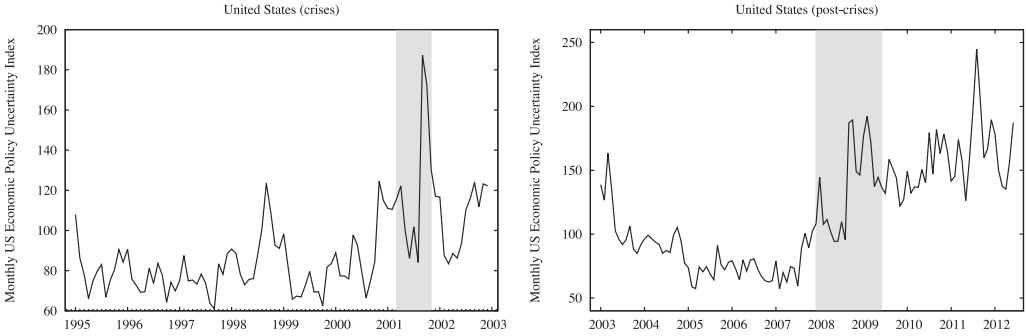

Fig. A.2. This figure plots the US monthly economic policy uncertainty index over the crises (i.e. January 1995–December 2002) and post-crises (i.e. January 2003–June 2012) periods. The policy uncertainty index series is computed as described in Baker et al. (2013), and publicly available at http://www.policyuncertainty.com/index.html.

Table A.4
Governance indicators: sub-sample average values. Average values are compute over three different periods. The full period extends from 1996 to 2011. The crises period extends from 1996 to 2002. The post-crises period extends from 2003 to 2011. Legend: CoC = Control of Corruption; GE = Government Effectiveness; PS = Political Stability and Absence of Violence; RQ: Regulatory Quality. *Notes*: Estimate of governance (ranges from approximately −2.5 (weak) to 2.5 (strong) governance performance). Source: World Bank.

Country	Panel A: CoC			Panel B: GE			Panel C: PS			Panel D: RQ		
	Full	Crises	Post	Full	Crises	Post	Full	Crises	Post	Full	Crises	Post
US	1.52	1.70	1.44	1.61	1.76	1.54	0.39	0.73	0.23	1.56	1.64	1.53
Argentina	−0.41	−0.31	−0.45	−0.04	0.11	−0.11	−0.13	−0.24	−0.09	−0.45	0.14	−0.71
Brazil	−0.01	−0.01	−0.02	−0.02	−0.04	−0.01	−0.09	−0.04	−0.12	0.18	0.37	0.09
Chile	1.43	1.48	1.41	1.19	1.18	1.19	0.57	0.51	0.60	1.48	1.48	1.48
Colombia	−0.27	−0.39	−0.21	−0.10	−0.26	−0.02	−1.80	−1.73	−1.83	0.12	0.07	0.15
Mexico	−0.29	−0.32	−0.28	0.20	0.23	0.18	−0.53	−0.45	−0.56	0.35	0.36	0.35
Peru	−0.26	−0.30	−0.25	−0.30	−0.08	−0.40	−0.94	−0.96	−0.93	0.34	0.47	0.29
China	−0.50	−0.35	−0.56	0.02	−0.12	0.09	−0.48	−0.31	−0.56	−0.24	−0.31	−0.20
India	−0.42	−0.39	−0.43	−0.06	−0.11	−0.03	−1.18	−1.06	−1.23	−0.33	−0.35	−0.32
Malaysia	0.26	0.41	0.19	1.05	0.89	1.12	0.22	0.21	0.22	0.54	0.57	0.53
Pakistan	−0.94	−0.96	−0.93	−0.55	−0.50	−0.57	−1.95	−1.31	−2.23	−0.61	−0.62	−0.61
Philippines	−0.59	−0.31	−0.71	−0.07	−0.09	−0.05	−1.31	−0.77	−1.55	−0.06	0.17	−0.16
Sri Lanka	−0.25	−0.20	−0.28	−0.21	−0.28	−0.18	−1.26	−1.52	−1.15	−0.07	0.19	−0.19
Thailand	−0.25	−0.16	−0.29	0.26	0.21	0.28	−0.53	0.44	−0.96	0.26	0.25	0.26
Cz Rep	0.36	0.41	0.34	0.89	0.71	0.97	0.88	0.77	0.93	1.10	0.96	1.17
Hungary	0.53	0.61	0.49	0.84	0.94	0.80	0.87	1.01	0.81	1.11	1.07	1.13
Poland	0.38	0.52	0.32	0.57	0.64	0.53	0.63	0.58	0.66	0.79	0.70	0.84
Russia	−0.94	−0.95	−0.93	−0.47	−0.60	−0.41	−1.05	−1.13	−1.01	−0.33	−0.39	−0.30
South Africa	0.37	0.60	0.27	0.58	0.70	0.53	−0.15	−0.39	−0.04	0.52	0.41	0.57
Turkey	−0.14	−0.46	0.00	0.14	−0.06	0.23	−0.91	−1.07	−0.83	0.27	0.30	0.26
Asia	−0.38	−0.28	−0.43	0.06	0.00	0.09	−0.93	−0.62	−1.07	−0.07	−0.01	−0.10
Latin America	0.03	0.03	0.03	0.15	0.19	0.14	−0.49	−0.48	−0.49	0.34	0.48	0.27
East Europe	0.08	0.15	0.05	0.46	0.42	0.47	0.33	0.31	0.35	0.67	0.59	0.71

Table A.5
Average US monthly economic policy uncertainty index.

	Crises	Post-Crises	Post-Lehman	Full
United States	88.88	116.78	159.49	104.02

Appendix B. The world CAPM: estimation results

- Tables (B.1)–(B.3) are available at the following url: ~~http://mdonadelli.altervista.org/DP2013_RIBF_Appendix.pdf~~. See also Donadelli and Persha (2013).https://sites.google.com/site/michdonadelli/research
- Tables (B.4)–(B.23) are available at the following url: ~~http://mdonadelli.altervista.org/DP2013_RIBF_Appendix.pdf~~. See also Donadelli and Persha (2013).https://sites.google.com/site/michdonadelli/research

Appendix C. Global co-movements and macroeconomic policy uncertainty

See Figs. C.1–C.3

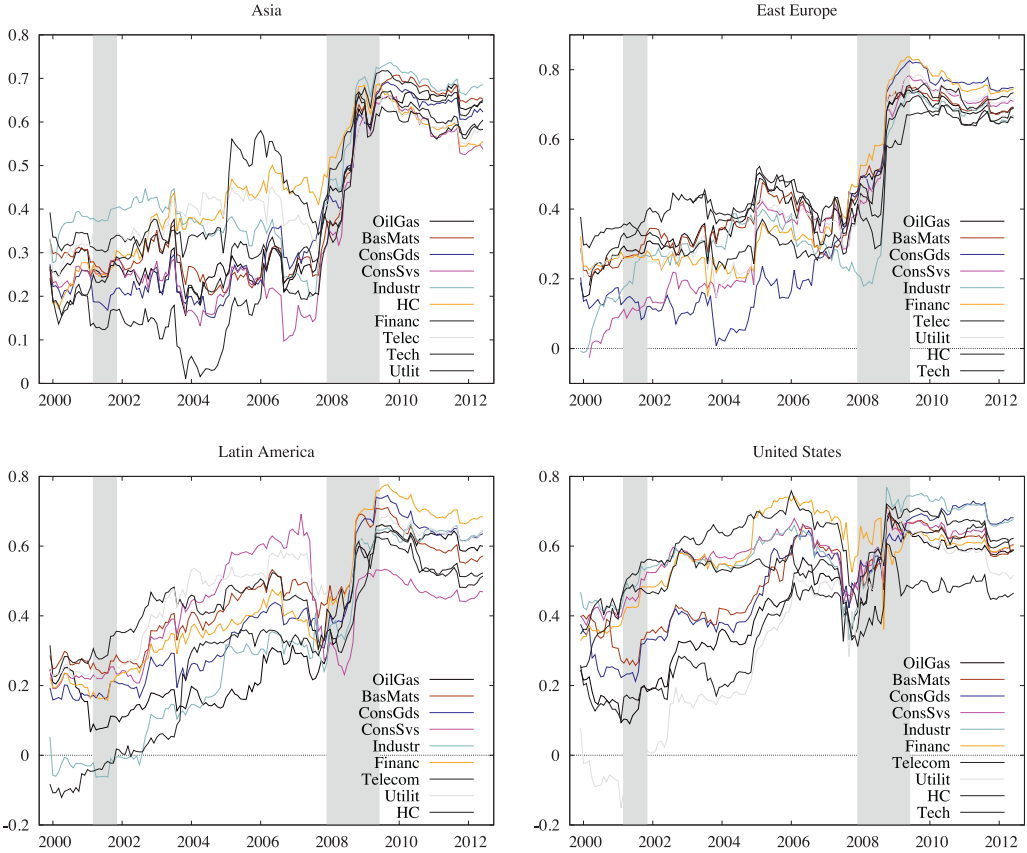

Fig. C.1. This figure reports the dynamic unconditional correlations between the world equity portfolio excess returns and the regional industry portfolios and the US industrial stock market excess returns. Correlation coefficients are obtained using a rolling window of 60 months. The sample goes from January 1995 (or later) to June 2012. *Notes*: Shading denotes US recessions as defined by NBER.

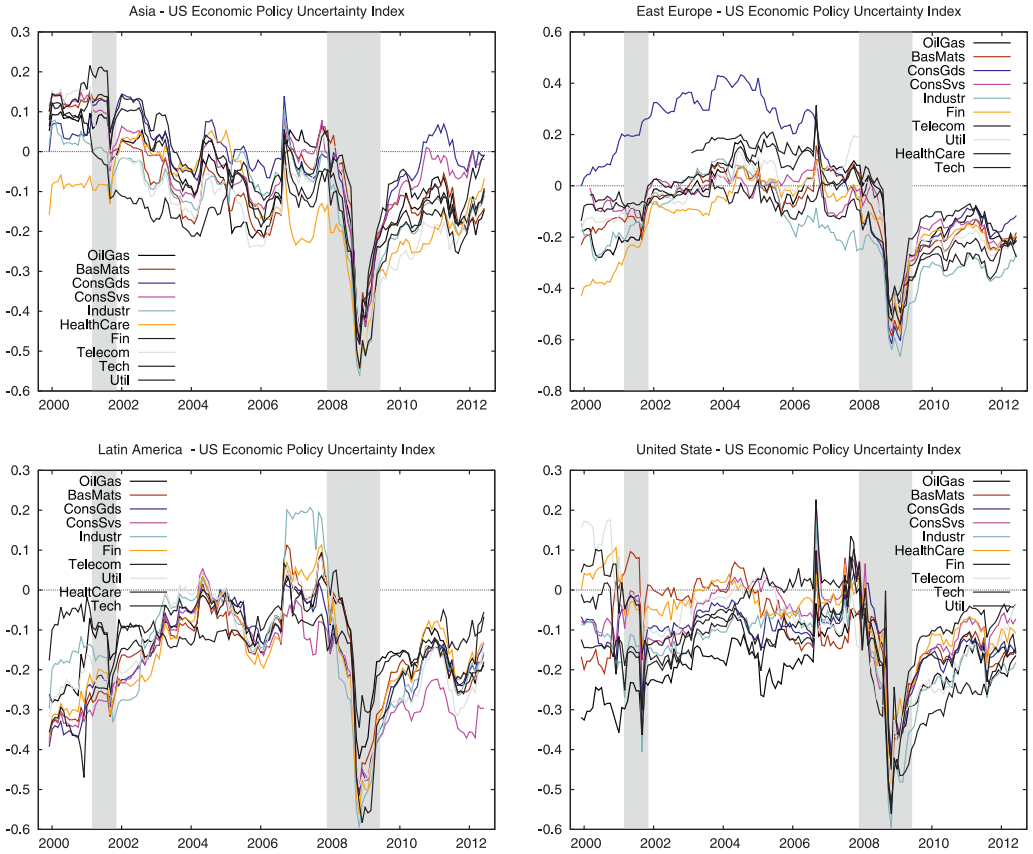

Fig. C.2. This figure reports the dynamic unconditional correlation between the regional industrial stock market excess returns and the US economic policy uncertainty index. Correlation coefficients are estimated using a rolling window of 60 months. Regional industry portfolios are constructed as in Eq. (2.2). The sample goes from January 1995 (or later) through June 2012. *Notes*: Shading denotes US recessions as defined by NBER.

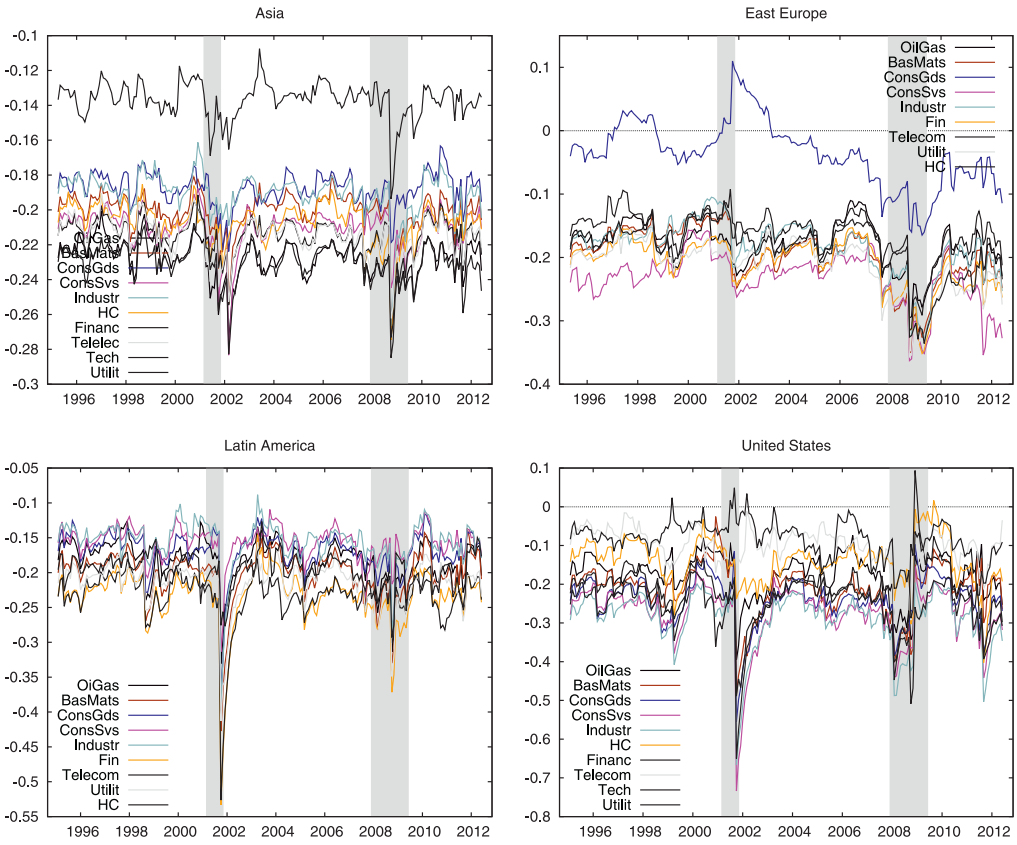

Fig. C.3. This figure reports the dynamic conditional correlations of US economic policy uncertainty and regional industry portfolio excess returns. Regional industry portfolios are constructed as in Eq. (2.2). The sample goes from January 1995 (or later) through June 2012. *Notes*: Shading denotes US recessions as defined by NBER.

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