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ON THE DYNAMICS OF INDUSTRIAL STOCK MARKET EXCESS RETURNS

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Abstract I study predictability and financial integration for the excess returns on ten emerging and U.S. industrial stock markets. Firstly, I examine one-factor and multi-factor linear models in a static context. I focus on the explanatory power of some common, macro, and artificial global risk factors. Estimation results suggest that emerging and U.S. industry excess returns are affected by the same global risk factors. I show that multi-factor models do a better job in explaining emerging and U.S. industry excess returns. Differently from U.S. estimates, I find that the "emerging industry intercepts" are positive and significantly different from zero. The result holds over four different linear factor models. My findings suggest that local risk factors may still play a key role. Secondly, I study the dynamics of the financial integration process across emerging and U.S. industrial stock markets. Examining the dynamics of the explanatory power of a multi-(*artificial*) factor model, where the first ten principal components extracted from a large set of variables are loaded as predictors, I show that emerging industrial stock markets are increasingly integrated. I also observe that the integration process across emerging industries has been affected by the "emerging country shocks" of the late '90s. The result is confirmed by the dynamics of the correlation coefficients between emerging and U.S. industrial stock markets. My findings suggest also that cross-industry diversification benefits are negligible.

Keywords Industrial Stock Market Indexes · Global Risk Sources · Financial Openness

1 Introduction

This paper aims to contribute to a recently active line of research that analyzes the dynamics of the global financial integration and its impact on international stock markets. I

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empirically examine linear factor asset pricing models for the excess returns on ten industrial stock markets. I employ ten emerging equally weighted industry total return indices (i.e. portofolios). As benchmark, I use the U.S industrial stock markets. industry total return indices. Industries are classified according to level 2 of Global Datastream Equity Indices, and are: basic materials, consumer goods, consumers services, financials, healthcare, industrials, oil&gas, telecommunications, technology and utilities. To explain variation in emerging industry excess returns (EIERs), I use several global risk measures. My risk measures are represented by traded and non-traded risk factors. To study the impact of the integration process on emerging and U.S. industrial stock markets, I use a multi-factor pricing model where the explanatory variables are represented by the first ten principal components extracted from a large set of variables. The dynamics of the $\bar{R}$ of this regression, estimated using a rolling window of 60 months, defines the global integration process across emerging and U.S. industrial stock markets.

This research has two goals. First, based on the assumption that emerging markets are increasingly integrated, I study the explanatory power of a bunch of global risk factors, namely, common, macro and artificial risk factors, in a static context. Estimations are performed over two different time horizons: (i) *full sample* (i.e. January 1994-June 2012); (ii) *post-liberalizations sample* (i.e. January 2000-June 2012). The *common factors* are from Fama and French (1994). The *macro factors* are chosen to measure global economic and financial risk. In addition to the common returns of the world equity market portfolio (i.e. MSCI World), the multi-macro factor model loads the U.S. industrial production growth rate, the U.S. M1 money stock growth rate, the US10Y-US2Y government bond yield spread, the 10Y Italian-German bund yield spread and the growth rate of the VIX. As *artificial factors*, I use the first ten principal components extracted from a large set of variables. In a static context, I model industry excess returns as a linear function of either one or N global risk factors. I start by examining two workhorse models, the Sharpe (1964) and Lintner (1965) version of the CAPM and the Fama and French (1994) three-factor models. Both models have been extensively studied. The empirical record of these models is very poor. Neverthenless, they are still widely used in financial applications, either to estimate the cost of capital or to evaluate managed funds' performances. As expected, I find that both asset pricing models weakly predict EIERs. In contrast, a multi-factor model loading macro risk sources as explanatory variables and a multi-factor model loading the first ten principal components as explanatory variables, both seem to do a better job in explaining variation across EIERs. I find that the six macro risk factors can explain, ex-post, between 25% and 37%, and between 31% and 46%, percent of the variance of the monthly EIERs over the full and post-liberalizations periods, respectively. Furthermore, the first ten principal components can explain between 74% and 93%, and between 77% and 94%, percent of the variance of the monthly EIERs over the full and post-liberalizations periods, respectively. While multiple beta models provide an improved explanation of the EIERs, their validity is rarely preserved. I find that the intercepts are positive and statistically different from zero. I argue that local risk sources may still play a role in predicting EIERs. Second, I study the integration process across emerging and U.S. industrial stock markets. The degree of co-movements between international stock markets as well as between cycle has sharply increased during the last 15 years. The impact of market integration on international stock markets has been largely studied. Most of these studies employ national indices in a static context. I focus on industrial indices in a dynamic context. In particular, I measure integration across emerging and U.S. industries. The dynamics of the simple correlation coefficient and of a robust measure of integration (i.e. the $\bar{R}s$ of a multi-(*artificial*) factor model) suggests that international industrial stock markets are increasingly. Strong evidence of common sensitivities to the employed global risk factors is found at the industry level, both in the emerging and the U.S. stock markets. As a result, the correlation coefficients and the $\bar{R}s$ follow a similar path (i.e. both estimates measure the level of integration). It emerges that national and industrial stock markets tend to move together and, therefore, the potential gains from international diversification is reduced. Clearly, my findings have implications for international investors as well as for financial applications.

The first part of this paper (i.e. static analysis) is most closely related to Ferson and Harvey (1994), Bilson et al. (2001), and Donadelli and Prosperi (2012b). As in their papers, I focus on excess returns' predictability, global risk sources and models' validity. The second part of this paper (i.e. dynamic analysis) is most closely related to Pukthuanthong and Roll (2009), and Donadelli and Prosperi (2012a). As in their empirical analysis, my environment has two key ingredients: *time-varying risk* and *artificial factors* (i.e. principal components). The paper is organized as follows. Section 2 reviews the literature. Section 3 describes data. Section 4 presents estimates from four different linear factor asset pricing models. Section 5 studies the dynamics of the global integration process across emerging and U.S. industrial stock markets. Section 6 concludes.

2 Prior literature and motivation

This paper adds to a vast literature that studies variations in emerging stock market returns. A fair amount of works have been conducted on the performance of emerging stock markets. Most authors find that emerging markets are much more volatile and carry higher returns than developed markets. Most of these studies focus on national stock indexes. Very few works have been devoted to study emerging industrial stock markets. The approach in this paper is unique in that I focus on the predictability of EIERs in a global-dynamic context. Given the poor empirical record of multiple betas models employing local risk factors, I only use global risk sources.

In addition, the high level of uncertainty as well as the strong time-varying component of emerging stock markets have led to heterogenous and weak estimation results. It turns out that estimation results are heavily state-contingent. Not surprisingly, in the most recent years, we observe a decrese in the number of works devoted to explain variation in emerging excess returns. This paper also aims to fill up this gap. To conlude, since the empirical strategy of this paper relies on the idea that emerging markets have become less segmented, my paper is also related to a large literature aimed at studying the global integration process and its effects on emerging stock markets.

2.1 On the use of industrial stock markets data

Several studies employ industrial stock market data to build industry factors. Roll (1992), using daily data for 24 countries and 7 industries, finds that the industrial structure of a country is key in explaining stock price behaviour. In particular, he observes that industry factors explain approximately 23% of the volatility in stock returns. In a similar framework, Griffin and Karolyi (1998), use the Dow Jones World Stock Index to construct industry factors. They find that little of the variation in country index returns can be explained by their industrial composition.[1] Grinold at al. (1989) find that a multi factor model which includes

[1] The Dow Jones World Stock Index dataset has been introduced in 1993. It covers 66 industries and an additional 45 sub-industry classifications spanning 25 countries.

both country and industry effects does a better job than a one factor model in explaining stock returns. Cavaglia and Brightman (2000), using monthly data for for 21 developed equity markets (from MSCI World Developed Markets) and 36 industries (from Financial Times/Standard & Poors (FT/S&P) thirty-six industry level national total return indices), find that diversification across industries provide more risk reduction benefits that diversification across countries. Serra (2000), using weekly IFC industry indices returns for the period 1990-1995, shows that cross-industry correlation is always higher than cross-market correlation. Wang et al. (2003) use DataStream Global Equity Indices to measure the relative importance of industry and country effects. They estimate a factor model for 7 equity markets and 22 industrial group returns indices from January 1990 to February 2001, and find that industry effects have significantly dominated country effects since 1999 and that country effects tend to exhibit a cyclical trend. However, very few studies have focused on the behaviour of industrial stock markets' returns. Donadelli and Lucchetta (2012), as in Wang et al. (2003), use DataStream Global Equity Indices to study the behaviour of EIERs in more than 20 emerging markets. Using a country-by-country approach, they find that small cross-industry diversification benefits might be still exploited. In addition, they show that the observed emerging stock premia are paid, in a large percentage, by few industries (e.g. healthcare sector in China and Turkey, and technology sector in Brazil, Chile and Turkey).

2.2 On the predictability of emerging stock excess returns

The poor empirical record of common asset pricing linear models has forced scholars and practitioners to employ multi-factor models including macroeconomic risk factors as explanatory variables. The role of macroeconomic variables in explaining variation in realized emerging stock returns has been largely studied in the last two decades. Chen et al. (1986) test the multifactor model in the U.S. by employing seven macroeconomic variables. They find that consumption, oil prices and the market index are not priced by the financial market. In contrast, they find that industrial production, changes in risk premium and twists in the yield curve explain stock returns. Ferson and Harvey (1994) examine multifactor asset pricing models for the returns and expected returns on 18 national developed equity markets. They employ factors measuring global economic risks, such as the returns on a world equity market portfolio, a measure of exchange rate risk, a measure of global inflation, real interest rates, and industrial production growth. In an ex-post framework, they find that the global risk factors can explain between 15% and 86% of the variance of the monthly returns over the 1970-1989. They also observe that the world market portfolio is the most important factor. Bailey and Chung (1996) examine the impact of macroeconomic risks on the equity market of the Philippines. They find that financial fluctuations, exchange rate movements and political changes on owners of Philippine equities do not predict Philippine stock returns. Belson et al. (2001) try to predict emerging national stock market returns employing both local and global factors. They use four country-specific macroecomic variables, as local factors, and the weighted world market index, as unique global factor. As local macro factors, they use the money supply, consumer price index, industrial production index and exchange rate, for 18 emerging markets. They find that their set of pre-determined global and local macroeconomic variables weakly predict emerging market returns. In a two-factor conditional CAPM, Donadelli and Prosperi (2012b), using data from January 1988 to December 2011, find that the VIX and the Open Interest on the U.S. stock market explain variation in emerging country excess returns.

2.3 On the global integration

Until late '90s the correlation coefficients between international market returns were either negative or very low. Some studies found that the low cross-country return correlation was a cosequence of different industrial structures. As industries are imperfectly correlated, equity markets with different industry composition will also be imperfectly correlated. A large part of the literature has focused on cross-country diversification benefits. I argue that all these studies have employed pre-2000 data. Given the increase in the degree of market openness and the financial market liberalizations of the late '80s and early '90s, the financial and trade sectors are today more open than in the past. Financial and trade openness have largely affected emerging stock returns. The effects on the diversification benefits, risk sharing and cost of capital have been largely investigated. Much of the literature has examined return correlations, or the evolution of betas with respect to a global benchmark. All these studies find that the integration process has a significant effect on stock returns.[2] The debate about whether or not emerging stock markets are fully integrated is still flourishing among scholars. In the post-liberalizations world, literature has focused on the concept of globalization. Empirical findings suggest that emerging markets have become globally integrated. Meric et al. (2001) examine the stability of correlations and the benefits of international portfolio diversification through investment in Argentina, Brazil, Chile and Mexico (i.e. the four largest Latin American markets) from the point of view of a U.S. investor. Their findings indicate that correlations are rising in time and that there are no significant gains to a domestically well diversified U.S. investor from holding a well diversified portfolio of Latin stocks. Phylaktis and Ravazzolo (2002) examines real and financial links simultaneously at the regional and global level for a group of Pacific-Basin countries. Focusing the covariance of excess returns on national stock markets over the period 1980-1998, they support the view that there is substantial integration between domestic and international financial markets in Hong Kong, Singapore, Malaysia, Philippines and Indonesia. Aggarwal et al. (2003), using a dynamic cointegration methodology, find that integration among European markets has increased. Pukthuanthong and Roll (2009), using a new integration measure based on the explanatory power of a multi-factor model, show that emerging countries are highly susceptible to the same global influences (i.e. high degree of integration). Jayasuriya (2011) examines the interlinkages of stock return behaviour for China and three of its emerging market neighbors in the East Asia and Pacific region. They employ VAR methodology to examine correlations among the markets. They find a significant interlinkage between the equity markets of China and Thailand. In contrast, in a recent paper, Bekaert et al. (2012), via a new measure of *de facto* equity market segmentation, find that the level of segmentation across emerging markets is still significant.

2.4 On the importance of standard asset pricing models and internatioanl co-movements

Financial integration has shifted relevance from country to global risk factors. To date, the literature on multifactor models in emerging markets has focused primarily on national stock returns' predictability. The literature has not examined the potential impact that common risk factors may have on EIERs. I regress emerging and U.S. industry excess returns on a bunch of traded and non-traded global risk factors, using four different asset pricing linear models. I refer to the CAPM (i.e. one-factor), Fama-French (i.e. three-factor), and two

[2] See Bekaert et al. (2007), Bekaert and Harvey (2000), and Donadelli and Prosperi (2012a,b), among others.

additional multi-factor models. It is largely accepted that the empirical record of the one-factor and three-factor linear factor models in predicting emerging excess returns is poor. Donadelli and Prosperi (2012b) employ the world CAPM to predict the excess returns of 19 emerging stock markets. They show that model's validity is rarely preserved. Harvey (1995) obtains a similar result. Nevertheless, these two models are still widely used in financial applications.

"*The CAPM is still widely used in applications, such as estimating the cost of capital for firms and evaluating the performance of managed portfolios. It is the centerpiece of MBA investment courses*."

Fama and French (2004)

Given these premises, I find reasonable to use the CAPM and the Fama-French models to predict EIERs. To the best of my knowledge, this is the first work which replicates, using an updated dataset, workhorse asset pricing models to explain excess returns' variation in a industry context.

Fig. 2.1 plots the dynamics of the correlation coefficients between the ten emerging industry portfolio excess returns and the return of the MSCI WORLD TRI and the cyclical components of the nominal (US$) GDP growth rate for the G7 countries, United States and Emerging Area. An increasing degree of co-movement between international stock markets and between international business cycles is evident. Such stylized facts motivate me to study variation in international industry excess returns throught the use of global risk sources and to measure the level of global integration across emerging industry stock markets.

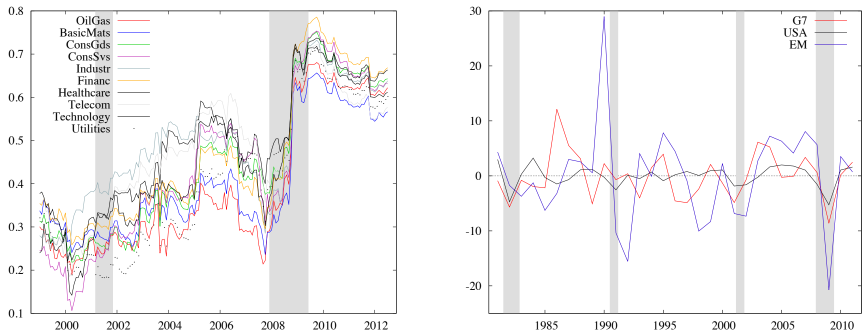

Fig. 2.1 Left plot: This figure shows the dynamics of the correlation coefficients between the emerging industry excess returns and the excess return on the MSCI WORLD TRI. Correlation coeffients are obtained using a rolling window of 60 months. Excess returns for the ten industries are computed as in Eqs. (3.1)-(3.2). Selected industries follow Datastream Global Equity Indices classification (i.e. level 2): Oil&Gas, Basic Materials, Consumer Goods, Consumer Services, Financials, Industrials, Healthcare, Telecommunications, Technology, Utilities Country-by-country industry TRIs are from Datastream Global Equity Indices. All returns are denominated in US$. The riskfree rate is the one-month T-bill rate from Kenneth French Data Library. The sample period goes from January 1994 until June 2012. Right plot: this figure shows the cyclical components of the nominal (US$) GDP growth rate for the G7 countries, United States and Emerging Area. Cyclical components are extracted using the Hodrick-Prescott (1980) business cycle filter. Following empirical practice, I use a smoothing parameter $\lambda = 100$. Data are annual and run from 1980 to 2011. Source: IMF

3 Data and preliminary statistics

3.1 Industry excess returns

I download, at country level, Industry Total Return Indexes (TRIs) from Datastream Global Equity Indices. Stock data are classified by industry and sector type (e.g. *financials* is an industry within which a number of sectors are included such as banks, life assurance and real estate). I focus on the level 2 classification of Datastream Global Equity Indices which divides the market into the following 10 industries: Oil & Gas, Basic Materials, Consumer Goods, Consumer Services, Industries, Health Care, Financials, Technology, Telecommunications and Utilities.[3] All TRIs are monthly. To kill the influence of domestic inflation all TRIs are denominated in U.S. dollars (i.e. returns denominated in this form only retain U.S. inflation). My sample period goes from December 1993 (or later) until June 2012.[4] TRIs denominated in US$ are available for 24 emerging markets. For comparison purposes, I use the U.S. industry TRIs. Some industries, in some countries, are excluded due to a lack of data. The full list of downloaded TRIs is given in Table A.1. Excess stock returns are computed for each country n and industry i as in Eq. (3.1),

$$Z_{i,t}^{n} = \frac{GEI\,TRI_{i,t}^{n} - GEI\,TRI_{i,t-1}^{i}}{GEI\,TRI_{i,t-1}^{n}} - R_t^f \tag{3.1}$$

where, $GEI\,TRI_{i,t}^{n}$ represents the global datastream equity total return index of industry i in country n at time t, $Z_{n,t}^{i}$ is the excess return of industry i in country n, and R_t^f is the one-month T-bill rate from Ibbotson Associates. Emerging industry portfolio excess returns are obtained as follows,

$$Z_{i,t} = \frac{1}{N}\sum_{n=1}^{N} Z_{i,t}^{n} \tag{3.2}$$

where $Z_{i,t}$ is the emerging "cross-country" average excess return in industry i.[5] Countries are equally weighted (i.e. $1/N$). For some countries and some industries data are not available at the starting date. As data become available, new countries are added to these industry portfolios. As a result, the number of countries in a portfolio might change from one period to the next. To conclude, in a one country space, $Z_{i,t}^{US}$ denotes the excess returns of industry i in the U.S. Summary statistics of industrial stock market excess returns are reported in Table 3.1. Monthly mean US$ EIERs range from 1.34 percent for the health-care industry to 0.76 for the telecommunications industry. Monthly mean US$ U.S. industry excess returns range from 0.97 percent for the technology industry to 0.34 percent for the telecommunications industry. In contrast to previous empirical findings, high average EIERs are not associated with high volatility. In some industries, U.S. excess returns' standard deviations are higher than EIERs' standard deviations (i.e. basic materials, consumer goods,

[3] Datastream Global Equity Indices break down into six levels. Level 1 is the market index, this covers all the sectors in each region or country. Level 2 divides the market into 10 industries and covers all the sectors within each group in each region or country. Levels 3 - 6 subdivide the level 2 classifications into sector classifications in increasing detail. Source: Datastream.

[4] I motivate the choice of monthly data as follows: (i) the choice is based on the willingness to avoid the common issues lying in a high frequency environment (e.g. missing observations, outliers, time zone); (ii) the choice is also based on the need to match the frequency of the employed macroeconomic variables (e.g. industrial production, unemployment rate, money stock measures).

[5] Donadelli and Lucchetta (2012) observe that industry excess returns across emerging countries tend to be highly correlated. As a consequence, in averaging industry TRIs across emerging countries we do not affect the dynamics of emerging industry excess returns.

healthcare). The Sharpe ratio is higher across EIERs than across U.S. industry excess returns, and ranges from 0.21 for the Oil%Gas industry to 0.12 for the telecommunications industry. Both emerging and U.S. industry excess returns display negative skewness.

	BasicMats	ConsGds	ConsSvs	Industr	Financ	Healtcare	Oil&Gas	Telec	Tech	Util
Emerging ($Z_{i,t}$)										
Mean	1.15	0.91	0.94	1.09	1.04	1.34	1.34	0.76	1.25	0.97
Sd	7.44	5.29	6.12	6.40	6.71	6.00	6.41	6.57	9.01	5.79
ShR	0.15	0.17	0.15	0.17	0.15	0.22	0.21	0.12	0.14	0.17
Min	-32.21	-20.26	-23.51	-25.63	-27.53	-22.33	-24.19	-17.92	-29.04	-21.59
Max	23.15	18.04	15.90	21.93	25.31	19.39	21.19	20.67	33.01	15.99
Skew	-0.51	-0.51	-0.29	-0.49	-0.44	-0.46	-0.49	-0.25	0.16	-0.43
Kurt	1.92	1.06	0.91	1.55	1.80	1.17	1.32	0.43	1.05	1.08
United States ($Z_{i,t}^{US}$)										
Mean	0.73	0.39	0.55	0.74	0.67	0.57	0.87	0.34	0.97	0.46
Sd	7.48	5.59	5.77	6.29	4.63	6.86	6.16	6.11	8.36	4.78
ShR	0.10	0.07	0.09	0.12	0.14	0.08	0.14	0.06	0.12	0.10
Min	-37.03	-23.13	-23.93	-25.76	-19.74	-38.12	-25.30	-16.73	-25.74	-20.83
Max	30.37	15.81	23.28	20.35	18.47	31.24	16.76	21.96	23.25	12.23
Skew	-0.96	-0.82	-0.83	-0.94	-0.61	-1.18	-0.59	0.08	-0.38	-0.73
Kurt	5.49	2.20	3.97	3.58	3.49	7.83	1.92	1.17	1.06	1.88

Table 3.1 Industry Portfolio Excess Returns: Monthly Summary Statistics. Mean, standard deviation, min and max values are expressed in percentage points. Emerging industry portfolios are computed as in Eq. (3.2). Excess returns ($Z_{i,t}$) are computed as in Eq. (3.1), i.e. the return on the equally weighted industry portfolio (including dividends) less the Ibbotson Associates one-month T-bill rate. Country-by-country industry TRIs are from Datastream Global Equity Indices. All returns are denominated in US$. The riskfree rate is the one-month T-bill rate from Ibbotson Associates. There are 222 observations from January 1994 to June 2012.

3.2 Macroeconomic variables

The risk factors identification process is still largely debated. The degree of subjectivity as well as the arbitrary nature of the selection process it self can be easily criticized. I take such criticism for granted. The selection process here follows two simple rule. First, as benchmark, I use common risk factors (i.e. widely employed in the literature). I rely on the F&F factors and on the World market index. Second, I select macro risk variables according to their relevance in driving global real economic and financial activity. The monthly global risk measures include two set of variables. The first set is composed by the three common F&F factors:[6] $R_{m,t} - R_t^f$ is the excess return on the market (i.e. is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate). SMB is the differece between the return of a portfolio of small stocks and the return of a portfolio of big stocks. HML is the difference between the returns of a portfolio of high book-to-market stocks and the return of a portfolio of low book-to-market stocks. The second set is composed by the following six macro variables: $WORLD$ is the return on the MSCI world equity index (including dividends) less the Ibbotson Associates one-month T-bill rate. ΔIP is the U.S. industrial production growth rate. $\Delta M1$ is the U.S. M1 money stock growth rate. $US10Y - US2Y$ is the US10Y-US2Y Government Bond Yield Spread. The spread is given by the difference between the US BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD and the US BENCHMARK 2 YEAR DS GOVT. INDEX - RED. YIELD.

[6] The Fama-French factors are publicly available online form: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french.

The spread gives the steepness of the U.S. yield curve. The spread reflects investors' views on the state of the U.S. economy.[7] $IT10Y - BD2Y$ is the 10Y Italian-German Bund Yield Spread. The spread is given by the difference between the IT BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD and the BD BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD. Fluctuations in the spread may capture fluctuations in sovereign risks in the EURO area. ΔVIX is the rate of growth of the volatility index (i.e. CBOE VIX). All data are monthly and run from December 1993 to June 2012. Summary statistics for the variables are presented in 3.2. Details are provided in Table A.2. The proxy I choose for the World market index is also used in Ferson and Harvey (1994), and Bilson et al. (2001). To measure global economic activity, Ferson and Harvey (1994) employ a weighted average of industrial production growth rates in the G7 countries. Bilson et al. (2001), at country level, measures real activity via the industrial production index. In Bilson et al. (2001), money supply is measured, country-by-country, as the narrow stock of money (M1). To capture the state in investment opportunities, Ferson and Harvey (1994) use a weighted average of short-term real interest rates in the G7 countries. To capture global credit risk fluctuations, Ferson and Harvey (1994) use the change in the spread between the 90-day Eurodollar deposit rate and the 90 day U.S. T-bill yield. As global liquidity proxies, Donadelli and Prosperi (2012b) use the U.S. stock market VIX and open interest.

PANEL A: *mean and standard deviation*									
Variable	$(R_m - R^f)$	SMB	HML	Z_w	ΔIP	$\Delta M1$	$US10Y - US2Y$	$IT10Y - BD10Y$	ΔVIX
Mean	0.51	0.21	0.21	0.50	0.18	0.32	1.11	1.28	1.99
Sd	4.70	3.56	3.37	4.54	0.70	0.96	0.96	1.61	20.26
PANEL B: *Macroeconomic risk factors correlation matrix*									
Variable	$(R_m - R^f)$	SMB	HML	Z_w	ΔIP	$\Delta M1$	$US10Y - US2Y$	$IT10Y - BD10Y$	ΔVIX
$(R_m - R^f)$	1.00								
SMB	0.25	1.00							
HML	-0.23	-0.36	1.00						
Z_w	0.98	0.09	-0.17	1.00					
ΔIP	0.02	-0.04	0.03	0.03	1.00				
$\Delta M1$	-0.06	-0.01	0.01	-0.06	-0.26	1.00			
$US10Y - US2Y$	-0.01	0.12	-0.04	-0.03	-0.09	0.34	1.00		
$IT10Y - BD10Y$	0.05	-0.06	-0.07	0.07	0.13	-0.02	0.00	1.00	
ΔVIX	-0.67	-0.15	0.14	-0.66	0.05	0.02	-0.04	0.04	1.00

Table 3.2 Macroeconomic Risk Factors: Monthly Summary Statistics. PANEL A: Mean and standard deviation values are monthly and expressed in percentage points. PANEL B reports the correlations between the macroeconomic variables. $R_{m,t} - R_t^f$, SMB, HML are the Fama-French factors from the Kenneth Frech Data Library. $R_{m,t} - R_t^f$ is the excess return on the market (i.e. is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate). SMB is the differece between the return of a portfolio of small stocks and the return of a portfolio of big stocks. HML is the difference between the returns of a portfolio of high book-to-market stocks and the return of a portfolio of low book-to-market stocks. Z_w is the return on the MSCI world equity index (including dividends) less the Ibbotson Associates one-month T-bill rate. ΔIP is the U.S. industrial production growth rate. $\Delta M1$ is the U.S. M1 money stock growth rate. $US10Y - US2Y$ is the US10Y-US2Y Government Bond Yield Spread. The spread is given by the difference between the US BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD and the US BENCHMARK 2 YEAR DS GOVT. INDEX - RED. YIELD. $IT10Y - BD2Y$ is the 10Y Italian-German Bund Yield Spread. The spread is given by the difference between the IT BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD and the BD BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD. ΔVIX is the rate of growth of the volatility index (i.e. CBOE VIX). There are 222 observations from January 1994 to June 2012.

[7] Estrella and Mishkin (1998) find that the short-long yield spread is a crucial indicator for the future state of the economy.

4 On the predictability of emerging industry excess returns: a static approach

I regress emerging and U.S. industry excess returns on a bunch of global risk factors in a OLS framework.[8] I employ four linear asset pricing models: a one-factor (i.e CAPM), a three-factor (i.e. Fama-French), a multi-(*macro*) factor and a multi-(*artificial*) factor models. My models load both traded and non-traded risk factors. Usually a trade factors is represented by the return on a portfolio of traded assets. Examples of traded factorr are: the return on the value-weighted portfolio of stocks (i.e. CAPM) and the Fama-French factors. Examples of non-traded factors can be found in Chen, et al. (1986), who use the growth rate of industrial production and the rate of inflation, and Breeden et al. (1989), who use the growth rate in per capita consumption as a factor. In this paper, the one-factor and the three-factor models load only traded factors, and the multi-(*macro*) factor model load both traded and non-traded factors. Clearly, the multi-(*artificial*) factor model load only non-traded factors (i.e. principal components).

The CAPM is shown in Eq.(4.1)

$$Z_{i,t} = \alpha_i^{CAPM} + \beta_i (R_{m,t} - R_t^f) + \varepsilon_{i,t}^{CAPM} \tag{4.1}$$

where $Z_{i,t} = R_{i,t} - R_t^f$ is the monthly industry portfolio excess return, $R_{M,t} - R_t^f$ is the monthly market excess return, and β_i, α_i are the regression parameters, and $\varepsilon_{i,t}^{CAPM}$ is the error term. The intercept, α_i^{CAPM} (i.e. "CAPM alpha"), measures the average monthly abnormal excess return (or addresses model's validity).

The Fama-French three-factor model is shown in Eq.(4.2)

$$Z_{i,t} = \alpha_i^{FF} + \beta_{i,M}(R_{M,t} - R_t^f) + \beta_{i,SMB} SMB_t + \beta_{i,HML} HML_t + \varepsilon_{i,t}^{FF} \tag{4.2}$$

where $Z_{i,t} = R_{i,t} - R_t^f$ is the monthly industry portfolio excess return, and $(R_{M,t} - R_t^f)$, SMB_t, HML_t are the three factors representing the excess return of the market, the difference between a portfolio of small stocks and a portfolio of big stocks, and the difference between a portfolio of high book-to-market stocks and a portfolio of low book-to-market stocks, respectively.[9] In Eq.(4.2) the parameters are α_i, $\beta_{i,M}$, $\beta_{i,SMB}$, and $\beta_{i,HML}$. $\varepsilon_{i,t}^{FF}$ is the error term. The intercept, α_i^{FF} (i.e. "FF alpha"), again measures the monthly average extra performance of the industry portfolios (or addresses model's validity).

The multi-(*macro*) factor model is shown in Eq.(4.3)

$$\begin{aligned} Z_{i,t} = {} & \alpha_i^{MACRO} + \beta_{i,Z_w} Z_{w,t} + \beta_{i,\Delta IND} \Delta IND_{t-2} + \\ & + \beta_{i,\Delta M} \Delta M_{t-1} + \beta_{i,Steep}(US10Y - US2Y)_{t-1} + \\ & + \beta_{i,SovRisk}(IT10Y - BD10Y)_{t-1} + \beta_{i,\Delta VIX} \Delta VIX_{t-1} + \varepsilon_{i,t}^{MACRO} \end{aligned} \tag{4.3}$$

where $Z_{w,t}$, ΔIND_t, ΔM_t, $(US10Y - US2Y)_t$, $(IT10Y - BD10Y)_t$ and ΔVIX_t are the six *macro factors* representing the return on the MSCI world equity index (including dividends)

[8] Note: under mild statistical assumptions the Generalized Method of Moments (GMM) applies, and estimates are similar to those obtained in a OLS framework. GMM estimation results, where a constant and the risk measures are used as instruments, are available upon request.

[9] See Fama and French (1993) for details on the construction of the factors.

less the Ibbotson Associates one-month T-bill rate, the rate of growth of the U.S. industrial production index, the rate of growth the U.S. M1 money stock, the US10Y-US2Y Bond Yield Spread, the 10Y Italian-German Bund Yield Spread, and the rate of change of the volatility index, respectively. Regression's parameters are represented by $\alpha_?$, β_{i,Z_w}, $\beta_{i,\Delta IND}$, $\beta_{i,\Delta M}$, $\beta_{i,Steep}$, $\beta_{i,SovRisk}$, $\beta_{i,\Delta VIX}$, and $\varepsilon_{i,t}^{MACRO}$ is the error term. The intercept α_i^{MACRO} (i.e. "MACRO alpha") measures the monthly average abnormal/unexpected returns (or addresses model's validity).

The multi-(*artificial*) factor model is shown in Eq.(4.4)

$$Z_{i,t} = \alpha_i^{PC} + \sum_{j=10}^{10} \beta_{i,PC^j} PC_{i,t}^j + \varepsilon_{i,t}^{PC} \tag{4.4}$$

where $\beta_{i,PC}^j$ represent the j_{th} risk factor associated to j_{th} principal component and $\varepsilon_{i,t}^{PC}$ is the error term. The role of α_i^{PC} (i.e. "PC alpha") is as in (4.1)-(4.3). The first ten principal components are extracted employing the variable set summarized in Table A.1.

Given the presence of a strong time-varying component in emerging stock markets and the global nature motive of this paper, I predict industry excess returns using two different time horizons. Firstly, I study the January 1994-June 2012 period (i.e. full sample). Secondly, I consider a shorter time period, January 2000-June 2012, which represents the post-liberalizations period.[10] As noticed by Bekaert et al. (2003), stock market liberalizations, in a sufficiently globally integrated world, give rise to important changes in both the financial and real sectors. Hence, in contrast to past empirical studies that use one shot estimations, I present estimation results for both periods.

4.1 Evidence from a linear one-factor model

Table B.1 presents the results of the one-factor model, Eq. (4.1), for each industry, and for both emerging and U.S. industrial stock markets. Estimates are presented for two time horizons, the full sample (i.e. January 1994-June 2004) and the post-liberalizations sample (i.e. January 2000-June2012). In this setup, the F&F market factor, $(R_{M,t} - R_t^f)$, is the only factor. In practice, I buy the assumption that the market beta times the average market excess return completely explain industry expected excess returns. Model's shortcomings are largely known and richly discussed in Fama and French (2004). To test the model, I follow Jensen (1968). In the Sharpe-Lintner version of the CAPM the expected value of an asset's excess return is completely explained by its beta time the expected value of the excess return of the market. It turns out that model's validity is preserved when the intercept in the time-series regression, as in Eq. (4.1), is zero for each asset/industry (i.e. the "CAPM alpha" represents a risk adjusted return equal to the intercept from a time-series regression of the industry portfolio on the excess return on the value-weight market index). Estimation results in the U.S. preserve model's validity. The null ($\alpha_i = 0$) is rarely rejected. In the U.S. industrial stock markets, statistically different from zero alphas are found in the healthcare and oil%gas industries over the full sample, and only in the oil%gas industry over the post-liberalizations sample. For the period January 1994-June 2012 (see PANEL A of Table B.1),

10 Many studies report that emerging market liberalizations took place mostly in the late '80s and early '90s. It turns out that in January 2000 many emerging markets passed through the liberalization process. For a detailed discussion on international stock markets liberalizations, see Henry (2000) and Bekaert et al. (2003).

in six out of ten emerging industrial stock markets, the CAPM holds. Emerging regression estimates in PANEL B do not support model's validity. Not surprisingly, the "CAPM alpha" is statistically different from zero and largely positive in 9 out of 10 emerging industries.[11] I stress that all emerging industry "CAPM alphas" are higher in the emerging industry environment. This implies that EIERs greatly exceed the expected level of performance. The result is clear in Fig. 4.1, which plots the realized average excess returns versus the predicted excess returns (on the horizontal axis) for the ten emerging and U.S. industries.

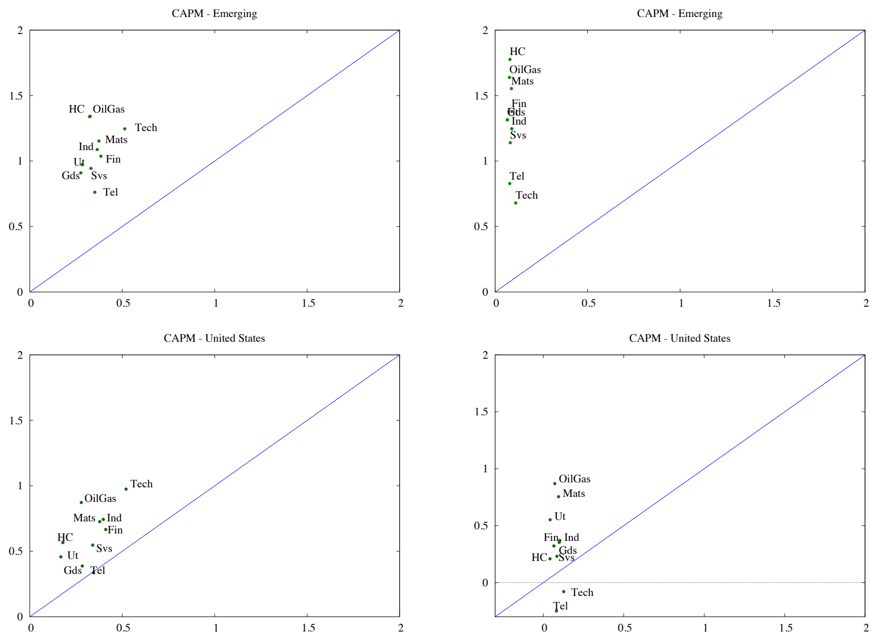

Fig. 4.1 This figure plots the realized average excess returns (i.e. $E[R_{i,t} - R_t^f]$) versus the predicted excess returns (i.e. $\hat{\beta}_{i,M} E[R_{M,t} - R_t^f]$) for ten emerging (top panel) and U.S. (bottom panel) industry portfolios, and for two different periods (i.e. January 1994-June 2012 (left panel) and January 2000-June 2012 (right panel)). Estimated betas are obtained from Eq. (4.1). The predicted excess returns are on the horizontal axis. Industries are: basic materials (Mats), consumer goods (Gds), consumer services (Svs), financials (Fin), healthcare (HC), industrials (Ind), oil&gas (OilGas), technology (Tech), telecommunications (Tel), utilities (Ut). The data are monthly.

All betas are statistically different from zero and positive. The market factor explains variation both in emerging industry portoflio excess returns and in U.S. industry excess returns. Moreover positive coefficients suggest that increases in industries returns are associated with increases in returns on the market factor. All betas and regressions' R^2 are higher in the January 2000-June 2012 period than in the full sample (i.e. January 1994-June 2012). Improvements seem to be negligible ranging from a min of 1 percent (i.e. U.S. healthcare) to a max of 11 percent (i.e. U.S. technology). The R^2 ranges from 10 percent for the U.S. utility to 32 percent for the U.S. industrial over the full sample, and from 12 percent for the

[11] Similar results, at national level, can be found in Harvey (1995), and Donadelli and Prosperi (2012b).

U.S. utility to 43 percent for the U.S. technology over the post-liberalizations sample. The results confirm the time-varying nature of emerging stock markets.[12]

4.2 Evidence from a linear three-factor model

Table B.2 presents the result of the three-factor model, Eq. (4.2), for each industry. Estimation results are presented for the emerging and U.S. industrial stock markets. PANEL A shows estimates for the full sample (i.e. January 1994-June2012). PANEL B reports estimates for the post-liberalizations sample (i.e. January 2000-June2012). Eq. (4.2) represents the time-series regression of the Fama-French three-factor model. Formally, the F&F expected return equation

$$E(Z_{i,t}) = \beta_{i,M}E(R_{M,t} - R_t^f) + \beta_{i,SMB}E(SMB_t) + \beta_{i,HML}E(HML_t)$$

where $(R_{M,t} - R_t^f)$, SMB_t, HML_t are the three factors representing the excess return of the market, the difference between a portfolio of small stocks and a portfolio of big stocks, and the difference between a portfolio of high book-to-market stocks and a portfolio of low book-to-market stocks, respectively. The straightforward implication of the Fama-French expected return equation is that the intercept in the time-series regression, Eq. (4.2), is zero for all assets/industries, i. Fama and French (1998) show that the three-factor model performs better than a standard CAPM in describing average returns. In my two-sample/industry framework, the result is not strongly supported. The one-factor and three-factor estimates do not show relevant differences. If the January 1994-June 2012 period is considerd, the null hypothesis, $\hat{\alpha}_i = 0$, is not rejected for 8 emerging and U.S. industries. In contrast, the null is rejected for 9 emerging industries and not rejected for 9 U.S. industries over the sub-sample. Improvements in the $\bar{R}^2$ are negligible. The increment to the $\bar{R}^2s$ from including the two extra Fama-French factors is small in emerging and U.S. industries. Increments range from 1 percent to 5 percent.

All market betas are statistically significant and positive at 1 percent level, with the same magnitude of the CAPM estimates. Results indicate that the return of the F&F market portfolio is the most important factors. For the period January 2000-June 2012, the explanatory power of the *SMB* factor is very low across emerging and U.S. industries. In contrast, for the full sample, the $\beta_{i,SMB}$ is statistically significant and positive in 9 emerging industries. The null is not rejected in all U.S. industries. Estimated “F&F alphas” and “CAPM alphas” are similar. As expected, emerging “F&F alphas” are higher than U.S.“F&F alphas”. Estimation results are confirmed in Fig. 4.2 which plots the realized average excess returns versus the predicted excess returns for ten emerging and U.S. industry portfolios.

4.3 Evidence from a linear multi-(*macro*) factor model

Table B.3 reports the results from fitting the model as in Eq. (4.3) to each of the ten emerging and U.S. industrial stock markets. Estimation results are presented for two different time horizons. My macro model contains six global risk factors. The inclusion of macro variables forces us to take a stand on the time issue in the regression estimation procedure. It is largely accepted that stock prices do not respond istantaneously to macroeconomic news.

[12] For example, Harvey (1995), using monthly emerging market US$ from March 1986 to June 1992, finds that emerging stock markets are not sensitive to the return on the world market index.

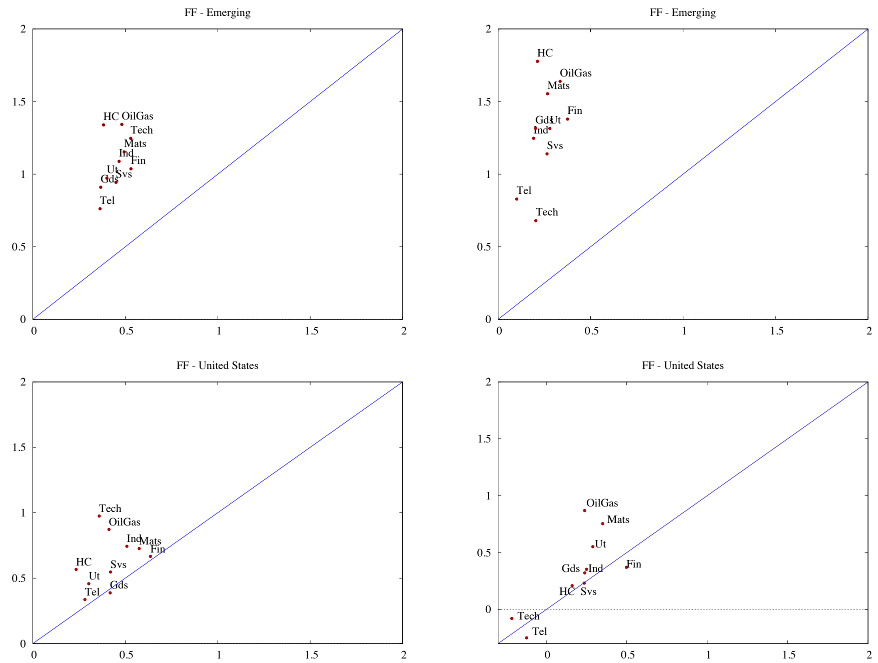

Fig. 4.2 This figure plots the realized average excess returns (i.e. $E[R_{i,t} - R_t^f]$) versus the predicted excess returns (i.e. $\hat{\beta}_{i,M} E[R_{M,t} - R_t^f] + \hat{\beta}_{i,SMB} E[R_{SMB,t}] + \hat{\beta}_{i,MHL} E[R_{MHL,t}]$) for ten emerging industry portfolios (top panel) and ten US industries (bottom panel), and for two different periods (i.e. January 1994-June 2012 (left panel) and January 2000-June 2012 (right panel)). Estimated betas are obtained from Eq. (4.2). The predicted excess returns are on the horizontal axis. Industries are: basic materials (Mats), consumer goods (Gds), consumer services (Svs), financials (Fin), healthcare (HC), industrials (Ind), oil&gas (OilGas), technology (Tech), telecommunications (Tel), utilities (Ut). The data are monthly.

Therefore, my model lags five out of six explanatory variables. The U.S. real economic activity (i.e. rate of growth of the U.S. industrial production index), ΔIND_{t-2}, is lagged by 2 months. The rate of growth the U.S. M1 money stock, ΔM_{t-1}, the US10Y-US2Y Bond Yield Spread, $(US10Y - US2Y)_{t-1}$, the 10Y Italian-German Bund Yield Spread, $(IT10Y - BD10Y)_{t-1}$, and the rate of change of the volatility index, ΔVIX_{t-1}, are lagged by 1 month. The MSCI world excess return, $Z_{w,t}$, is not lagged.[13]

The world market index and the volatility index are clearly the most influencial macroeconomic variables. Emerging and U.S. industry excess returns are significantly affected by these variables. The result holds for both samples. Estimation results indicate that emerging and U.S. industries show lower sensitivity to the excess return on the world market index than the sensitivity estimated via the one-factor and three-factor models. The result is quite intuitive: the explanatory power of the world market factor is spread with the other macro risk factors of the model. The sign of the coefficients on the volatility index variable, $\beta_{i,\Delta VIX}$, is negative for all emerging and U.S. industries. The order of magnitude of the coefficients appear to be stable across industries. The coefficient on the rate of change of the volatility index is higher across emerging industries, ranging from -0.08 to -0.13, than across U.S. industries, ranging from -0.04 to -0.09.

[13] A similar lag structure can be found in Bilson et al. (2001). In contrast, in Ferson and Harvey (1994), all the global risk variables are contemporaneous.

EIERs also show sensitivity to the 10Y Italian-German Bund Spread. For the full sample, seven emerging industries display a significant coefficient on the spread, $\beta_{i,SovRisk}$. For the post-liberalizations sample, the number of industries jumps to eight. All coefficients on the 10Y Italian-German Bund Spread are negative. In contrast, U.S. industry excess returns do not show sensitivity to the spread. The industrial production and the M1 money stock growth rates affect mostly the U.S. industry excess returns. Not surprisingly, only the "industrials" excess returns show large sensitivity to the U.S. industrial production growth rate. Emerging industries coefficients are positive and higher than one, 1.26 and 1.66, for the full and the post-liberalizations sample, respectively. The result indicates that the industrials stock markets pay well in good state of natures.

The increment to the $\bar{R}^2s$ from including the other macro variables is relative big in most emerging industries. For the full sample, when compared to the CAPM, the increment ranges from 7% (consumer services) to 11% (basic materials, consumer goods, financials, healthcare, industrials). For the post-liberalizations sample, it ranges from 4% (Telecommunications) to 12% (Industrials). The size of the increments are similar across U.S. industries. For the period January 1994-June 2012, model's validity is preserved. For all emerging and U.S. industries, the null (i.e. "MACRO alpha=0") is not rejected.[14] Model's validity is still preserved, in three out of ten emerging industries (i.e. consumer services, technology, telecommunications), over the post-liberalizations sample. As expected, emerging intercepts are positive and higher than U.S. intercepts. All results can be easily summarized in Fig. 4.3, which plots the realized average excess returns versus the predicted excess returns for emerging and U.S. industries. Fig. 4.3 suggests that the multi-(*macro*) factor model does largely better than the CAPM and the F&F models.

4.4 Evidence from a linear multi-(*artificial*) factor model

Regression model in Eq. (4.4) employs artifical factors as explanatory variables. I refer to them as *artificial* factors. My ten artificial regressors are computed via the principal component analysis (PCA). The purpose of the PCA is to condense the variables that explain the return variation in each country and in each industry (in my case) into a smaller set of common factors. To avoid the influence of high variance on principal components, I performe the PCA using the correlation matrix. This procedure effectively gives each variable an equal weighting in the data matrix, independent of their variance, and avoids loading on those variables with the largest standard deviation. Each j_{th} principal component is computed as a linear combination of the series in the group with weights given by the j_{th} eigenvector. The PCA is conducted using a data matrix composed by all "*" labelled series in Table A.1, with the objective of obtaining a set of factors that is common to all emerging and U.S. industries. The idea is that the first j components display as much as possible of the variation among objects. It is standard practice to make use of the first ten principal components. In finace studies, they usually account for 90% of the variation across variables. I report the variance explained by the first ten *artificial* factors in Table B.6. Results are reported for three different periods: full sample (i.e. January 1994-June 2012), January 1994-December 2004 and January 2000-June 2012. We defer the use of the principal components extracted over the two additional subperiods to the dynamic analysis developed in section 5. In this static setup, I rely on the full sample (i.e.PANEL A in Table B.6).[15] Given the large num-

[14] Note that the might be driven by the inclusion of non statistical significant variables. Variables having non significantly different from zero coefficients should be dropped from the anlaysis.

[15] I motivate the choice of extracting the principal component using different time horizons, as an exercise, in Section 5.

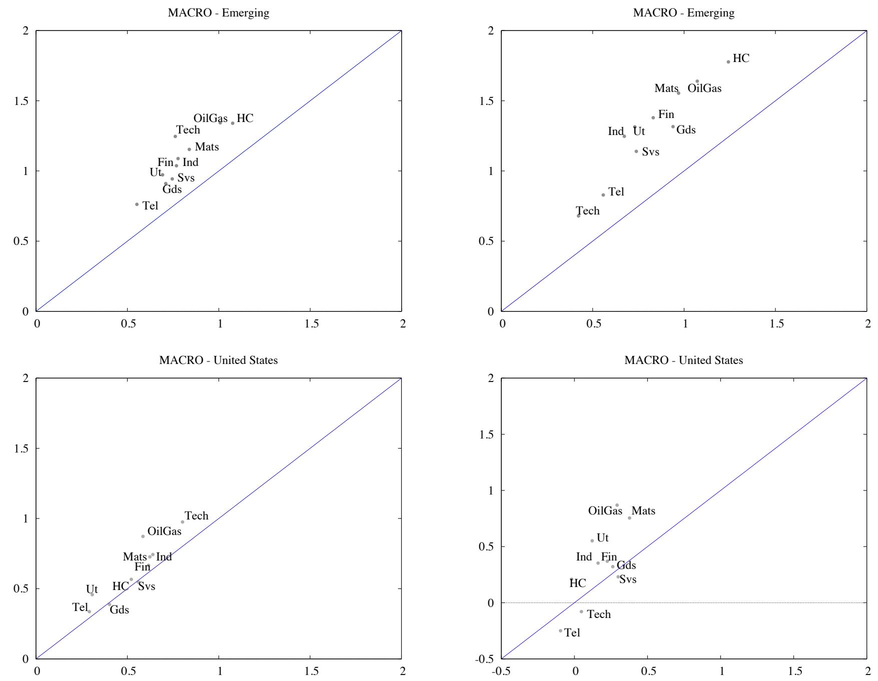

Fig. 4.3 This figure plots the realized average excess returns (i.e. $E[R_{i,t} - R_t^f]$) versus the predicted excess returns (i.e. $\hat{\beta}_{i,Z_M} E[Z_{M,t}] + \beta_{i,\Delta IND} E[\Delta IND_t] + \beta_{i,\Delta M} E[\Delta M_t] + \beta_{i,Steep} E[(US10Y - US2Y)_t] + \beta_{i,SovRisk} E[(IT10Y - BD10Y)_t] + \beta_{i,\Delta VIX} E[\Delta VIX_t]$) for ten emerging industry portfolios (top panel) and US industries (bottom panel), and for two different samples (i.e. January 1994-June 2012 (left panel) and January 2000-June 2012 (right panel)). Estimated betas are obtained from Eq. (4.3). The predicted excess returns are on the horizontal axis. Industries are: basic materials (Mats), consumer goods (Gds), consumer services (Svs), financials (Fin), healthcare (HC), industrials (Ind), oil&gas (OilGas), technology (Tech), telecommunications (Tel), utilities (Ut). The data are monthly.

ber of variables employed to perform the PCA (i.e. $\sim$ 150 variables), the first ten principal components explain only around 60% of the variation.[16]

Estimation results of (4.4) for each emerging and U.S. industrial stock markets are presented in Table B.4. PANEL A shows estimates for the full sample. PANEL B shows estimate for the post-liberalizations sample. The $\bar{R}^2$ values are high. The result suggests that the *artificial* global risk sources that are able to explain variation in excess returns are common to most industries. For the full sample, the model fit ranges from a low of 37 percent in U.S. utilities to 93 percent in emerging basic materials and financials. Similar results are obtained for the post-liberalizations sample, where the $\bar{R}^2$ ranges from 44 percent (i.e. U.S. utilities) to 94 percent (i.e. Emerging financials). The estimation results also present a not negligible number of significant coefficients, especially for the U.S. industrial stock markets. The sensitivities of emerging and U.S. industries to the first two principal components are similar. Both components affect positively industry excess returns. Most of the U.S. industries display a significant coefficient on the 3rd, 4th, 7th and 10th components. In contrast, emerging industries seem to be sporadically affected by the other *artificial* factors. The "PC Alpha" is positive, and constantly higher across emerging industries. For the sample January 1994-June 2012, the PC alpha ranges from 0.76 (i.e. telecommunications) to

16 Note that this result does not affect the main purpose of the analysis.

1.34 (i.e. healthcare and oil&gas) for the emerging industrial stock markets, and from 0.34 (i.e. telecommunications) to 0.98 (i.e. technology) for the U.S. industrial stock markets. The post-libearalizations period display similar results.

5 Emerging industries and financial integration: a dynamic approach

The examined single and multiple beta models point out that global risk sources can explain, ex-post, a large percentage of the variance of the monthly emerging and U.S. industry excess returns over tha last fifteen years. In contrast to previous studies, global factors seem to have more explanatory power than local risk sources.[17] Nevertheless, the estimated intercepts suggest that other factors might be able to explain variation in EIERs. I observe that industry excess returns do not differ in their sensitivities to these factors. Estimates suggest also that the exposure to global risk sources is increasing over time. I rely on the concept of integration. As mentioned, a significant number of papers have associated an increasing degree of integration between international equity markets with an increasing correlations in their returns over time. Other studies have employed cointegration measures (Engle-Granger methodology) to assess the degree of international integration in equity markets. All these early studies have been developed in a static context. Most recent works observe that international average excess returns have a strong time-varying component.[18] In a dynamic context, I study two different measures of integration: (i) the correlation coefficient between emerging and U.S. industry excess returns; (ii) the percentage of variation in emerging and U.S. industry excess returns explained by the same global factors (i.e. the $\bar{R}^2$ from regression 4.4). Both measures are estimated using a rolling window of 60 months over three different subperiods: January 1994-June 2012 (i.e. full *sample*), January 1994-December 2004 (i.e. *I sub-sample*) and January 2000-June 2012 (i.e. *II sub-sample*).[19] The sub-sample analysis allows us to to capture the effects of the late '90s and early '00s domestic shocks on emerging stock markets. I rely on the crisis of Mexico (1995), Argentina (1995), Thailand (1997), Indonesia (1997), the Philippines (1998), Korea (1997-98), Russia (1998), Brazil (1997-99), Turkey (2001-02), and Argentina (2001-02).[20]

5.1 A "naive" measure of integration

Fig. 5.1 plots the dynamics of the correlation coefficients between emerging and US industry excess returns (e.g. emerging vs U.S. basic materials excess returns) for the three different periods. In line with Fig. 2.1, which plots the dynamics of the correlation coefficients between the emerging industry excess returns and the excess return on the MSCI WORLD TRI, I observe that the degree of comovement between emerging and U.S. industry excess returns is increasing overtime. In both cases correlation coefficients are estimated

[17] For a comparison, see Belson et al. (2001) and Ferson and Harvey (1994), among others.

[18] For a detailed discussion on time-varying excess returns, see Bekaert and Harvey (1995), Donadelli and Prosperi (2012a), and Salomons and Grootveld (2003), among many others.

[19] The number of observations for estimation is 60. *Full sample* (i.e. January 1994-June 2012, 162 estimation windows): the first estimation window is January 1994-December 1998, the second estimation window is February 1994-January 1999, the last estimation window is July 2007-June 2012. *I sub-sample* (i.e. January 1994-December 2004, 72 estimation windows): the first estimation window is January 1994-December 1998, the second estimation window is February 1994-January 1999, the last estimation window is January 2000-December 2004. *II sub-sample* (i.e. January 2000-June 2012, 90 estimation windows): the first estimation window is January 2000-December 2004, the second estimation window is February 2000-January 2005, the last estimation window is July 2007-June 2012.

[20] For a detailed discussion on emerging crisis, see Joyce (2011).

using a rolling window of 60 months. The right plot of Fig. 5.1 suggests that much of this increase is related to the last 10 years. I argue that the result is partially influenced by the presence of the contagion effect during the sub-prime crisis (i.e. during crisis periods, the correlation between asset returns increases).

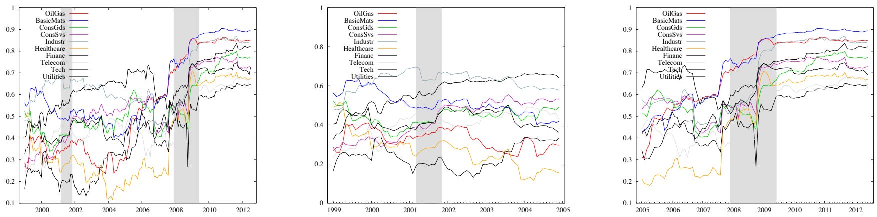

Fig. 5.1 This figure plots the correlations between emerging and US industry excess returns. Correlation coefficients are estimated using a rolling window of 60 months. The left plot uses data from the sample period January 1994-December 2012 (i.e. 222 obs, 162 windows). The middle plot uses data from the sample period January 1994-December 2004 (i.e. 132 obs, 72 windows). The right plot uses data from the sample period January 2000-June 2012 (i.e. 150 obs, 90 windows). The shaded vertical bars denote NBER-dated recessions.

The middle plot of Fig. 5.1 shows the dynamics of correlation coefficients for the period January 1994-December 2004. In this sub-sample correlation coefficients seem to be more stable over time. I argue that the result is mainly driven by domestic shocks. As discussed in Donadelli (2012), emerging excess returns are heavily sample-sensitive. He finds that in the late '90s and early '00s emerging stock markets have been largely driven by financial shocks (e.g. Mexican crisis (1994), Asian financial crisis (1997) and Argentine default (2001)). As a results, average correlations between emerging and U.S. industry excess returns over the sub-sample January 1999-December 2004 are lower than those computed over the sub-sample January 2005-June 2012. Results are summarized in Table 5.1 which reports the average correlation coefficients between emerging and U.S. industry excess returns for five different sample periods. The second and last lines of Table 5.1 suggest that the average correlations computed over the sample January 1999-December 2004 are much lower that the average correlations computed over the sample January 2007-June 2012. The result holds for all industries. The average positive "sample gap" (i.e. obtained as the average of the differences between line 5 and line 2 of Table 5.1) across industries is equal to 0.25, indicating that the degree of co-movement between emerging and U.S. industry excess returns has largely increased in the last five years.

Corr	BasicMats	ConsGds	ConsSvs	Industr	Financ	HealthCare	OilGas	Telec	Tech	Util
Jan99-Jun12	0.638	0.541	0.544	0.659	0.480	0.392	0.544	0.466	0.649	0.432
Jan99-Dec04	0.511	0.443	0.429	0.623	0.429	0.270	0.328	0.406	0.570	0.239
Jan00-Jun12	0.641	0.547	0.564	0.668	0.391	0.391	0.559	0.480	0.667	0.447
Jan05-Jun12	0.740	0.620	0.636	0.689	0.521	0.490	0.718	0.514	0.712	0.587
Jan07-Jun12	0.822	0.650	0.666	0.735	0.544	0.582	0.795	0.554	0.721	0.655

Table 5.1 This table reports the average correlation coefficients between emerging and U.S. industry excess returns for five different sample periods. Correlation coefficients are estimated using a rolling window of 60 months. Formally, the average correlation coefficients are $corr^{avg}_{i_{em},i_{us}} = \frac{1}{W}\sum_{w=1}^{W} c\hat{o}rr^{w}_{i_{em},i_{us}}$, where i_{em} denotes the emerging industry excess return and i_{us} the U.S. industry excess return, w is the window in which the correlation coefficient is estimated, and W is the total number of window in each sub-sample. In the full sample there are 222 observations from January 1994 to June 2012 (i.e. 162 windows).

5.2 A "robust" measure of integration

"*Perfect integration implies that the same international factors explain 100% of the broad index returns in both countries, but if country indexes differ in their sensitivities to these factors, they will not exhibit perfect correlation*"

Pukthuanthong and Roll (2009)

They regress country returns on principal components estimated from a previous period and average the $\bar{R}^2s$ to produce a multiple $\bar{R}^2$. They show that this measure of integration is more reliable than correlation and sometimes contradictory to correlation. Following Pukthuanthong and Roll (2009), in a time-varying, low frequency and in-sample context,[21] I construct the same alternative measure of integration. I obtain emerging and U.S. industry-by-industry time-varying $\bar{R}^2s$ via Eq. (4.4). Estimates are obtained using a rolling window of 60 months (i.e. 162 regressions). Global risk factors are represented by the first ten principal components, namely *artificial* factors. Principal components are extracted as described in section 4.4. Table B.6 represents the variance explained by the first ten principal components, extracted using three different sub-sample periods. When principal components are extracted using the January 2000-June 2012 period, they explain a larger percentage of variation across data.

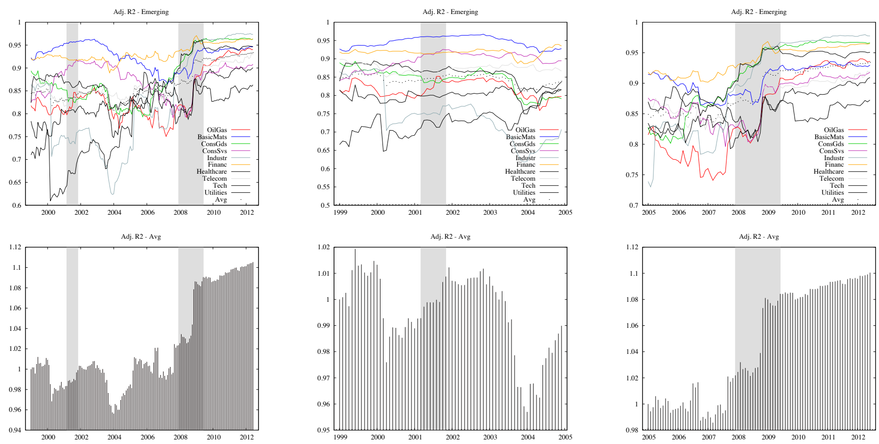

Fig. 5.2 This figure plots the $\bar{R}^2$ pattern for each emerging industry (top panel) and the average $\bar{R}^2$ cumulative return (bottom panel). The average $\bar{R}^2$ in each window w is obtained as follows, $\bar{R}^2_{avg,w} = \frac{1}{I}\sum_{i=1}^{T}\bar{R}^2_{i,w}$, where i represents the industry and w the rolling window. The $\bar{R}^2s$ are obtained from regression (4.4). The *artificial* factors (4.4) are computed via PCA, as described in the text. Estimations are performed on rolling basis using a window of 60 months. Constants are included. The left plot uses data from the sample period January 1994-December 2012 (i.e. 222 obs, 162 windows). The middle plot uses data from the sample period January 1994-December 2004 (i.e. 132 obs, 72 windows). The right plot uses data from the sample period January 2000-June 2012 (i.e. 150 obs, 90 windows). The shaded vertical bars in all graphs denote NBER-dated recessions.

The dynamics of the estimated $\bar{R}_2s$ suggest that market integration has grown during the last 15 years in all industries. The top panel of Figs. (5.2) and (5.3) plot the $\bar{R}^2s$ pattern for each emerging and U.S. industry respectively. The bottom panel plots the cumulative rate of

[21] Differently from Pukthuanthong and Roll (2009), the resulting principal components are orthogonal. As a consequence, when the principal components are used as explanatory variables in the regressions, multicollinearity problems are negligible.

change of the estimated average $\bar{R}^2$. I find four main results. Firt, at industry level, I show that the two different measures of integration (i.e. simple correlation coefficient and $\bar{R}_2s$) follow a similar path. Second, I find that the dynamics of the global integration process across emerging and U.S. industry stock market is similar. Third, the integration process across emerging industrial stock markets have been affected by domestic shocks (e.g. Mexican, Asian and Argentine crisis).

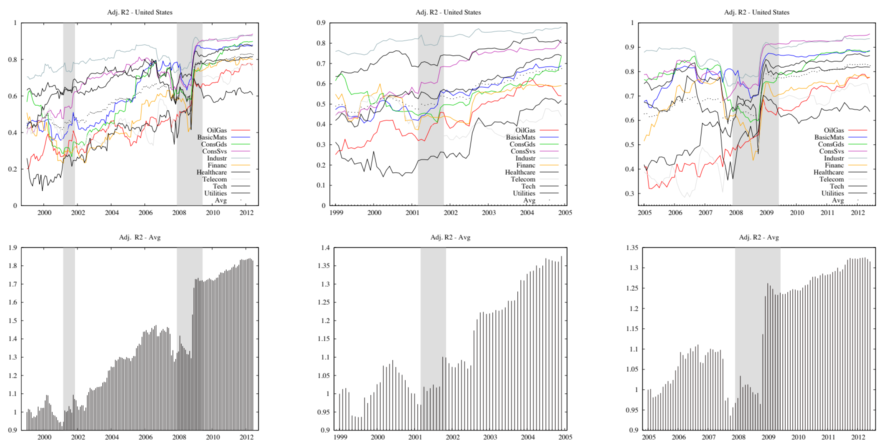

Fig. 5.3 This figure plots the $\bar{R}^2$ pattern for each U.S. industry (top panel) and the average $\bar{R}^2$ cumulative return (bottom panel). The average $\bar{R}^2$ in each window w is obtained as follows, $\bar{R}^2_{avg,w} = \frac{1}{T}\sum_{i=1}^{T}\bar{R}^2_{i,w}$, where i represents the industry and w the rolling window. The $\bar{R}^2s$ are obtained from regression (4.4). The *artificial* factors (4.4) are computed via PCA, as described in the text. Estimations are performed on rolling basis using a window of 60 months. Constants are included. The left plot uses data from the sample period January 1994-December 2012 (i.e. 222 obs, 162 windows). The middle plot uses data from the sample period January 1994-December 2005 (i.e. 132 obs, 72 windows). The right plot uses data from the sample period January 2000-June 2012 (i.e. 150 obs, 90 windows). The shaded vertical bars in all graphs denote NBER-dated recessions.

The result is clear in the middle plot of Figs. 5.1 and 5.2. I observe a slow down both in the correlation coefficients between emerging and U.S. industry excess returns and in the $\bar{R}^2$ across emerging industrial stock markets. For the sample January 1994-December 2004, the cumulative rate of change of the estimated average $\bar{R}^2$ across U.S. industries is increasing (see the middle plot in the bottom panel of Fig. 5.3). In contrast, it is decreasing across emerging industries (see the middle plot in the bottom panel of Fig. 5.2). Fourth, I find that the global integration process has grown fast in all emerging and U.S. industry stock markets in the last ten years. My empirical findings suggest also that the correlation coefficient does not necessarily represent a poor measure of integration. As discussed in section 4, emerging and U.S. industry excess returns do not differ in their sensitivities to the *artificial* factors. It turns out that the correlation coefficients between excess returns and the $\bar{R}^2s$ estimated from a multi-factor regression tend to move together.

Table 5.2 reports the average $\bar{R}^2s$ for five different sample periods. In line with the patterns illustrated in Fig. 5.3, integration is higher over the last five years in most industries. The integration measure, from the January 1999-December 2004 to January 07-June 2012, increases by 18 percent, 16 percent and 14 percent in the finacial, technology and utilities stock markets, respectively. The average positive "gap" (i.e. obtained as the average of the differences between line 5 and line 2 of Table 5.2) across industries is equal to 6.6 percent.

In addition, I find that emerging industries' PC alphas are higher than U.S. industries' PC alphas. This result confirm that emerging stock markets tend to generate abnormal returns (or higher pricing errors). Emerging PC alphas have also been affected by domestic shocks. Table B.6 reports the average values of the intercepts estimated via Eq. (4.4) using a rolling window of 60 months for the three different sub-samples. Estimates for the sample January 1994-December 2004 confirm the impact of the domestic shocks on industries performances (i.e. lower average PC alphas). Nine of the ten emerging industries have massive and higher unexpected excess returns in the period less affected by domestic shocks (i.e. Janurary 2000-June 2012). The emerging cross-industry average of the difference between the average PC alphas in the subperiod January 1994-December 2004 and the average PC alphas in the subperiod January 2000-June 2012 is equal to 0.42. Across U.S. industries, the same difference is negative and equal to -0.26.

$\bar{R}^2$	BasicMats	ConsGds	ConsSvs	Industr	Financ	HealthCare	OilGas	Telec	Tech	Util
Jan99-Jun12	0.840	0.928	0.881	0.876	0.831	0.932	0.847	0.866	0.788	0.856
Jan99-Dec04	0.819	0.943	0.845	0.887	0.748	0.919	0.858	0.845	0.704	0.791
Jan00-Jun12	0.841	0.928	0.881	0.879	0.828	0.933	0.845	0.866	0.794	0.863
Jan05-Jun12	0.857	0.915	0.910	0.867	0.897	0.943	0.838	0.884	0.856	0.907
Jan07-Jun12	0.878	0.921	0.941	0.868	0.931	0.950	0.841	0.897	0.861	0.930

Table 5.2 This table reports the average $\bar{R}^2s$ for five different sample periods. Correlation coefficients are estimated using a rolling window of 60 months. Formally, the $\bar{R}^2s$ are $\bar{R}^2_{avg,i} = \frac{1}{W}\sum_{w=1}^{W}\hat{\bar{R}}^2_{w,i}$, where w is the window in which the $\bar{R}^2$ is estimated, and W is the total number of window in each sub-sample. In the full sample there are 222 observations from January 1994 to June 2012 (i.e. 162 windows).

6 Concluding remarks

The world economy is becoming increasingly integrated. The degree of market openness as well as the interdependence between international stock markets have followed an increasing path during the last twenty years. Several studies support the idea that emerging markets have become globally integrated and find that emerging stock returns have been largely affected by the financial and real integration processes. However, the debate about whether or not emerging stock markets are fully integrated is still open. Bekaert et al. (2012), find that emerging markets are still partially segmented. In a non-fully integrated world, both local and global risk factors should be employ to explain variation in ex-post emerging excess returns. Given the presence of strong stylized facts which confirm the high degree of integration, I model ex-post EIERs as a linear relation to a number of global risk sources. Firstly, I try to explain variation in international industry excess returns. I examine several measures of global risks, namely common, macro and artificial factors. Secondly, using simple correlations and a robust measure of integration, I study the global financial integration process across emerging and U.S. industrial stock markets. Using a set of liner factor asset pricing model and a two different measures of integration, I find four main results: (i) emerging and U.S. industry excess are equally sensitive to the same global risk factors; (ii) in contrast to existing empirical findings, single and multiple beta models strongly explain variation in emerging and U.S. industrial stock market excess returns; (iii) emerging industrial stock markets might be still affected by local factors; (iv) emerging industrial stock markets have become increasingly integrated.

A Data

Name	Code	Period
Basic Materials		
ARGENTINA-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRAR(RI)∼U$	Dec 93 - Jun 12*
BRAZIL-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRBR(RI)∼U$	Jul 94 - Jun 12
CHILE-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRCL(RI)∼U$	Dec 93 - Jun 12*
CHINA-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRCH(RI)∼U$	Dec 93 - Jun 12*
COLOMBIA-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRCB(RI)∼U$	Dec 93 - Jun 12*
CZECH REP.-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRCZ(RI)∼U$	Dec 93 - Jun 12*
HONG KONG-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRHK(RI)∼U$	Dec 93 - Jun 12*
HUNGARY-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRHN(RI)∼U$	Dec 93 - Jun 12*
ISRAEL-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRIS(RI)∼U$	Dec 93 - Jun 12*
INDIA-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRIN(RI)∼U$	Dec 93 - Jun 12*
MEXICO-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRMX(RI)∼U$	Dec 93 - Jun 12*
MALAYSIA-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRMY(RI)∼U$	Dec 93 - Jun 12*
PAKISTAN-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRPK(RI)∼U$	Dec 93 - Jun 12*
PERU-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRPE(RI)∼U$	Jan 94 - Jun 12
PHILIPPINE-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRPH(RI)∼U$	Dec 93 - Jun 12*
POLAND-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRPO(RI)∼U$	Mar 94 - Jun 12
RUSSIA-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRRS(RI)∼U$	Nov 01 - Jun 12
SINGAPORE-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRSG(RI)∼U$	Dec 93 - Jun 12*
SOUTH AFRI-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRSA(RI)∼U$	Dec 93 - Jun 12*
TAIWAN-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRTA(RI)∼U$	Dec 93 - Jun 12*
THAILAND-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRTH(RI)∼U$	Dec 93 - Jun 12*
TURKEY-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRTK(RI)∼U$	Dec 93 - Jun 12*
US-DS Basic Mats - TOT RETURN IND (∼U$)	BMATRUS(RI) ∼U$	Dec 93 - Jun 12*
Consumer Goods		
ARGENTINA-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGAR(RI)∼U$	Dec 93 - Jun 12*
BRAZIL-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGBR(RI)∼U$	Jul 94 - Jun 12
CHILE-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGCL(RI)∼U$	Dec 93 - Jun 12*
CHINA-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGCH(RI)∼U$	Dec 93 - Jun 12*
COLOMBIA-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGCB(RI)∼U$	Dec 93 - Jun 12*
CZECH REP.-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGCZ(RI)∼U$	Dec 93 - Jun 12*
HONG KONG-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGHK(RI)∼U$	Dec 93 - Jun 12*
HUNGARY-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGHN(RI)∼U$	Dec 93 - Jun 12*
INDIA-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGIN(RI)∼U$	Dec 93 - Jun 12*
ISRAEL-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGIS(RI)∼U$	Jan 98 - Jun 12
MALAYSIA-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGMY(RI)∼U$	Dec 93 - Jun 12*
MEXICO-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGMX(RI)∼U$	Dec 93 - Jun 12*
PAKISTAN-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGPK(RI)∼U$	Dec 93 - Jun 12*
PERU-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGPE(RI)∼U$	Jan 94 - Jun 12
PHILIPPINE-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGPH(RI) U$	Dec 93 - Jun 12*
POLAND-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGPO(RI)∼U$	Jul 96 - Jun 12
RUSSIA-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGRS(RI)∼U$	Jan 03 - Jun 12
SINGAPORE-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGSG(RI)∼U$	Dec 93 - Jun 12*
SOUTH AFRI-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGSA(RI)∼U$	Dec 93 - Jun 12*
SRI LANKA-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGCY(RI)∼U$	Dec 93 - Jun 12*
TAIWAN-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGTA(RI)∼U$	Dec 93 - Jun 12*
THAILAND-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGTH(RI)∼U$	Dec 93 - Jun 12*
TURKEY-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGTK(RI)∼U$	Dec 93 - Jun 12*
US-DS Consumer Gds - TOT RETURN IND (∼U$)	CNSMGUS(RI) ∼U$	Dec 93 - Jun 12*
Consumer Services		
ARGENTINA-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSAR(RI)∼U$	Dec 93 - Jun 12*
BRAZIL-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSBR(RI)∼U$	Feb 02 - Jun 12
CHILE-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSCL(RI)∼U$	Dec 93 - Jun 12*
CHINA-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSCH(RI)∼U$	Dec 93 - Jun 12*
COLOMBIA-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSCB(RI)∼U$	Dec 93 - Jun 12*
CZECH REP.-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSCZ(RI)∼U$	Mar 95 - Jun 12
HONG KONG-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSHK(RI)∼U$	Dec 93 - Jun 12*
HUNGARY-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSHN(RI)∼U$	May 99 - Jun 12
ISRAEL-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSIS(RI)∼U$	Dec 93 - Jun 12*
MALAYSIA-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSMY(RI)∼U$	Dec 93 - Jun 12*
MEXICO-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSMX(RI)∼U$	Dec 93 - Jun 12*
PAKISTAN-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSPK(RI)∼U$	Dec 93 - Jun 12*
PERU-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSPE(RI)∼U$	Jan 01 - Jun 12
PHILIPPINE-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSPH(RI)∼U$	Dec 93 - Jun 12*
POLAND-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSPO(RI)∼U$	Nov 95 - Jun 12
RUSSIA-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSRS(RI)∼U$	Apr 99 - Jun 12
SINGAPORE-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSSG(RI)∼U$	Dec 93 - Jun 12*
SOUTH AFRI-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSSA(RI)∼U$	Dec 93 - Jun 12*
SRI LANKA-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSCY(RI)∼U$	Dec 93 - Jun 12*
TAIWAN-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSTA(RI)∼U$	Dec 93 - Jun 12*
THAILAND-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSTH(RI)∼U$	Dec 93 - Jun 12*
TURKEY-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSTK(RI)∼U$	Dec 93 - Jun 12*
US-DS Consumer Svs - TOT RETURN IND (∼U$)	CNSMSUS(RI)∼U$	Dec 93 - Jun 12*
Financials		
ARGENTINA-DS Financials - TOT RETURN IND (∼U$)	FINANAR(RI)∼U$	Dec 93 - Jun 12*
BRAZIL-DS Financials - TOT RETURN IND (∼U$)	FINANBR(RI)∼U$	Jul 94 - Jun 12
CHILE-DS Financials - TOT RETURN IND (∼U$)	FINANCL(RI)∼U$	Dec 93 - Jun 12*
CHINA-DS Financials - TOT RETURN IND (∼U$)	FINANCH(RI)∼U$	Dec 93 - Jun 12*
COLOMBIA-DS Financials - TOT RETURN IND (∼U$)	FINANCB(RI)∼U$	Dec 93 - Jun 12*
CZECH REP.-DS Financials - TOT RETURN IND (∼U$)	FINANCZ(RI)∼U$	Jan 94 - Jun 12
HONG KONG-DS Financials - TOT RETURN IND (∼U$)	FINANHK(RI)∼U$	Dec 93 - Jun 12*
HUNGARY-DS Financials - TOT RETURN IND (∼U$)	FINANHN(RI)∼U$	Dec 93 - Jun 12*
INDIA-DS Financials - TOT RETURN IND (∼U$)	FINANIN(RI)∼U$	Dec 93 - Jun 12*
ISRAEL-DS Financials - TOT RETURN IND (∼U$)	FINANIS(RI)∼U$	Dec 93 - Jun 12*

MALAYSIA-DS Financials - TOT RETURN IND (∼U$)	FINANMY(RI)∼U$	Dec 93 - Jun 12*
MEXICO-DS Financials - TOT RETURN IND (∼U$)	FINANMX(RI)∼U$	Dec 93 - Jun 12*
PAKISTAN-DS Financials - TOT RETURN IND (∼U$)	FINANPK(RI)∼U$	Dec 93 - Jun 12*
PERU-DS Financials - TOT RETURN IND (∼U$)	FINANPE(RI)∼U$	Dec 99 - Jun 12
PHILIPPINE-DS Financials - TOT RETURN IND (∼U$)	FINANPH(RI)∼U$	Dec 93 - Jun 12*
POLAND-DS Financials - TOT RETURN IND (∼U$)	FINANPO(RI)∼U$	Mar 94 - Jun 12
RUSSIA-DS Financials - TOT RETURN IND (∼U$)	FINANRS(RI)∼U$	Apr 98 - Jun 12
SINGAPORE-DS Financials - TOT RETURN IND (∼U$)	FINANSG(RI)∼U$	Dec 93 - Jun 12*
SOUTH AFRI-DS Financials - TOT RETURN IND (∼U$)	FINANSA(RI)∼U$	Dec 93 - Jun 12*
SRI LANKA-DS Financials - TOT RETURN IND (∼U$)	FINANCY(RI)∼U$	Dec 93 - Jun 12*
TAIWAN-DS Financials - TOT RETURN IND (∼U$)	FINANTA(RI)∼U$	Dec 93 - Jun 12*
THAILAND-DS Financials - TOT RETURN IND (∼U$)	FINANTH(RI)∼U$	Dec 93 - Jun 12*
TURKEY-DS Financials - TOT RETURN IND (∼U$)	FINANTK(RI)∼U$	Dec 93 - Jun 12*
US-DS Financials - TOT RETURN IND (∼U$)	FINANUS(RI)∼U$	Dec 93 - Jun 12*
Health Care		
BRAZIL-DS Health Care - TOT RETURN IND (∼U$)	HLTHCBR(RI)∼U$	Nov 07 - Jun 12
CHILE-DS Health Care - TOT RETURN IND (∼U$)	HLTHCCL(RI)∼U$	Dec 93 - Jun 12*
CHINA-DS Health Care - TOT RETURN IND (∼U$)	HLTHCCH(RI)∼U$	Mar 04 - Jun 12
HUNGARY-DS Health Care - TOT RETURN IND (∼U$)	HLTHCHN(RI)∼U$	Dec 93 - Jun 12*
INDIA-DS Health Care - TOT RETURN IND (∼U$)	HLTHCIN(RI)∼U$	Dec 93 - Jun 12*
ISRAEL-DS Health Care - TOT RETURN IND (∼U$)	HLTHCIS(RI)∼U$	Dec 93 - Jun 12*
MALAYSIA-DS Health Care - TOT RETURN IND (∼U$)	HLTHCMY(RI)∼U$	Apr 01 - Jun 12
MEXICO-DS Health Care - TOT RETURN IND (∼U$)	HLTHCMX(RI)∼U$	Jul 98 - Jun 12
PAKISTAN-DS Health Care - TOT RETURN IND (∼U$)	HLTHCPK(RI)∼U$	Dec 93 - Jun 12*
RUSSIA-DS Health Care - TOT RETURN IND (∼U$)	HLTHCRS(RI)∼U$	Sep 07 - Jun 12
SINGAPORE-DS Health Care - TOT RETURN IND (∼U$)	HLTHCSG(RI)∼U$	Dec 93 - Jun 12*
SOUTH AFRI-DS Health Care - TOT RETURN IND (∼U$)	HLTHCSA(RI)∼U$	Dec 93 - Jun 12*
THAILAND-DS Health Care - TOT RETURN IND (∼U$)	HLTHCTH(RI)∼U$	Dec 93 - Jun 12*
TURKEY-DS Health Care - TOT RETURN IND (∼U$)	HLTHCTK(RI)∼U$	Jul 00 - Jun 12
US-DS Health Care - TOT RETURN IND (∼U$)	HLTHCUS(RI)∼U$	Dec 93 - Jun 12*
Industrials		
ARGENTINA-DS Industrials - TOT RETURN IND (∼U$)	INDUSAR(RI)∼U$	Jan 94 - Jun 12
BRAZIL-DS Industrials - TOT RETURN IND (∼U$)	INDUSBR(RI)∼U$	Jul 94 - Jun 12
CHILE-DS Industrials - TOT RETURN IND (∼U$)	INDUSCL(RI)∼U$	Dec 93 - Jun 12*
CHINA-DS Industrials - TOT RETURN IND (∼U$)	INDUSCH(RI)∼U$	Dec 93 - Jun 12*
CZECH REP.-DS Industrials - TOT RETURN IND (∼U$)	INDUSCZ(RI)∼U$	Dec 93 - Jun 12*
HONG KONG-DS Industrials - TOT RETURN IND (∼U$)	INDUSHK(RI)∼U$	Dec 93 - Jun 12*
HUNGARY-DS Industrials - TOT RETURN IND (∼U$)	INDUSHN(RI)∼U$	May 97 - Jun 12
INDIA-DS Industrials - TOT RETURN IND (∼U$)	INDUSIN(RI)∼U$	Dec 93 - Jun 12*
INDONESIA-DS Industrials - TOT RETURN IND (∼U$)	INDUSID(RI)∼U$	Dec 93 - Jun 12*
ISRAEL-DS Industrials - TOT RETURN IND (∼U$)	INDUSIS(RI)∼U$	Dec 93 - Jun 12*
MALAYSIA-DS Industrials - TOT RETURN IND (∼U$)	INDUSMY(RI)∼U$	Dec 93 - Jun 12*
MEXICO-DS Industrials - TOT RETURN IND (∼U$)	INDUSMX(RI)∼U$	Dec 93 - Jun 12*
PAKISTAN-DS Industrials - TOT RETURN IND (∼U$)	INDUSPK(RI)∼U$	Dec 93 - Jun 12*
PERU-DS Industrials - TOT RETURN IND (∼U$)	INDUSPE(RI)∼U$	Dec 93 - Jun 12*
PHILIPPINE-DS Industrials - TOT RETURN IND (∼U$)	INDUSPH(RI)∼U$	Dec 93 - Jun 12*
POLAND-DS Industrials - TOT RETURN IND (∼U$)	INDUSPO(RI)∼U$	Sep 96 - Jun 12
RUSSIA-DS Industrials - TOT RETURN IND (∼U$)	INDUSRS(RI)∼U$	Feb 05 - Jun 12
SINGAPORE-DS Industrials - TOT RETURN IND (∼U$)	INDUSSG(RI)∼U$	Dec 93 - Jun 12*
SOUTH AFRI-DS Industrials - TOT RETURN IND (∼U$)	INDUSSA(RI)∼U$	Dec 93 - Jun 12*
SRI LANKA-DS Industrials - TOT RETURN IND (∼U$)	INDUSCY(RI)∼U$	Dec 93 - Jun 12*
THAILAND-DS Industrials - TOT RETURN IND (∼U$)	INDUSTH(RI)∼U$	Dec 93 - Jun 12*
TAIWAN-DS Industrials - TOT RETURN IND (∼U$)	INDUSTA(RI)∼U$	Dec 93 - Jun 12*
TURKEY-DS Industrials - TOT RETURN IND (∼U$)	INDUSTK(RI)∼U$	Dec 93 - Jun 12*
US-DS Industrials - TOT RETURN IND (∼U$)	INDUSUS(RI)∼U$	Dec 93 - Jun 12*
Oil & Gas		
ARGENTINA-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSAR(RI)∼U$	Dec 93 - Jun 12*
BRAZIL-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSBR(RI)∼U$	Jul 94 - Jun 12
CHILE-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSCL(RI)∼U$	Dec 93 - Jun 12*
CHINA-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSCH(RI)∼U$	Dec 94 - Jun 12
COLOMBIA-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSCB(RI)∼U$	Dec 93 - Jun 12*
CZECH REP.-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSCZ(RI)∼U$	Dec 93 - Jun 12*
HONG KONG-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSHK(RI)∼U$	Dec 93 - Jun 12*
HUNGARY-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSHN(RI)∼U$	Dec 95 - Jun 12
INDIA-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSIN(RI)∼U$	Dec 93 - Jun 12*
ISRAEL-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSIS(RI)∼U$	Dec 93 - Jun 12*
MALAYSIA-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSMY(RI)∼U$	Dec 93 - Jun 12*
PAKISTAN-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSPK(RI)∼U$	Dec 93 - Jun 12*
PERU-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSPE(RI)∼U$	Apr 04 - Jun 12
RUSSIA-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSRS(RI)∼U$	Feb 98 - Jun 12
PHILIPPINE-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSPH(RI)∼U$	Dec 93 - Jun 12*
POLAND-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSPO(RI)∼U$	Feb 06 - Jun 12
SINGAPORE-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSSG(RI)∼U$	Dec 93 - Jun 12*
SOUTH AFRI-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSSA(RI)∼U$	Dec 93 - Jun 12*
SRI LANKA-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSCY(RI)∼U$	Nov 96 - Jun 12
TAIWAN-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSTA(RI)∼U$	Jan 04 - Jun 12
TURKEY-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSTK(RI)∼U$	Dec 93 - Jun 12*
THAILAND-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSTH(RI)∼U$	Dec 93 - Jun 12*
US-DS Oil & Gas - TOT RETURN IND (∼U$)	OILGSUS(RI) ∼U$	Dec 93 - Jun 12*
Telecommunications		
ARGENTINA-DS Telecom - TOT RETURN IND (∼U$)	TELCMAR(RI) ∼U$	Dec 93 - Jun 12*
BRAZIL-DS Telecom - TOT RETURN IND (∼U$)	TELCMBR(RI)∼U$	Jul 94 - Jun 12
CHILE-DS Telecom - TOT RETURN IND (∼U$)	TELCMCL(RI)∼U$	Dec 93 - Jun 12*
CHINA-DS Telecom - TOT RETURN IND (∼U$)	TELCMCH(RI)∼U$	Nov 02 - Jun 12
COLOMBIA-DS Telecom - TOT RETURN IND (∼U$)	TELCMCB(RI)∼U$	Oct 03 - Jun 12
CZECH REP.-DS Telecom - TOT RETURN IND (∼U$)	TELCMCZ(RI)∼U$	Mar 95 - Jun 12
HONG KONG-DS Telecom - TOT RETURN IND (∼U$)	TELCMHK(RI)∼U$	Dec 93 - Jun 12*
HUNGARY-DS Telecom - TOT RETURN IND (∼U$)	TELCMHN(RI)∼U$	Nov 97 - Jun 12
INDIA-DS Telecom - TOT RETURN IND (∼U$)	TELCMIN(RI)∼U$	Dec 93 - Jun 12*

ISRAEL-DS Telecom - TOT RETURN IND (∼U$)	TELCMIS(RI)∼U$	Dec 93 - Jun 12*
MALAYSIA-DS Telecom - TOT RETURN IND (∼U$)	TELCMMY(RI)∼U$	Dec 93 - Jun 12*
MEXICO-DS Telecom - TOT RETURN IND (∼U$)	TELCMMX(RI)∼U$	Dec 93 - Jun 12*
PAKISTAN-DS Telecom - TOT RETURN IND (∼U$)	TELCMPK(RI)∼U$	Nov 94 - Jun 12
PERU-DS Telecom - TOT RETURN IND (∼U$)	TELCMPE(RI)∼U$	Jan 94 - Jun 12
PHILIPPINE-DS Telecom - TOT RETURN IND (∼U$)	TELCMPH(RI)∼U$	Dec 93 - Jun 12*
POLAND-DS Telecom - TOT RETURN IND (∼U$)	TELCMPO(RI)∼U$	Nov 98 - Jun 12
SINGAPORE-DS Telecom - TOT RETURN IND (∼U$)	TELCMSG(RI)∼U$	Dec 93 - Jun 12*
RUSSIA-DS Telecom - TOT RETURN IND (∼U$)	TELCMRS(RI)∼U$	Feb 98 - Jun 12
SOUTH AFRI-DS Telecom - TOT RETURN IND (∼U$)	TELCMSA(RI)∼U$	Jan 96 - Jun 12
SRI LANKA-DS Telecom - TOT RETURN IND (∼U$)	TELCMCY(RI)∼U$	Jan 03 - Jun 12
TAIWAN-DS Telecom - TOT RETURN IND (∼U$)	TELCMTA(RI)∼U$	Sep 00 - Jun 12
THAILAND-DS Telecom - TOT RETURN IND (∼U$)	TELCMTH(RI)∼U$	Dec 93 - Jun 12*
TURKEY-DS Telecom - TOT RETURN IND (∼U$)	TELCMTK(RI)∼U$	Dec 93 - Jun 12*
US-DS Telecom - TOT RETURN IND (∼U$)	TELCMUS(RI)∼U$	Dec 93 - Jun 12*
Technology		
BRAZIL-DS Technology - TOT RETURN IND (∼U$)	TECNOBR(RI)∼U$	Mar 06 - Jun 12
CHILE-DS Technology - TOT RETURN IND (∼U$)	TECNOCL(RI)∼U$	Dec 94 - Jun 12
CHINA A-DS Technology - TOT RETURN IND (∼U$)	TECNOCA(RI)∼U$	Jun 08 - Jun 12
HONG KONG-DS Technology - TOT RETURN IND (∼U$)	TECNOHK(RI)∼U$	Dec 93 - Jun 12*
HUNGARY-DS Technology - TOT RETURN IND (∼U$)	TECNOHN(RI)∼U$	May 99 - Jun 12
INDIA-DS Technology - TOT RETURN IND (∼U$)	TECNOIN(RI)∼U$	Dec 93 - Jun 12*
ISRAEL-DS Technology - TOT RETURN IND (∼U$)	TECNOIS(RI)∼U$	Dec 93 - Jun 12*
MALAYSIA-DS Technology - TOT RETURN IND (∼U$)	TECNOMY(RI)∼U$	Mar 10 - Jun 12
POLAND-DS Technology - TOT RETURN IND (∼U$)	TECNOPO(RI)∼U$	Feb 98 - Jun 12
SINGAPORE-DS Technology - TOT RETURN IND (∼U$)	TECNOSG(RI)∼U$	Dec 93 - Jun 12*
SRI LANKA-DS Technology - TOT RETURN IND (∼U$)	TECNOCY(RI)∼U$	Jul 11 - Jun 12
TAIWAN-DS Technology - TOT RETURN IND (∼U$)	TECNOTA(RI)∼U$	Mar 96 - Jun 12
THAILAND-DS Technology - TOT RETURN IND (∼U$)	TECNOTH(RI)∼U$	Dec 93 - Jun 12*
TURKEY-DS Technology - TOT RETURN IND (∼U$)	TECNOTK(RI)∼U$	Dec 93 - Jun 12*
US-DS Technology - TOT RETURN IND (∼U$)	TECNOUS(RI)∼U$	Dec 93 - Jun 12*
Utilities		
ARGENTINA-DS Utilities - TOT RETURN IND (∼U$)	UTILSAR(RI)∼U$	Dec 94 - Jun 12
BRAZIL-DS Utilities - TOT RETURN IND (∼U$)	UTILSBR(RI)∼U$	Jul 94 - Jun 12
CHILE-DS Utilities - TOT RETURN IND (∼U$)	UTILSCL(RI)∼U$	Dec 93 - Jun 12*
CHINA-DS Utilities - TOT RETURN IND (∼U$)	UTILSCH(RI)∼U$	Jul 95 - Jun 12
COLOMBIA-DS Utilities - TOT RETURN IND (∼U$)	UTILSCB(RI)∼U$	Dec 93 - Jun 12*
CZECH REP.-DS Utilities - TOT RETURN IND (∼U$)	UTILSCZ(RI)∼U$	Dec 93 - Jun 12*
HONG KONG-DS Utilities - TOT RETURN IND (∼U$)	UTILSHK(RI)∼U$	Dec 93 - Jun 12*
HUNGARY-DS Utilities - TOT RETURN IND (∼U$)	UTILSHN(RI)∼U$	Jan 94 - Jun 12
INDIA-DS Utilities - TOT RETURN IND (∼U$)	UTILSIN(RI)∼U$	Dec 93 - Jun 12*
ISRAEL-DS Utilities - TOT RETURN IND (∼U$)	UTILSIS(RI)∼U$	Jan 98 - Jun 12
MALAYSIA-DS Utilities - TOT RETURN IND (∼U$)	UTILSMY(RI)∼U$	Dec 93 - Jun 12*
PAKISTAN-DS Utilities - TOT RETURN IND (∼U$)	UTILSPK(RI)∼U$	Dec 93 - Jun 12*
PERU-DS Utilities - TOT RETURN IND (∼U$)	UTILSPE(RI)∼U$	Aug 96 - Jun 12
PHILIPPINE-DS Utilities - TOT RETURN IND (∼U$)	UTILSPH(RI)∼U$	Dec 93 - Jun 12*
POLAND-DS Utilities - TOT RETURN IND (∼U$)	UTILSPO(RI)∼U$	Nov 00 - Jun 12
RUSSIA-DS Utilities - TOT RETURN IND (∼U$)	UTILSRS(RI)∼U$	Feb 98 - Jun 13
SINGAPORE-DS Utilities - TOT RETURN IND (∼U$)	UTILSSG(RI)∼U$	Jan 01 - Jun 12
THAILAND-DS Utilities - TOT RETURN IND (∼U$)	UTILSTH(RI)∼U$	Jan 95 - Jun 12
TURKEY-DS Utilities - TOT RETURN IND (∼U$)	UTILSTK(RI)∼U$	Dec 93 - Jun 12*
US-DS Utilities - TOT RETURN IND (∼U$)	UTILSUS(RI)∼U$	Dec 93 - Jun 12*

Table A.1: Data Summary: Global Equity Datastream Indices. All returns are denominated in US$. Datastream Global Equity Indices break down into six levels. Level 1 is the market index, this covers all the sectors in each region or country. Level 2 divides the market into 10 industries and covers all the sectors within each group in each region or country. Levels 3 - 6 subdivide the level 2 classifications into sector classifications in increasing detail. I focus on the 10 industries classified as in level 2. Industry TRIs denominated in US$ are available for 24 emerging markets countries: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hong-Kong, Hungary, India, Indonesia, Israel, Malaysia, Mexico, Pakistan, Peru, Philippine, Poland, Russia, Singapore, South Africa, Sri-Lanka, Taiwan, Thailand, Turkey.

Variable	Source
Fama-French Factors:	
$(R_{M,t} - R_t^f)$ (Market Factor)	Kenneth R.?French?- Data Library
SMB (Small minus Big)	Kenneth R.?French?- Data Library
HML (High minus Low)	Kenneth R.?French?- Data Library
Macrol Factors:	
MSCI WORLD U$ - TOT RETURN IND	Datastream
CBOE SPX VOLATILITY VIX (NEW) - PRICE INDEX	Datastream
US BENCHMARK 2 YEAR DS GOVT. INDEX - RED. YIELD	Datastream
US BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD	Datastream
BD BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD	Datastream
IT BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD	Datastream
Industrial Production and Capacity Utilization (s.a.)	Board of Governors of the Federal Reserve System
M1 Money Stock (s.a.)	Board of Governors of the Federal Reserve System

Table A.2 Data Summary: Macroeconomic Variables. *Fama-French Factors*: $(R_{M,t} - R_t^f)$, SMB_t, HML_t represent the excess return of the market, the difference between a portfolio of small stocks and a portfolio of big stocks, and the difference between a portfolio of high book-to-market stock.s and a portfolio of low book-to-market stocks, respectively. *Global Factors*: the MSCI WORLD U$ - TOT RETURN IND is the return of Morgan Stanley Capital International world equity index (dividends are included), the US BENCHMARK 2 YEAR DS GOVT. INDEX - RED. YIELD and the US BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD are the redemption yields (computed semi-annually) of a 2Y and 10Y U.S. government bond benchmark index, the IT BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD and the IT BENCHMARK 10 YEAR DS GOVT. INDEX - RED. YIELD are the redemption yields (computed annually) of a 10Y Italian government bond benchmark index and 10Y German government bond benchmark index, respectively. Details on benchmark bonds and redemption yield computation are provided by Datastream government bond indices. The industrial production and capacity utilization and the M1 money stock are monthly seasonally adjusted series from the Fed St. Louis.

B Estimation results

Table B.1 One-Factor Model Estimation Results (i.e. CAPM). This table reports coefficient estimates from estimating the following regression for each Emerging and U.S. industry excess return in a OLS framework: $Z_{i,t} = \alpha_i^{CAPM} + \beta_{i,M}(R_{M,t} - R_t^f) + \varepsilon_{i,t}^{CAPM}$. Country-by-country industry TRIs are from Datastream Global Equity Indices. All returns are denominated in US$. The market factor, $R_{m,t} - R_t^f$, is from Kenneth French Data Library. Newey-West standard errors are shown in square brackets. I correct for heteroscedasticity and autocorrelation using the Newey and West (1987, 1994) correction with lag = 4. *** indicates significance at the 1% level, ** indicates significance at the 5% and * indicates significance at the 1%. There are 222 observations from January 1994 to June 2012. PANEL A reports regression estimates for the full sample. PANEL B reports regression estimates for the post-liberalizations sample (i.e. January 2000-June 2012).

	PANEL A: January 1994 - June 2012			PANEL B: January 2000 - June 2012		
Emerging	$\hat{\alpha}_i^{CAPM}$	$\hat{\beta}_{i,M}$	R_i^2	$\hat{\alpha}_i$	$\hat{\beta}_{i,M}$	R_i^2
BasicMats	0.79	0.72***	0.21	1.47**	0.78***	0.25
	[0.52]	[0.14]		[0.56]	[0.18]	
ConsGds	0.64*	0.53***	0.22	1.25***	0.59***	0.32
	[0.37]	[0.09]		[0.36]	[0.11]	
ConsSvs	0.62	0.64***	0.24	1.06**	0.72**	0.33
	[0.42]	[0.11]		[0.46]	[0.13]	
Financial	0.66	0.74***	0.27	1.29***	0.79***	0.34
	[0.44]	[0.12]		[0.44]	[0.16]	
Healthcare	1.03**	0.61***	0.23	1.70***	0.71***	0.33
	[0.40]	[0.10]		[0.43]	[0.12]	
Industr	0.73*	0.70***	0.26	1.16**	0.80***	0.34
	[0.41]	[0.12]		[0.45]	[0.14]	
Oil&Gas	1.03**	0.62***	0.21	1.56***	0.68***	0.28
	[0.43]	[0.12]		[0.44]	[0.15]	
Tech	0.74	0.99***	0.27	0.57	0.99***	0.32
	[0.58]	[0.12]		[0.65]	[0.14]	
Telec	0.42	0.68***	0.24	0.75*	0.70***	0.31
	[0.41]	[0.08]		[0.43]	[0.10]	
Utilit	0.70*	0.54***	0.19	1.25***	0.58***	0.26
	[0.37]	[0.10]		[0.40]	[0.12]	
United States	$\hat{\alpha}_i^{CAPM}$	$\hat{\beta}_{i,M}$	R_i^2	$\hat{\alpha}_i$	$\hat{\beta}_{i,M}$	R_i^2
BasicMats	0.35	0.74***	0.21	0.66	0.83***	0.24
	[0.40]	[0.17]		[0.47]	[0.21]	
ConsGds	0.11	0.56***	0.22	0.26	0.58***	0.24
	[0.27]	[0.10]		[0.30]	[0.12]	
ConsSvs	0.21	0.66***	0.29	0.15	0.75***	0.34
	[0.22]	[0.10]		[0.26]	[0.12]	
Financial	0.16	0.80***	0.30	0.11	0.91***	0.35
	[0.29]	[0.14]		[0.33]	[0.16]	
Healthcare	0.49***	0.34***	0.12	0.33	0.36***	0.13
	[0.21]	[0.09]		[0.23]	[0.11]	
Industr	0.35	0.77***	0.33	0.25	0.88***	0.38
	[0.23]	[0.12]		[0.25]	[0.14]	
Oil&Gas	0.60*	0.53***	0.17	0.80**	0.63***	0.20
	[0.31]	[0.12]		[0.35]	[0.15]	
Tech	0.46	1.01***	0.32	-0.21	1.13***	0.43
	[0.39]	[0.15]		[0.37]	[0.16]	
Telec	-0.01	0.68***	0.27	-0.33	0.73***	0.29
	[0.32]	[0.09]		[0.39]	[0.11]	
Utilit	0.29	0.32***	0.10	0.51	0.37***	0.12
	[0.31]	[0.10]		[0.37]	[0.13]	

Table B.2 Three-Factor Model Estimations (i.e. *Fama-French Model*): This table reports coefficient estimates from estimating the following regression for each Emerging and U.S. industry excess return in a OLS framework: $Z_{i,t} = \alpha_i^{FF} + \beta_{i,M}(R_{M,t} - R_t^f) + \beta_{i,SMB}SMB_t + \beta_{i,HML}HML_t + \varepsilon_{i,t}^{FF}$. Country-by-country industry TRIs are from Datastream Global Equity Indices. All returns are denominated in US$. The Fama-French factors are from Kenneth French Data Library. $R_m - R_t^f$ is the market excess return, SMB_t is the difference between the returns on diversified portfolios of small and big stocks, HML_t is the difference between the returns on diversified portfolios of high and low book-to-market stocks. Newey-West standard errors are shown in square brackets. I correct for heteroscedasticity and autocorrelation using the Newey and West (1987, 1994) correction with lag = 4. *** indicates significance at the 1% level, ** indicates significance at the 5% and * indicates significance at the 1%. There are 222 observations from January 1994 to June 2012. PANEL A reports regression estimates for the full sample. PANEL B reports regression estimates for the post-liberalization sample (i.e. January 00-June 2012).

	PANEL A: January 1994 - June 2012					PANEL B: January 2000 - June 12				
Emerging	$\hat{\alpha}_i^{FF}$	$\hat{\beta}_{i,M}$	$\hat{\beta}_{i,SMB}$	$\hat{\beta}_{i,HML}$	R_i^2	$\hat{\alpha}_i$	$\hat{\beta}_{i,M}$	$\hat{\beta}_{i,SMB}$	$\hat{\beta}_{i,HML}$	R_i^2
BasicMats	0.68	0.70***	0.32**	0.26**	0.22	1.36**	0.78***	0.06	0.16	0.24
	[0.52]	[0.14]	[0.13]	[0.13]		[0.61]	[0.18]	[0.17]	[0.15]	
ConsGds	0.56	0.51***	0.25***	0.19**	0.24	1.17***	0.58***	0.05	0.11	0.31
	[0.37]	[0.09]	[0.09]	[0.09]		[0.39]	[0.11]	[0.11]	[0.09]	
ConsSvs	0.51	0.61***	0.35***	0.25**	0.27	0.92*	0.70***	0.14	0.15	0.32
	[0.43]	[0.10]	[0.11]	[0.11]		[0.50]	[0.12]	[0.13]	[0.12]	
Financial	0.52	0.72***	0.39***	0.32***	0.30	1.06**	0.77***	0.20	0.29**	0.35
	[0.43]	[0.11]	[0.11]	[0.11]		[0.46]	[0.15]	[0.13]	[0.12]	
Healthcare	0.98**	0.58***	0.23**	0.07	0.23	1.65***	0.70***	0.06	0.05	0.32
	[0.40]	[0.10]	[0.11]	[0.11]		[0.44]	[0.12]	[0.11]	[0.12]	
Industr	0.64	0.71***	0.15	0.26**	0.27	1.11**	0.83***	-0.10	0.17	0.34
	[0.42]	[0.12]	[0.14]	[0.10]		[0.49]	[0.14]	[0.13]	[0.11]	
Oil&Gas	0.88**	0.60***	0.37***	0.34***	0.24	1.37***	0.67***	0.16	0.24*	0.28
	[0.43]	[0.11]	[0.11]	[0.11]		[0.47]	[0.14]	[0.13]	[0.12]	
Tech	0.73	0.85***	0.58***	-0.20	0.32	0.50	0.86***	0.47**	-0.26**	0.37
	[0.55]	[0.13]	[0.20]	[0.12]		[0.61]	[0.16]	[0.22]	[0.12]	
Telec	0.41	0.60***	0.32***	-0.10	0.26	0.77*	0.66***	0.15	-0.16	0.32
	[0.39]	[0.09]	[0.11]	[0.11]		[0.44]	[0.11]	[0.10]	[0.10]	
Utilit	0.59	0.53***	0.26***	0.28***	0.21	1.09**	0.57***	0.13	0.20*	0.26
	[0.37]	[0.09]	[0.09]	[0.10]		[0.42]	[0.12]	[0.11]	[0.12]	
United States	$\hat{\alpha}_i^{FF}$	$\hat{\beta}_{i,M}$	$\hat{\beta}_{i,SMB}$	$\hat{\beta}_{i,HML}$	R_i^2	$\hat{\alpha}_i$	$\hat{\beta}_{i,M}$	$\hat{\beta}_{i,SMB}$	$\hat{\beta}_{i,HML}$	R_i^2
BasicMats	0.16	0.82***	0.11	0.62***	0.27	0.43	0.91***	-0.11	0.56**	0.29
	[0.39]	[0.14]	[0.15]	[0.17]		[0.51]	[0.17]	[0.17]	[0.22]	
ConsGds	-0.03	0.62***	0.05	0.44***	0.27	0.09	0.64***	-0.10	0.41**	0.30
	[0.26]	[0.08]	[0.16]	[0.16]		[0.32]	[0.09]	[0.17]	[0.18]	
ConsSvs	0.13	0.67***	0.15	0.21*	0.30	0.00	0.75***	0.07	0.24*	0.34
	[0.24]	[0.10]	[0.17]	[0.12]		[0.30]	[0.11]	[0.20]	[0.14]	
Financial	-0.07	0.89***	0.16	0.71***	0.40	-0.30	0.95***	0.11	0.71***	0.44
	[0.24]	[0.10]	[0.15]	[0.18]		[0.31]	[0.10]	[0.18]	[0.21]	
Healthcare	0.44**	0.38***	-0.05	0.19	0.13	0.22	0.38***	-0.01	0.22*	0.14
	[0.22]	[0.09]	[0.08]	[0.12]		[0.26]	[0.10]	[0.10]	[0.13]	
Industr	0.24	0.80***	0.12	0.32**	0.35	0.11	0.91***	-0.02	0.31**	0.39
	[0.24]	[0.11]	[0.14]	[0.13]		[0.28]	[0.12]	[0.14]	[0.14]	
Oil&Gas	0.47	0.60***	0.04	0.42***	0.20	0.67*	0.69***	-0.12	0.36**	0.23
	[0.29]	[0.11]	[0.12]	[0.15]		[0.38]	[0.13]	[0.13]	[0.18]	
Tech	0.63*	0.88***	0.16	-0.64***	0.39	0.14	1.08***	-0.04	-0.65***	0.48
	[0.34]	[0.15]	[0.22]	[0.19]		[0.34]	[0.14]	[0.22]	[0.20]	
Telec	0.06	0.65***	-0.05	-0.20	0.27	-0.13	0.75***	-0.18	-0.24	0.30
	[0.31]	[0.10]	[0.15]	[0.14]		[0.39]	[0.10]	[0.16]	[0.15]	
Utilit	0.16	0.38***	0.08	0.42***	0.17	0.28	0.39***	0.07	0.40**	0.16
	[0.30]	[0.10]	[0.10]	[0.13]		[0.40]	[0.12]	[0.13]	[0.15]	

Table B.3 Multi-(*Macro*) Factor Model Estimations. This table reports coefficient estimates from estimating the following regression for each Emerging and U.S. industry excess return in a OLS framework: $Z_{i,t} = \alpha_i^{MACRO} + \beta_{i,Z_w} Z_{w,t} + \beta_{i,\Delta IND} \Delta IND_{t-2} + \beta_{i,\Delta M} \Delta M_{t-1} + \beta_{i,Steep}(US10Y - US2Y)_{t-1} + \beta_{i,SovRisk}(IT10Y - BD10Y)_{t-1} + \beta_{i,\Delta VIX} \Delta VIX_{t-1} + \varepsilon_{i,t}^{MACRO}$. The variables are defines as: Z_w - World Market Return, ΔIND - US Ind. Prod. Growth Rate, $\Delta M1$ - US Monetary Base Growth Rate, $(IT10Y - BD10Y)$ - 10Y Italian-German Gov. Spread, $(US10Y - US2Y)$ - US10Y-US2Y Gov. Bond Spread (i.e. US yield curve steepness), ΔVIX - Volatility Index Growth Rate. The explanatory variables are detailed discussed in the text. Country-by-country industry TRIs are from Datastream Global Equity Indices. All returns are denominated in US$. The riskfree rate is the one-month T-bill rate from Ibbotson Associates. Newey-West standard errors are shown in square brackets. I correct for heteroscedasticity and autocorrelation using the Newey and West (1987, 1994) correction with lag = 4. *** indicates significance at the 1% level, ** indicates significance at the 5% and * indicates significance at the 1%. There are 222 observations from January 1994 to June 2012. PANEL A reports regression estimates for the full sample. PANEL B reports regression estimates for the post-liberalizations sample (i.e. January 2000-June 2012).

PANEL A: January 1994 - June 2012								
Emerging	α_i^{MACRO}	β_{i,Z_w}	$\beta_{i,\Delta IND}$	$\beta_{i,\Delta M}$	$\beta_{i,Steep}$	$\beta_{i,SovRisk}$	$\beta_{i,\Delta VIX}$	$\bar{R}^2$
BasicMats	0.86	0.59***	0.49	-0.07	0.79*	-0.56**	-0.13***	0.31
	[0.92]	[0.10]	[0.95]	[0.37]	[0.47]	[0.25]	[0.02]	
ConsGds	0.49	0.46***	0.33	0.22	0.65*	-0.41**	-0.09***	0.33
	[0.64]	[0.07]	[0.59]	[0.26]	[0.34]	[0.20]	[0.01]	
ConsSvs	0.61	0.53***	0.52	-0.09	0.60	-0.36	-0.10***	0.31
	[0.79]	[0.09]	[0.71]	[0.34]	[0.41]	[0.23]	[0.02]	
Financial	0.74	0.62***	0.47	-0.05	0.60	-0.42*	-0.12***	0.36
	[0.82]	[0.10]	[0.79]	[0.36]	[0.44]	[0.24]	[0.02]	
Healthcare	0.71	0.54***	0.45	-0.03	0.90**	-0.42**	-0.10***	0.34
	[0.74]	[0.08]	[0.59]	[0.31]	[0.40]	[0.20]	[0.02]	
Industr	0.87	0.60***	1.26*	-0.17	0.55	-0.54**	-0.10***	0.37
	[0.70]	[0.09]	[0.73]	[0.30]	[0.39]	[0.22]	[0.02]	
Oil&Gas	1.04	0.49***	0.32	-0.24	0.78**	-0.44*	-0.12***	0.30
	[0.76]	[0.10]	[0.80]	[0.31]	[0.39]	[0.23]	[0.02]	
Tech	1.57	0.85***	0.62	0.55	-0.26	-0.41	-0.10***	0.25
	[1.27]	[0.13]	[0.89]	[0.51]	[0.66]	[0.33]	[0.02]	
Telec	0.62	0.57***	0.87	0.19	0.39	-0.46*	-0.10***	0.31
	[0.90]	[0.08]	[0.56]	[0.38]	[0.48]	[0.27]	[0.02]	
Utilit	0.73	0.45***	0.26	0.05	0.38	-0.23	-0.11***	0.30
	[0.71]	[0.08]	[0.56]	[0.24]	[0.39]	[0.24]	[0.02]	
United States								
BasicMats	0.27	0.67***	0.90	0.23	0.21	-0.16	-0.08***	0.24
	[0.74]	[0.11]	[1.39]	[0.39]	[0.36]	[0.18]	[0.03]	
ConsGds	-0.08	0.55***	0.40	0.51*	0.08	-0.01	-0.06***	0.27
	[0.52]	[0.08]	[0.53]	[0.26]	[0.26]	[0.16]	[0.02]	
ConsSvs	0.02	0.62***	0.97	0.39	0.11	-0.04	-0.07***	0.35
	[0.43]	[0.09]	[0.72]	[0.35]	[0.24]	[0.12]	[0.02]	
Financial	0.23	0.30***	0.96*	0.52**	-0.23	0.27**	-0.05***	0.21
	[0.35]	[0.07]	[0.57]	[0.24]	[0.23]	[0.11]	[0.01]	
Healthcare	0.22	0.72***	1.28	-0.43	0.03	0.03	-0.08***	0.36
	[0.53]	[0.09]	[1.39]	[0.60]	[0.37]	[0.15]	[0.02]	
Industr	0.33	0.70***	1.33*	0.53	-0.17	0.01	-0.08***	0.41
	[0.38]	[0.10]	[0.74]	[0.38]	[0.22]	[0.12]	[0.02]	
Oil&Gas	0.89	0.48***	0.89	0.38	-0.21	-0.14	-0.06***	0.19
	[0.55]	[0.09]	[0.74]	[0.37]	[0.31]	[0.14]	[0.02]	
Tech	0.50	0.95***	0.55	0.71	-0.38	0.20	-0.09***	0.34
	[0.80]	[0.16]	[0.75]	[0.52]	[0.42]	[0.22]	[0.02]	
Telec	0.25	0.68***	0.30	0.26	-0.28	0.03	-0.05***	0.29
	[0.60]	[0.09]	[0.57]	[0.33]	[0.38]	[0.17]	[0.01]	
Utilit	0.62	0.28***	0.96*	0.78***	-0.49	-0.04	-0.04**	0.14
	[0.49]	[0.08]	[0.50]	[0.25]	[0.30]	[0.13]	[0.02]	

PANEL B: January 2000-June 2012								
Emerging	α_i^{MACRO}	β_{i,Z_w}	$\beta_{i,\Delta IND}$	$\beta_{i,\Delta M}$	$\beta_{i,Steep}$	$\beta_{i,SovRisk}$	$\beta_{i,\Delta VIX}$	$\bar{R}^2$
BasicMats	1.83*	0.64***	1.00	0.07	0.50	-1.13***	-0.13***	0.35
	[0.96]	[0.13]	[1.06]	[0.41]	[0.50]	[0.31]	[0.02]	
ConsGds	1.20**	0.50***	0.88	0.21	0.30	-0.40*	-0.08***	0.40
	[0.59]	[0.09]	[0.64]	[0.26]	[0.34]	[0.22]	[0.01]	
ConsSvs	1.26	0.61***	0.98	0.05	0.37	-0.75***	-0.10***	0.40
	[0.87]	[0.11]	[0.72]	[0.35]	[0.45]	[0.27]	[0.02]	
Financial	1.73**	0.68***	1.03	-0.01	0.23	-0.73**	-0.11***	0.42
	[0.76]	[0.14]	[0.88]	[0.38]	[0.43]	[0.29]	[0.02]	
Healthcare	1.67**	0.63***	0.68	0.18	0.58	-0.91***	-0.09***	0.41
	[0.72]	[0.10]	[0.64]	[0.33]	[0.41]	[0.26]	[0.02]	
Industr	1.77**	0.71***	1.66**	0.01	0.13	-0.85***	-0.10***	0.46
	[0.70]	[0.11]	[0.82]	[0.31]	[0.41]	[0.24]	[0.02]	
Oil&Gas	1.80**	0.56***	0.74	-0.01	0.41	-0.77***	-0.12***	0.38
	[0.77]	[0.12]	[0.89]	[0.36]	[0.40]	[0.24]	[0.02]	
Tech	0.84	0.82***	0.83	0.47	0.01	-0.33	-0.12***	0.31
	[1.42]	[0.16]	[1.00]	[0.53]	[0.73]	[0.38]	[0.02]	
Telec	0.82	0.60***	1.15*	0.14	0.46	-0.87***	-0.08***	0.35
	[0.93]	[0.10]	[0.63]	[0.34]	[0.50]	[0.23]	[0.02]	
Utilit	1.84***	0.49***	0.68	0.13	0.06	-0.73***	-0.10***	0.36
	[0.69]	[0.10]	[0.61]	[0.27]	[0.39]	[0.23]	[0.02]	
United States								
BasicMats	1.17	0.78***	1.53	0.49	-0.15	-0.50	-0.09**	0.28
	[0.86]	[0.14]	[1.52]	[0.42]	[0.45]	[0.33]	[0.04]	
ConsGds	0.18	0.61***	0.82	0.62**	0.02	-0.20	-0.04***	0.29
	[0.60]	[0.10]	[0.52]	[0.28]	[0.32]	[0.20]	[0.02]	
ConsSvs	-0.20	0.72***	1.38*	0.45	0.14	0.07	-0.06***	0.40
	[0.55]	[0.10]	[0.75]	[0.39]	[0.30]	[0.27]	[0.02]	
Financial	0.44	0.35***	1.33**	0.74***	-0.32	0.03	-0.04**	0.21
	[0.40]	[0.08]	[0.61]	[0.26]	[0.26]	[0.23]	[0.02]	
Healthcare	0.71	0.86***	1.88	-0.27	-0.24	-0.06	-0.06***	0.40
	[0.58]	[0.11]	[1.54]	[0.65]	[0.36]	[0.25]	[0.02]	
Industr	0.57	0.84***	1.89***	0.81**	-0.26	-0.30	-0.07***	0.45
	[0.40]	[0.12]	[0.72]	[0.41]	[0.23]	[0.24]	[0.02]	
Oil&Gas	1.78***	0.59***	1.43**	0.73*	-0.56**	-0.55**	-0.08***	0.27
	[0.48]	[0.10]	[0.70]	[0.37]	[0.28]	[0.23]	[0.03]	
Tech	-0.40	1.11***	0.90	0.91	0.02	-0.14	-0.06**	0.42
	[0.71]	[0.17]	[0.79]	[0.56]	[0.40]	[0.30]	[0.02]	
Telec	-0.44	0.74***	0.53	0.10	-0.08	0.38	-0.04**	0.31
	[0.73]	[0.11]	[0.59]	[0.35]	[0.45]	[0.41]	[0.02]	
Utilit	1.33**	0.33***	1.35***	0.85***	-0.79**	-0.07	-0.06**	0.20
	[0.53]	[0.10]	[0.48]	[0.28]	[0.35]	[0.32]	[0.02]	

Table B.4 Multi-(*artificial*) Factor Model Estimations. This table reports coefficient estimates from estimating the following regression for each Emerging and U.S. industry excess return in a OLS framework: $Z_{i,t} = \alpha_i^{PC} + \beta_{i,PC^1} PC^1_{i,t} + \beta_{i,PC^2} PC^2_{i,t} + \beta_{i,PC^3} PC^3_{i,t} + \beta_{i,PC^4} PC^4_{i,t} + +\beta_{i,PC^5} PC^5_{i,t} + \beta_{i,PC^6} PC^6_{i,t} + \beta_{i,PC^7} PC^7_{i,t} + \beta_{i,PC^8} PC^8_{i,t} + \beta_{i,PC^9} PC^9_{i,t} + \beta_{i,PC^{10}} PC^{10}_{i,t} \varepsilon^{PC}_{i,t}$. The principal components (i.e. artificial global factors) are extracted employing all "*" labelled TRIs in Table A.1. Country-by-country industry TRIs are from Datastream Global Equity Indices. All returns are denominated in US$. The riskfree rate is the one-month T-bill rate from Kenneth French Data Library. Newey-West standard errors are shown in square brackets. I correct for heteroscedasticity and autocorrelation using the Newey and West (1987, 1994) correction with lag = 4. *** indicates significance at the 1% level, ** indicates significance at the 5% and * indicates significance at the 1%. There are 222 observations from January 1994 to June 2012. PANEL A reports regression estimates for the full sample. PANEL B reports regression estimates for the post-liberalizations sample (i.e. January 2000-June 2012).

PANEL A: January 1994 - June 2012												
Emerging	$\hat{\alpha}_i^{PC}$	$\hat{\beta}_{i,PC^1}$	$\hat{\beta}_{i,PC^2}$	$\hat{\beta}_{i,PC^3}$	$\hat{\beta}_{i,PC^4}$	$\hat{\beta}_{i,PC^5}$	$\hat{\beta}_{i,PC^6}$	$\hat{\beta}_{i,PC^7}$	$\hat{\beta}_{i,PC^8}$	$\hat{\beta}_{i,PC^9}$	$\hat{\beta}_{i,PC^{10}}$	R_i^2
BasicMats	1.15***	1.07***	-0.04	0.15***	-0.25***	-0.08	-0.01	0.21***	0.28***	0.01	-0.40***	0.93
	[0.15]	[0.03]	[0.05]	[0.04]	[0.05]	[0.07]	[0.06]	[0.07]	[0.07]	[0.06]	[0.08]	
ConsGds	0.91***	0.75***	0.06	0.09*	-0.26***	0.06	-0.06	0.13**	0.06	0.10	-0.20***	0.90
	[0.12]	[0.02]	[0.06]	[0.05]	[0.05]	[0.06]	[0.06]	[0.06]	[0.08]	[0.08]	[0.07]	
ConsSvs	0.94***	0.86***	0.11**	0.35***	-0.08	0.04	-0.02	0.09	0.00	0.02	-0.12	0.88
	[0.16]	[0.02]	[0.05]	[0.06]	[0.07]	[0.06]	[0.07]	[0.08]	[0.07]	[0.09]	[0.09]	
Financial	1.04***	0.97***	0.19***	0.02	-0.21***	0.03	-0.03	0.16**	0.12*	0.20**	-0.27***	0.93
	[0.12]	[0.02]	[0.07]	[0.06]	[0.07]	[0.06]	[0.08]	[0.08]	[0.07]	[0.08]	[0.09]	
Healthcare	1.34***	0.80***	0.25***	0.05	-0.20**	0.41***	0.18*	0.16**	-0.25**	0.03	-0.02	0.82
	[0.18]	[0.03]	[0.07]	[0.10]	[0.09]	[0.07]	[0.11]	[0.08]	[0.11]	[0.12]	[0.14]	
Industr	1.09***	0.90***	0.14**	0.02	0.05	0.04	-0.06	0.05	-0.01	0.11	0.07	0.86
	[0.18]	[0.03]	[0.06]	[0.08]	[0.11]	[0.07]	[0.10]	[0.16]	[0.07]	[0.12]	[0.11]	
Oil&Gas	1.34***	0.88***	0.08	0.21**	-0.19**	-0.04	0.00	0.26***	0.30***	-0.11	-0.04	0.85
	[0.17]	[0.03]	[0.06]	[0.09]	[0.09]	[0.07]	[0.09]	[0.08]	[0.09]	[0.11]	[0.11]	
Tech	1.25***	1.07***	0.43***	0.86***	0.51***	0.20	-0.34	-0.03	-0.47**	0.59***	0.73***	0.74
	[0.37]	[0.04]	[0.13]	[0.23]	[0.13]	[0.22]	[0.21]	[0.18]	[0.18]	[0.21]	[0.20]	
Telec	0.76***	0.86***	0.34***	0.26**	0.12*	0.39***	-0.42***	0.20**	-0.34**	0.46***	-0.16	0.84
	[0.20]	[0.04]	[0.06]	[0.12]	[0.07]	[0.08]	[0.13]	[0.08]	[0.11]	[0.14]	[0.14]	
Utilit	0.97***	0.79***	0.25***	0.13	-0.27***	0.14	-0.03	0.12	0.14**	-0.06	-0.21**	0.85
	[0.16]	[0.03]	[0.06]	[0.08]	[0.08]	[0.09]	[0.10]	[0.08]	[0.07]	[0.11]	[0.09]	
United States												
BasicMats	0.73***	0.83***	0.30***	-0.61***	0.48***	-0.51***	0.44**	-0.79***	0.32*	-0.20	-0.16	0.68
	[0.26]	[0.06]	[0.10]	[0.14]	[0.17]	[0.13]	[0.17]	[0.21]	[0.18]	[0.20]	[0.24]	
ConsGds	0.39**	0.48***	0.31***	-0.44***	0.28**	-0.02	0.01	-1.18***	-0.15	0.12	0.21	0.55
	[0.23]	[0.04]	[0.10]	[0.12]	[0.12]	[0.11]	[0.14]	[0.18]	[0.20]	[0.21]	[0.22]	
ConsSvs	0.55***	0.54***	0.55***	-0.50***	0.56***	-0.15	0.18	-1.23***	-0.28**	0.31**	0.38***	0.75
	[0.18]	[0.04]	[0.07]	[0.11]	[0.09]	[0.12]	[0.12]	[0.13]	[0.11]	[0.13]	[0.14]	
Financial	0.67***	0.33***	0.37***	-0.38***	0.42***	-0.19*	0.30**	-0.85***	-0.23*	-0.15	0.28**	0.51
	[0.18]	[0.03]	[0.07]	[0.09]	[0.10]	[0.11]	[0.12]	[0.19]	[0.13]	[0.16]	[0.12]	
Healthcare	0.57**	0.63***	0.56***	-0.73***	0.83***	-0.45***	0.40**	-1.23***	-0.12	0.25	-0.19	0.72
	[0.24]	[0.07]	[0.08]	[0.14]	[0.13]	[0.12]	[0.19]	[0.15]	[0.13]	[0.15]	[0.16]	
Industr	0.74***	0.67***	0.58***	-0.51***	0.62***	-0.32***	0.06	-1.20***	-0.22**	0.30**	0.39***	0.82
	[0.17]	[0.03]	[0.08]	[0.08]	[0.11]	[0.08]	[0.10]	[0.13]	[0.10]	[0.14]	[0.14]	
Oil&Gas	0.87***	0.56***	0.33***	-0.48***	0.44***	-0.47***	0.46***	-0.51***	0.35**	-0.08	-0.53***	0.54
	[0.21]	[0.04]	[0.09]	[0.11]	[0.15]	[0.11]	[0.16]	[0.19]	[0.16]	[0.21]	[0.20]	
Tech	0.98***	0.71***	0.90***	-0.39**	0.62***	-0.06	-0.13	-1.26***	-0.63***	1.11***	0.95***	0.64
	[0.35]	[0.05]	[0.16]	[0.16]	[0.18]	[0.22]	[0.17]	[0.18]	[0.21]	[0.31]	[0.22]	
Telec	0.34	0.41***	0.49***	-0.54***	0.70***	0.03	0.10	-0.87***	-0.44**	0.46*	0.12	0.45
	[0.30]	[0.05]	[0.12]	[0.17]	[0.12]	[0.21]	[0.15]	[0.15]	[0.18]	[0.26]	[0.20]	
Utilit	0.46*	0.29***	0.22**	-0.19*	0.46***	-0.44***	0.25**	-0.64***	-0.12	-0.43**	-0.37***	0.37
	[0.24]	[0.03]	[0.09]	[0.10]	[0.11]	[0.12]	[0.12]	[0.19]	[0.14]	[0.17]	[0.14]	

PANEL B: January 2000-June 2012												
Emerging	$\hat{\alpha}_i^{PC}$	$\hat{\beta}_{i,PC^1}$	$\hat{\beta}_{i,PC^2}$	$\hat{\beta}_{i,PC^3}$	$\hat{\beta}_{i,PC^4}$	$\hat{\beta}_{i,PC^5}$	$\hat{\beta}_{i,PC^6}$	$\hat{\beta}_{i,PC^7}$	$\hat{\beta}_{i,PC^8}$	$\hat{\beta}_{i,PC^9}$	$\hat{\beta}_{i,PC^{10}}$	R_i^2
BasicMats	1.17***	1.08***	0.01	0.19**	-0.26***	-0.19*	-0.05	0.31***	0.36***	0.01	-0.47***	0.92
	[0.19]	[0.04]	[0.09]	[0.09]	[0.08]	[0.12]	[0.09]	[0.09]	[0.10]	[0.09]	[0.13]	
ConsGds	1.08***	0.74***	-0.02	0.08	-0.18**	0.06	-0.02	0.17**	0.07	0.16*	-0.24**	0.92
	[0.15]	[0.02]	[0.08]	[0.09]	[0.09]	[0.09]	[0.09]	[0.08]	[0.14]	[0.09]	[0.09]	
ConsSvs	0.92***	0.86***	0.19*	0.50***	-0.13	-0.02	-0.01	0.18*	-0.08	0.09	-0.17	0.89
	[0.18]	[0.03]	[0.10]	[0.08]	[0.09]	[0.11]	[0.09]	[0.09]	[0.10]	[0.13]	[0.10]	
Financial	1.13***	0.96***	0.17**	0.11*	-0.20***	0.07	0.02	0.31***	0.10	0.33***	-0.34***	0.94
	[0.14]	[0.03]	[0.07]	[0.06]	[0.07]	[0.10]	[0.09]	[0.06]	[0.11]	[0.10]	[0.12]	
Healthcare	1.65***	0.80***	0.26**	0.30*	-0.04	0.47***	0.10	0.15	-0.16	-0.15	0.02	0.83
	[0.22]	[0.03]	[0.12]	[0.15]	[0.15]	[0.14]	[0.12]	[0.09]	[0.14]	[0.14]	[0.14]	
Industr	1.17***	0.94***	0.19	0.05	0.20	0.08	-0.33**	-0.01	-0.06	0.24	-0.12	0.88
	[0.27]	[0.03]	[0.13]	[0.12]	[0.16]	[0.20]	[0.10]	[0.20]	[0.09]	[0.17]	[0.12]	
Oil&Gas	1.37***	0.86***	0.18	0.03	-0.29***	-0.07	0.00	0.31***	0.34***	0.06	-0.25**	0.87
	[0.20]	[0.03]	[0.12]	[0.11]	[0.11]	[0.09]	[0.09]	[0.10]	[0.10]	[0.11]	[0.13]	
Tech	0.67*	1.03***	0.66***	1.04**	0.29	-0.38	-0.62**	0.22	-0.23	0.64**	0.18	0.77
	[0.40]	[0.05]	[0.22]	[0.44]	[0.20]	[0.53]	[0.24]	[0.26]	[0.18]	[0.25]	[0.28]	
Telec	0.80***	0.79***	0.65***	0.44**	0.06	0.19	-0.37**	0.35***	-0.19	0.26	-0.12	0.83
	[0.25]	[0.04]	[0.15]	[0.17]	[0.13]	[0.15]	[0.15]	[0.11]	[0.18]	[0.19]	[0.20]	
Utilit	1.08***	0.79***	0.15	0.15	-0.21**	0.03	-0.04	0.13	0.07	-0.10	-0.21**	0.90
	[0.16]	[0.03]	[0.11]	[0.09]	[0.09]	[0.11]	[0.09]	[0.08]	[0.08]	[0.13]	[0.09]	
United States												
BasicMats	0.82**	0.89***	0.28	-0.81**	0.53**	-0.41	0.31	-1.19***	0.64**	-0.37	0.02	0.75
	[0.35]	[0.08]	[0.23]	[0.32]	[0.26]	[0.26]	[0.25]	[0.19]	[0.26]	[0.28]	[0.32]	
ConsGds	0.56**	0.52***	0.19	-0.41	0.53***	0.33	-0.03	-1.42***	0.05	0.01	0.36	0.60
	[0.28]	[0.05]	[0.25]	[0.25]	[0.16]	[0.24]	[0.20]	[0.21]	[0.33]	[0.30]	[0.33]	
ConsSvs	0.61**	0.62***	0.59***	-0.73***	0.63***	0.19	0.03	-1.52***	-0.01	0.34**	0.55***	0.84
	[0.24]	[0.04]	[0.14]	[0.16]	[0.12]	[0.16]	[0.13]	[0.12]	[0.14]	[0.16]	[0.18]	
Financial	0.56**	0.31***	0.34**	-0.33	0.41**	-0.34*	0.41**	-1.01***	-0.40**	-0.21	0.33*	0.54
	[0.22]	[0.04]	[0.15]	[0.21]	[0.16]	[0.20]	[0.16]	[0.30]	[0.17]	[0.26]	[0.18]	
Healthcare	0.51*	0.63***	0.72***	-0.88***	0.68***	-0.52***	0.39	-1.45***	0.02	0.47*	-0.12	0.74
	[0.29]	[0.08]	[0.16]	[0.21]	[0.21]	[0.19]	[0.24]	[0.19]	[0.20]	[0.24]	[0.22]	
Industr	0.74***	0.65***	0.98***	-0.63***	0.56***	-0.39***	0.02	-1.56***	-0.03	0.23	0.57***	0.88
	[0.20]	[0.03]	[0.18]	[0.14]	[0.11]	[0.11]	[0.12]	[0.11]	[0.17]	[0.17]	[0.18]	
Oil&Gas	0.89***	0.60***	0.61***	-0.68***	0.22	-0.41*	0.22	-0.78***	0.52**	-0.18	-0.54**	0.59
	[0.28]	[0.05]	[0.21]	[0.19]	[0.27]	[0.24]	[0.19]	[0.22]	[0.23]	[0.34]	[0.24]	
Tech	0.59*	0.72***	1.56***	-0.41**	0.80**	0.30	-0.33	-1.04***	-0.29	1.07***	0.82***	0.74
	[0.31]	[0.07]	[0.21]	[0.21]	[0.22]	[0.35]	[0.24]	[0.21]	[0.19]	[0.40]	[0.23]	
Telec	0.18	0.47***	0.84**	-1.01***	0.49**	0.73**	-0.05	-0.82***	0.02	0.88***	0.03	0.53
	[0.37]	[0.07]	[0.34]	[0.24]	[0.24]	[0.34]	[0.19]	[0.22]	[0.26]	[0.33]	[0.27]	
Utilit	0.61**	0.29***	0.54***	-0.41**	0.23	-0.60**	0.07	-0.76***	-0.13	-0.69***	-0.23	0.44
	[0.30]	[0.05]	[0.19]	[0.20]	[0.19]	[0.25]	[0.18]	[0.28]	[0.24]	[0.24]	[0.19]	

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
					PANEL A: January 1994-June 2012					
Var. Prop.	29.72	5.81	3.64	3.48	3.28	2.95	2.59	2.42	2.20	2.02
Cum. Prop.	29.72	35.53	39.17	42.66	45.93	48.88	51.48	53.90	56.10	58.13
					PANEL B: January 1994-December 2004					
Var. Prop.	22.67	7.20	4.57	4.23	3.88	3.22	2.92	2.84	2.77	2.49
Cum. Prop.	22.67	29.87	34.44	38.67	42.55	45.78	48.70	51.53	54.31	56.79
					PANEL C: January 2000-June 2012					
Var. Prop.	36.67	3.91	3.76	3.21	2.73	2.68	2.53	2.44	2.18	2.05
Cum. Prop.	36.67	40.58	44.34	47.55	50.28	52.96	55.49	57.93	60.10	62.15

Table B.5 This table reports the percentage of variance explained by the first ten principal components. The principal components (i.e. artificial global factors) are extracted employing all "*" labelled TRIs in Table A.1. The PCA is performed using the correlation matrix for three different time horizons. PANEL A shows the variance explained by the first ten principal components, extracted using the full sample, January 1994-June 2012 (i.e. 222 obs). PANEL B shows the variance explained by the first ten principal components, extracted using a shorter time period, January 1994-December 2004 (i.e. 132 obs). PANEL C shows the variance explained by the first ten principal components, extracted using a shorter time period, January 2000-June 2012 (i.e. 150 obs).

	Basic Mats	Cons Gds	Cons Svs	Industr	Financials	HealthCare	OilGas	Telecom	Tech	Util
					PANEL A: January 1994-June 2012					
Emerging	1.238	0.910	1.029	1.116	1.151	1.407	1.398	0.794	1.054	1.152
United States	0.606	0.451	0.487	0.677	0.489	0.566	0.697	0.106	0.628	0.396
PCA Alpha Gap	0.632	0.460	0.542	0.439	0.662	0.841	0.701	0.688	0.426	0.755
					PANEL B: January 1994-December 2004					
Emerging	0.784	0.712	0.779	0.923	0.876	0.822	1.252	0.441	1.994	0.709
United States	0.203	0.321	0.663	0.955	0.795	0.774	0.469	0.000	1.250	0.286
PCA Alpha Gap	0.581	0.391	0.116	-0.032	0.081	0.048	0.783	0.441	0.743	0.423
					PANEL C: January 2000-June 2012					
Emerging	1.757	1.146	1.344	1.409	1.421	1.795	1.683	1.005	0.489	1.418
United States	0.830	0.227	0.165	0.291	0.193	0.080	0.945	0.066	-0.121	0.462
PCA Alpha Gap	0.928	0.919	1.178	1.117	1.228	1.715	0.738	0.939	0.609	0.956

Table B.6 This table reports the average values of the estimated industry intercepts (i.e. PC alphas). PC alphas are estimated, via Eq. (4.4), using a rolling window of 60 months. Formally, $\alpha_i^{avg} = \frac{1}{W}\sum_{w=1}^{W}\hat{\alpha}_i^w$, where i denotes the industry and w is the w_{th} window in which the intercept is estimated. There are 222 observations from January 1994 to Jun 2012. Rolling estimations are performed for three different sub-samples. PANEL A reports estimates for the full sample (i.e. 162 windows). PANEL B reports estimates for the sample January 1994-December 2004 (i.e. 72 windows). PANEL C reports estimates for the sample January 2000-June 2012 (i.e. 90 windows). In each panel, the first row shows α_i^{avg} for the emerging world and the second row shows α_i^{avg} for the US. The third line provides the difference.

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