Predictability of Growth in Emerging Markets: Information in Financial Aggregates*

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Abstract

This paper tests for predictability of output growth in a panel of twenty-two emerging market economies. We use pooled panel data methods that control for endogeneity and persistence in the predictor variables to test the predictive power of a large set of financial aggregates including valuation measures, interest rates, and capital flows. Empirical evidence suggests that stock returns, portfolio investment flows, the term spread and default spreads help predict output growth in emerging markets. In particular, large capital inflows predict subsequent high GDP growth as do high term spreads. Conversely, higher default spreads on emerging market government debt signals lower future GDP growth. We also find evidence that the performance of aggregates such as global commodity markets, a cross-sectional firm size factor, and returns on the market portfolio contain information about the future state of the economy. We benchmark our results against the US and find that there are differences in information flows and the role of capital markets in predicting economic growth. Our analysis extends previous findings in the macro-finance literature on the links between the real economy and financial market performance.

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1 Introduction

Emerging markets are becoming a central player in the global economy. Following financial liberalization in the late 80's and early 90's, they have an increasing influence on the prospects of global growth and financial stability. In particular, over the past years we have seen emerging markets outperforming developed economies. Many of these countries have undertaken economic and political reforms resulting in more favorable business conditions and stronger government balance sheets. These reforms included but were not limited to fiscal programs aimed at controlling public deficits, trade agreements, financial system regulations and monetary policy that led to lower inflation rates.[1] While at the end of 1985 emerging markets accounted for 11% of the global GDP, by the end of 2009 their share had more than doubled to 23%. Furthermore, current international conditions indicate these markets will continue growing at higher rates than their developed counterparts. Yet, dynamics of emerging market growth are poorly understood. It is unclear whether GDP growth is predictable, and if so, which factors lead economic growth in these transitional economies.

While much of the empirical research in macro-finance literature focuses on developed countries, not much work studies the link between financial market performance and future output growth in developing economies. In this paper we study the predictive dynamics of economic growth in emerging markets and evaluate the extent to which financial aggregates can be used as leading indicators of economic growth. Specifically, we test whether stock returns, valuation measures, interest rates, flows, commodity prices, and a set of well stablished risk factors, contain information about the future state of the economy. We compare these results with empirical findings about the role of capital markets in predicting future output growth in the US. Given the specific characteristics of emerging market economic, financial and institutional systems, we might expect the transmission channels between financial markets and the real economy to work differently due to liquidity or credit market frictions specific to emerging markets. Also, the impact of financial aggregates such as capital and portfolio inflows on output growth can be expected to be more significant in emerging market economies as they tend to be more dependent and vulnerable to such flows. In

[1] Brazil, China and Mexico, among other countries, greatly improved their fiscal profiles. This improvement in credit quality, together with favorable growth prospects and attractive risk-adjusted returns, has resulted in massive international inflows into emerging markets' sovereign debt.

this regard, we have seen capital flight from developed countries into emerging markets seeking investment opportunities with higher expected returns. These inflows boosted economic growth, relaxed liquidity constraints, raised asset prices as well as broadened and increased the depth of many of these financial markets. On the negative side, capital outflows have preceded financial and economic crisis in emerging markets. There is a large body of research on sudden stops that models the effects of capital flows on output growth in emerging markets, e.g. Calvo (1998), Reinhart and Calvo (2000), Ferretti and Razin (2000). However, few studies quantify the relationship between output growth and capital inflows in these markets. In this paper we use country level data on net portfolio investment and capital flows to empirically evaluate the predictive power of these aggregates in forecasting GDP growth.

To address our main question we construct a comprehensive dataset for twenty two emerging market countries selected based on Standard and Poor's classification system. Our sample includes a large set of country-specific and global macro and financial variables such as real GDP growth, valuation measures, interest rates, capital flows, and commodity indices, covering the period 1992-2010.[2] To test for predictability of output growth we use pooled panel data methods that control for endogenous and nearly persistence predictor variables. A large literature documents the effects of endogeneity and persistence on time-series predictive regressions. Stambaugh (1999) shows that OLS estimates are biased in the presence of endogenous and persistent regressors, inhibiting normal inference. Hjalmarsson (2010) finds that these econometric issues also apply to panel data forecasting models when fixed effects are included and proposes a robust estimator that corrects for the Stambaugh-bias. Even though Stambaugh-bias has been discussed exclusively in the return predictability literature, we find that it can also arise in the context of output growth predictability. In particular, valuation ratios such as the dividend yield and the price-earnings ratio, as well as the capitalization ratio, prove to be highly persistent and endogenous. For this reason, we follow Hjalmarsson's methodology to correct for these features when testing for output growth predictability. Moreover, as part of our empirical analysis we test for output growth predictability at different forecasting horizons by applying reverse regression methods proposed by Hodrick (1992) and extended by Wei and Wright (2010).

[2]We considered extending the period under analysis. However, it is only after financial liberalization that the phenomenon of emerging markets loomed. In earlier decades, many of these countries were closed economies and therefore the study of emerging markets as a whole is not of particular relevance.

Our results provide empirical evidence that stock returns, portfolio investment flows, the term spread, default spreads, and commodity prices help predict output growth in emerging market economies. In particular, large capital inflows predict subsequent high GDP growth as does a high term spread. Conversely, higher default spreads on emerging market government debt signals lower future GDP growth. Our findings also suggest that some variables such as the term spread, stock returns, and capital flows contained a higher predictive power during the 90's, while the short interest rate and portfolio flows proved more useful during the last decade. Furthermore, when looking at regional level data we find that Latin America provides the strongest evidence of output growth predictability across regions.

We also extend previous findings on the links between output growth and Fama and French (1993) risk factors (i.e. Liew and Vassalou (2000)). In particular, we test whether book-to-market, size, and the market portfolio contain information about the future state of the economy. We find strong evidence of the predictive power of the size factor and returns on the market portfolio.

We benchmark our results to the US and find that there are differences in information flows and the role of capital markets in predicting economic growth. Variables that proved to convey information about the future state of the economy in developing countries, such as returns on commodity markets, the term spread, and stock market returns, lack any predictive power in the context of US growth. On the other hand, despite structural differences, our results suggest that default spreads share some similar patterns across markets.

Our paper is related to a vast body of work that studies the performance of financial variables as predictors of future output growth in the US and, to a lesser extent, in international developed markets. These studies focus mainly on well documented financial variables such as the term spread, the default spread and stock market returns. Estrella and Hardouvelis (1991) find evidence that the slope of the yield curve can predict changes in real output. Harvey (1988) documents that the expected real term structure forecasts consumption growth. Hamilton and Kim (2002) confirm and extend the conclusion of earlier research by decomposing the contribution of the term spread to forecast real GDP growth into the expected changes in interest rates and the term premium.[3] The macro-finance literature has also long studied the forecasting power of default spreads. Stock and Watson (1989) find that the spread between commercial paper and treasury

[3] A large literature has examined the role of the term spread as a predictor of the business cycle. See Stock and Watson (2003) for a literature review.

bills is a helpful indicator when forecasting output growth. Also Weber (1998) concludes that the paper-bill spread helps predict consumption spending. Later work by Gilchrist, Yankov, and Zakrajsek (2009) suggests that corporate bond spreads issued by intermediate risk non-financial firms have predictive power over GDP growth. Related to the predictive power of stock returns, empirical evidence is mixed. An early study by Harvey (1989) finds that only about 5% of variation in output growth is explained by stock market related variables in the US over the 1953-1989 period. On the other hand, Estrella and Mishkin (1998) find evidence that stock price indexes are good predictors of US recessions. Specific to emerging markets, Mauro (2003) focuses on the correlation of lagged stock returns and output growth and finds this relationship to be positive and significant in several cases. Moreover, his findings suggest that countries with a high market capitalization to GDP ratio exhibit stronger correlations.[4] Although there is no consensus about the empirical success of equity prices and related variables to predict future economic activity, they are widely considered by policy makers and investors. Our analysis validates and extend previous studies in the macro-finance literature that find that stock returns, term spreads and default spreads can be helpful predictors of economic activity.

In summary, the main contributions of the paper are as follows. First, we develop a comprehensive dataset on output growth and a large set of country-specific and global financial aggregates for a panel of twenty two emerging market countries. Second, we apply novel pooled panel data methods to shed light on the predictive dynamics of emerging market growth. Third, we document empirically that stock returns, flows, the term spread, default spreads and commodity prices, among other aggregates, can be used as leading indicators of economic activity in emerging markets. Our results generalize previous empirical findings in the macro-finance literature on the linkages between the real economy and financial market performance.

The paper is organized as follows. Section 2 describes our data set. Section 3 details the predictive regression methodology. In section 4 we present our empirical findings. Section 5 provides robustness analysis. Finally, we conclude in section 6.

[4]There is also a relatively new literature that studies stock return predictability in emerging markets. Harvey (1995, 1994) shows that equity returns are predictable in some developing countries when conditioning on country specific and global information variables such as dividend yields, past returns, currency index and earning-price ratio. Bekaert, Harvey, and Lundblad (2007) find that local market liquidity is an important driver of returns in these economies.

2 Data

Our study focuses on twenty-two countries that were classified as emerging market economies by Standard and Poor's as of December of 2009. We develop a comprehensive dataset of country-specific and global macroeconomic and financial variables for the period covering December 1992 to March 2010. We use quarterly series that include real GDP growth rates, inflation, stock returns, valuation measures, interest rates, capital flows, and commodity returns. GDP series are from the IMF's International Financial Statistics (IFS) except in the cases of Mexico, Taiwan, and South Africa where the source is Global Financial database (GFD). We deflated these series using the corresponding GDP deflators from the IFS. We tested and removed seasonality using the X-12-ARIMA Seasonal Adjustment Program from the U.S. Census Bureau. Table 1 presents descriptive statistics for the GDP series over the fourth quarter of 1992 to the first quarter of 2010. During the span of our sample all countries report positive average output growth rates. On average, quarterly GDP rates reach 1.13%, with China exhibiting the highest average growth rate (3.05%) and Mexico the lowest (0.61%) within emerging markets.[5] In terms of volatility, Morocco presents the highest average volatility level (4.2%) while Hungary shows the most stable growth pattern (1.05%). Stock market index returns for our set of countries are from Global Financial Database. They are inflation adjusted, include both changes in price and dividends, and are expressed in local currency terms. With respect to valuation measures, we consider country-specific dividend yields and price-earning ratios from GFD. These aggregates are based on large cap stocks which represent about 75% of the capitalization of the country. We also study the information content of stock market capitalization on subsequent output growth. In doing so, we employ capitalization growth rates and a ratio of capitalization to GDP from GFD. We evaluate different measures of financial flows from the balance of payments in our panel of developing countries. At the broader level, we consider capital and portfolio flows. Capital flows are the net sum of direct investment, portfolio investment, financial derivatives, and other investments from the financial account. Portfolio investment flows are a subset of the capital flow variable and account for transactions with nonresidents in financial securities. We disaggregate this category into debt and equity flows. Debt flows are

[5] GDP summary statistics for China only start on Q4 1999.

the net sum of both inflows and outflows of assets and liabilities covering fixed income instruments such as bonds and money market securities. Equity Securities are the sum of assets and liabilities covering stocks, and similar instruments that represent ownership of equity. Within capital flows, we also evaluate the predictive power of direct investment capital flows. This aggregate is the sum of direct investment abroad and direct investment in the reporting country. The source of our flow aggregates is the IFS. Our interest rate variables are from GFD. We consider the term spread, the real short interest rate, and returns on JPMorgan's Emerging Markets Bond Index Plus country indices (EMBI+). This family of indices reports the spread between local and US government debt instruments. More specifically, they track the spread between the average yield on the securities of the local country against that of US Treasuries. The local debt instruments include US-dollar denominated Brady bonds, Eurobonds, and traded loans issued by sovereign entities. We also test whether US interest rate aggregates lead the business cycle of emerging market countries. In doing so, we consider the US default spread, short interest rate and the term spread. The default spread is measured as the difference between Moody's Corporate BAA and AAA bond yields, the short interest rate is the yield on the 3 months Treasury Bill, and the term spread is the difference between the yields on the 10-year Government Bond and the 3 months Treasury Bill. We also consider the performance of a set of commodity indices. We use the Goldman Sachs commodity index (GSCI) as a proxy for the performance of commodity markets at the aggregate level. GSCI is a composite index of commodity sector returns weighted by world production. We also drill down to the sector level and include returns covering agricultural, energy, livestock and precious metal commodity markets from the S&P GSCI family indices. Finally, we build and test the predictive power of proxies for Fama and French risk factors. The size factor is the spread between returns on the MSCI Emerging Markets Small Cap and the MSCI Emerging Markets Large Cap total return indices. The book-to-market factor is represented by the return difference between the MSCI Emerging Markets Standard Growth and the MSCI Emerging Markets Standard Value total return indices. Lastly, we use the MSCI Emerging Markets total return index as a proxy for the market portfolio. A detailed explanation of the sources and definitions of our set of predictive variables is presented in the appendix.

3 Estimation

In this section we describe our predictive regression methodology. We use Hjalmarsson's (2010) panel data framework, that can be represented by the following system of equations:

$$y_{i,t} = \alpha_i + \beta' x_{i,t-1} + u_{i,t} \tag{1}$$

$$x_{i,t} = A_i x_{i,t-1} + v_{i,t} \tag{2}$$

$$A_i = I + C_i/T \tag{3}$$

where $y_{i,t}$ is real GDP growth for country i at time t, $x_{i,t}$ is a mx1 vector of predictor variables, $u_{i,t}$ are country-specific innovations that satisfy martingale difference sequences with finite fourth order momments, A_i is a mxm matrix representing the near unit root assumption and C_i is the local-to-unity parameter. The model allows for endogeneity by letting $u_{i,t}$ and $v_{i,t}$ be contemporaneously correlated and introduces persistency by defining the dependent variable, $x_{i,t}$, as an autoregressive process of order 1 with roots being local to unity. By letting C differ across countries we allow for the time series to have different persistence levels. We find this property to be of relevance in our analysis since we are considering a heterogenous panel of countries, and can therefore expect regressors to have different cross-sectional characteristics. [6]

Using panel data methodology results in more precise estimates than the analogue individual time-series regressions. Furthermore, even in the case where the slope coefficients differ across countries, the pooled estimator will provide information about the average slope coefficient. Also, pooling the data allows us to evaluate whether our group of developing countries possess common characteristics. This could be of particular relevance to investors who consider and invest in emerging markets as an asset class.

In our baseline setting we consider three different scenarios for pooled estimation presented in Hjalmarsson's (2010) study. First, the naive case where we estimate a standard pooled estimator. We then allow for the possibility of individual effects by letting α_i differ across countries. Finally, we consider a recursively demeaned estimator that corrects for the bias found in the fixed effects procedure.

[6] The near unit root assumption is preferred to a unit root set up since it is a less restrictive condition on the regressors when modeling non-stationary series. Also, as Hjalmarsson (2010) points out, under the near unit root assumption the degree of persistence in the predictive regressors will be carried over to the asymptotic distribution. This will allow the small sample distribution to correspond with that predicted by asymptotic distribution theory.

The standard pooled estimator does not allow for individual effects and is given by equations (4)-(6):

$$\hat{\beta}_{Pool} = \left(\sum_{i=1}^{n} \sum_{t=1}^{T} \tilde{x}_{i,t-1} \tilde{x}'_{i,t-1} \right)^{-1} \left(\sum_{i=1}^{n} \sum_{t=1}^{T} \tilde{y}_{i,t} \tilde{x}_{i,t-1} \right) \tag{4}$$

$$\tilde{y}_{i,t} = y_{i,t} - \frac{1}{nT} \sum_{i=1}^{n} \sum_{t=1}^{T} y_{i,t} \tag{5}$$

$$\tilde{x}_{i,t} = x_{i,t} - \frac{1}{nT} \sum_{i=1}^{n} \sum_{t=1}^{T} x_{i,t} \tag{6}$$

Despite the fact that from an economic perspective we might think that country-specific intercepts should be considered, it is worth evaluating this simple case given the econometric properties of this estimator. In particular, this estimator is asymptotically normally distributed therefore allowing for normal inference.

The fixed effects estimator is defined by the following equations:

$$\hat{\beta}_{FE} = \left(\sum_{i=1}^{n} \sum_{t=1}^{T} \underline{x}_{i,t-1} \underline{x}'_{i,t-1} \right)^{-1} \left(\sum_{i=1}^{n} \sum_{t=1}^{T} \underline{y}_{i,t} \underline{x}_{i,t-1} \right) \tag{7}$$

$$\underline{y}_{i,t} = y_{i,t} - \frac{1}{T} \sum_{t=1}^{T} y_{i,t} \tag{8}$$

$$\underline{x}_{i,t} = x_{i,t} - \frac{1}{T} \sum_{t=1}^{T} x_{i,t-1} \tag{9}$$

Although economically more meaningful in the context of emerging markets, this estimator suffers from a second-order bias in the presence of endogenous regressors. The time-series demeaned regressor, $\underline{x}_{i,t-1}$, incorporates information corresponding to periods after $t-1$. As a result the demeaned regressor is correlated with $u_{i,t}$ generating a small sample bias. [7] This bias, also known as the Stambaugh bias (Stambaugh (1999)), can be defined in terms of the limiting bias in the autoregressive root of the predictor variable. As shown in Hjalmarsson (2007), the analogue of the Stambaugh bias in the panel case can be written as:

$$\underset{(T,n\to\infty)_{seq}}{p-lim} \; T(\hat{\beta}_{FE} - \beta) = \underset{(T,n\to\infty)_{seq}}{p-lim} \; \frac{w_{12}}{w_{22}} T(\hat{\rho}_{FE} - \rho) \tag{10}$$

[7] In the standard pooled estimation, the small sample bias is not an issue since the effects of endogeneity are eliminated when pooling the data.

where w_{12} and w_{22} are the average covariance between $u_{i,t}$ and $v_{i,t}$ and variance of $v_{i,t}$ respectively, and $\hat{\rho}_{FE}$ is the fixed effects estimator of the autoregressive root of the predictor variable.[8]

The recursively demeaned estimator that corrects for this bias is given by the following equations:

$$\hat{\beta}_{FD} = \left(\sum_{i=1}^{n} \sum_{t=1}^{T} \underline{x}_{i,t-1}^{dd} x_{i,t-1}' \right)^{-1} \left(\sum_{i=1}^{n} \sum_{t=1}^{T} \underline{y}_{i,t}^{dd} x_{i,t-1} \right) \tag{11}$$

$$\underline{y}_{i,t}^{dd} = y_{i,t} - \frac{1}{T-t+1} \sum_{s=t}^{T} y_{i,s} \tag{12}$$

$$\underline{x}_{i,t}^{dd} = x_{i,t} - \frac{1}{T-t+1} \sum_{s=t}^{T} x_{i,s} \tag{13}$$

This estimator uses $x_{i,t-1}$ as an instrument and $\underline{u}_{i,t}^{dd}$ only includes data corresponding to periods after t. Therefore, by forward demeaning, $\underline{u}_{i,t}^{dd}$ is independent of $x_{i,t-1}$ and no second-order bias arises.[9]

The literature that studies the effects of and corrections for endogenous and persistent regressors has focused exclusively on return predictability. However, as tables 2a and 2b show, we find that this issue also arises in the context of output growth predictability. In particular, there is evidence of high persistence and endogeneity when using the capitalization ratio, the dividend yield and, the price earning ratio as regressors. Also, the term spread and short interest rate are highly persistent. However, cross-correlations for these predictors lack statistical significance in most of the countries. These results reinforce our choice of predictive framework.

Many studies have shown that the predictive power of a variable may depend on the forecasting horizon under analysis. Variables that proved to be helpful predictors for short horizons may lack any predictive power when tested over longer horizons, and vice-versa. Hence, as part of our empirical analysis, we test for predictability of our set of financial aggregates using different horizons. In doing so, we use reverse regressions as proposed by Hodrick (1992) who shows that,

[8] Note that when the local-to-unity parameters are unknown, direct estimation of the bias is not feasible.

[9] See Hjalmarsson (2010) for theorems and proofs of the properties of the above estimators.

under the null of no predictability and covariance stationary, in the usual long horizon predictive regression

$$\Delta y_{t:t+k} = \alpha_{k,1} + \beta_{k,1} x_t + u_{t:t+k} \tag{14}$$

with k representing the number of periods ahead considered in the forecast, and $\Delta y_{t:t+k} = \Delta log(y_{t+k}/y_t)$ $= \Delta y_{t:t+1} + \Delta y_{t+1:t+2} + ... + \Delta y_{t+k-1:t+k}$ the k-period GDP growth, the numerator of the slope coefficient estimated by

$$cov = [(\Delta y_{t:t+1} + ... + \Delta y_{t+k-1:t+k}); x_t] \tag{15}$$

is equivalent to

$$cov = [\Delta y_{t:t+1}; (x_t + ... + x_{t-k+1})] \tag{16}$$

where (15) is the numerator of the slope coefficient in the following predictive regression

$$\Delta y_{t:t+1} = \alpha_{k,1} + \gamma_{k,1} x_{t-k+1:t} + u_{t:t+1} \tag{17}$$

with $x_{t-k+1:t} = x_t + ... + x_{t-k+1}$. The coefficient in the forward regression, β_k, can be expressed as a linear function of the coefficient in the reverse regression, γ_k

$$\beta_k = \frac{\star V_{xx}}{V_{xx}} \gamma_k \tag{18}$$

where $\star V_{xx}$ and V_{xx} are the covariance matrices of the regressors in the reverse and forward regressions respectively. As a result, testing the null of no predictability $\beta_{k,1} = 0$ is equivalent to testing $\gamma_{k,1} = 0$. However, under the reverse regression setting of equation (17), inference will lead to less size distortions. Recent work by Wei and Wright (2010) extends these findings by considering persistency in the predictive regressors. They model the predictors as autoregressive processes of order 1 with near unit roots and find that reverse regression methods can still be performed in the context of nearly non-stationary processes. Furthermore, their results confirm previous findings that inference is more robust in small sample under the reverse regressions than with typical long horizon regression methods (i.e. equation 14). We use this methodology to perform inference for long-term horizon growth rates by regressing the one-period ahead return on the sum of the regressors over the past k=4, and k=8 periods.

4 Empirical Results

In this section we present the empirical findings for our set of predictive regressions. Table 3 introduces our baseline results on the predictive power of country-specific financial aggregates to forecast subsequent, one year, and two years ahead output growth. Following the empirical macro-finance literature (i.e. Stock and Watson (2003)), our regressions include lagged GDP growth and the variable of interest as regressors. However, for convenience, we only report results for our set of financial predictors[10]. We also normalized our series to allow for comparison across variables. Table 4 goes one step further in the analysis of flows by testing the predictive power of net inflows related to direct investment capital, debt, and equity securities. In table 5 we shift our focus away from country-specific regressors and assess the forecasting ability of a group of global aggregates. This set of variables includes returns on commodity markets and US interest rates. In table 6, we examine the information content of Fama and French (1993) risk factors in Emerging Markets. We also evaluate the differences and similarities on the role of capital markets to predict future economic growth in emerging markets and in the US. In doing so we test for output growth predictability in the US over the same sample period, and use analogous predictive regressors of our emerging market analysis. These results are described in table 7. Finally, in table 8 we report findings at the country level using time series predictive regressions.

4.1 Returns and Valuation Measures

Although the goal of this paper is not to establish causality in the traditional economic sense, our results can be related to financial theories that relate stock prices to the present value of future cash-flows. In particular, theories such as the "passive informant" hypothesis suggests that positive news about future output growth will be translated into higher equity market prices, resulting in a positive relationship between stock returns and future GDP growth.[11] In our baseline case, we find strong evidence of the predictive power of stock market returns in emerging markets. As presented in table 3, the slope coefficients are both statistically and economically significant across models, suggesting that returns are positively related to future output growth. Furthermore, when we look at longer forecasting horizons our results are validated. Both panels B and C show that

[10] Details are available from the author.

[11] See Mauro (2003) for a detailed description on the main theories studying the relationship between stock markets and output growth.

there is information content in equity market returns at the one and two years horizons. Strongest results are for the one year ahead forecasts. [12] Time series regressions point in the same direction. However, only ten of the countries present statistically significant coefficients. These findings are in line with Mauro (2003) who finds the correlation of lagged stock returns and output growth to be positive and significant in several emerging economies.

We also evaluate the predictive relationship between market capitalization, commonly used as an indicator of stock market development, and GDP growth. In doing so, we consider a ratio that relates capitalization to GDP. Results from our pooled estimations lack statistical significance when forecasting subsequent and two years ahead economic activity. Only the slope coefficient for our capitalization ratio is significant under the fixed effects model at the one year ahead horizon. This result suggest a negative predictive relationship. However, as shown in tables 2a and 2b, this variable is both highly persistent and endogenous. As a result, our fixed effects estimator is biased[13]. Therefore we focus on the forward demeaned estimator that corrects for this small sample bias. Our country level results present no clear pattern about the relationship between capitalization and subsequent output growth. As table 8 shows, slope coefficients lack statistical significance in most of the countries. Estimates are significant only in Argentina, Egypt, and Malaysia where we find a positive relationship between capitalization and subsequent output growth.

Two widely tested valuation measures in the return predictability literature are the price-earning ratio and the dividend yield. As shown in tables 2a and 2b we find that both aggregates suffer from a second order bias. We correct for this bias in our demeaned estimation. As presented in table 3, panels A through C, we find no evidence of the predictive power in the price-earning ratio. Only the fixed effects estimator is statistically significant when forecasting two years ahead. However, when we correct for the Stambaugh bias, we failed to reject the null of no predictability [14]. Time series regressions in table 8 provide no clear pattern of the predictive power of P/E ratios. Similarly, we find no predictive relationship between lagged dividend yields and future output growth in our robust estimations. Both the standard pooled and the fixed effects coefficients suggest evidence of

[12] Lagged GDP growth included in these bivariate regressions lack statistical significance at any forecasting horizon and under all model specifications.

[13] Note that since the direction of the bias depends on the sign of the cross-correlations of the innovation processes, and in this case $cov(u_i, v_i) > 0$, the bias is negative and therefore we see $\beta_{FD} > \beta_{FE}$.

[14] Lagged GDP coefficients are positive and statistically significant across model specifications and horizons. These results are available upon request

a negative predictive relationship between these aggregates when forecasting one quarter ahead (see panel A of table 3). However, when we allow for individual effects and correct for endogeneity and persistence, signs of predictability disappear. This result is of particular relevance in the context of a highly persistent variable such as the dividend yield, since findings from our fixed effects estimation could result in misleading interpretations[15]. Time series regressions in table 8 lack statistical significance in a large number of countries. However, when significant, they suggest a negative predictive relationship between dividend yields and subsequent output growth.

When we compare the results of emerging markets and the US, we find similar patterns for capitalization and the dividend yield. In particular, there is no sign of predictability in these two measures, slope coefficients lack statistical significance. On the other hand, we find that stock market returns, that lead economic growth in emerging markets, have no predictive power in the context of the US. Also, the price-earning ratio, which presents no evidence of predictive power in emerging markets, can be a helpful predictor of future GDP in the US. Finally, it is worth noting that although there are differences in the information content of valuation measures across markets, we find some similarities in the characteristics of the data. Specifically, aggregates that show high levels of persistence and cross-correlations in emerging markets present the same patterns in the US. This is the case for capitalization ratio, the dividend yield, and the price-earning ratio.

4.2 Interest Rates

In table 3 we present results for the real short interest rate, the term spread and default spread. As panels A through C show, we find strong evidence of predictability in the spreads when predicting future GDP growth. In particular, higher default spreads on emerging market government debt signal lower output growth [16]. This counter-cyclical predictive relationship can be related to the literature on credit channels linking the financial and real side of the economy, where worsening in the quality of government balance sheets are translated into higher default risk, resulting in higher borrowing rates. These tighter financial conditions will negatively impact future economic growth.

Conversely, a high term spread predicts a future increase in GDP growth (i.e. short interest rate

[15] In this bivariate setting, lagged GDP coefficients are both positive and statistically significant.

[16] Arellano and Mendoza (2002) document that episodes of sudden stops in emerging markets are characterized by sharp and unexpected declines in EMBI+ spread indices (our measure of default spreads) and plummeting equity markets.

declines relative to the longer rate are followed by future rises in economic activity). Estimates are both positive and statistically significant across models when forecasting subsequent and one year ahead output growth. This predictive relationship could be explained in terms of an expectation and a term premium effect. In the first case spreads are expected to convey information about future short rates. The positive predictive relationship is based on the expectations hypothesis of the term spread and the impact of monetary policy. For example, easing of monetary policy is expected to positively impact interest sensitive sectors, boosting economic activity. On the other hand, the term premium effect signals changes in the term premium related to the compensation demanded for holding long bonds, influenced by risk and liquidity premium among other factors [17]. Regarding the real short interest rate, by adding lagged GDP into the regression the information content of this aggregate vanishes. Our estimates lose predictive power across models and horizons.

We also find that for most of our emerging market countries time series regressions lack statistical significance. Nevertheless, when they are significant, the short term rate and default spread signal a negative relationship with future GDP growth. These findings do not extend to the term spread where there is no clear pattern in our country level estimates.

Our empirical results also suggest that there are some differences in the role of interest rates in predicting output growth in the US and emerging markets. In particular, the term spread that proved to be a helpful predictor in emerging markets shows no predictive power in the US over our sample period [18]. On the other hand, the default spread and the real short interest rate present similar patterns across markets [19].

4.3 Flows

Results for our measures of flows are presented in tables 3 and 4. Table 3 introduces results at the aggregate level, while table 4 looks at components of portfolio investment and capital flows. As de-

[17] Hamilton and Kim (2002) decompose the contribution of the term spread into the expected changes in interest rates and the term premium and find that both factors are relevant for forecasting real GDP growth in the US.

[18] Work by Haubrich and Dombrosky (1996), Dotsey (1998), and Kucko and Chin (2009) examine the evidence of the yield curve as predictor of future economic activity in the US and find that the predictive power of the yield curve has deteriorated in recent years.

[19] Note that in the case of the default spread we can not perform a precise comparison since we consider corporate bond yield spreads in the US, while in emerging markets we track spreads between local government debt instruments and US treasuries.

scribed in table 3, we find evidence of the predictive power of country flows in forecasting economic activity in emerging markets. Both capital and portfolio flow ratios, present economically and statistically significant slope coefficients when we forecast subsequent output growth. In line with the International Finance literature, results suggest that periods of capital and portfolio inflows anticipate future output growth and in turn, periods dominated by large outflows are followed by declines in economic activity. Furthermore, these results are confirmed and extended in table 4. We find that equity and debt security flows as well as direct investment flows can be useful predictors of future economic growth. Slope coefficients are economically and statistically significant signaling a positive relationship when predicting subsequent growth. Although the causality question is beyond the scope of this paper, the positive predictive relationship of portfolio flows could be related to an information and portfolio optimization effects. As investors become optimistic about opportunities in emerging markets, we see large financial inflows into local debt and equity securities. Overall, results suggest that investors are well informed and have the ability to react to news and expectations about future economic conditions in emerging markets. Net inflows to equity and debt markets predict subsequent output growth. Conversely, net portfolio outflows signal lower GDP growth. Also, direct investment capital flows present evidence of predictability over subsequent and one year-horizon, signaling a positive relationship between flows and output growth. These results could be related to the effect of demand shocks where an exogenous increase in investments will be associated with an increase in demand which will be followed by an increase in economic activity.

When we extend our forecasting window to one and two years, we lose predictability in our aggregate measure of portfolio investment flows. Moreover, if we disaggregate further, we find a similar pattern in the case of debt security flows. On the other hand, results for equity flows are economically and statistically significant when predicting one year ahead GDP growth. Similarly, slope coefficients for direct investment flows are positive and significant over one year horizon. We also find a reversal in the predictive relationship between capital flows and GDP when forecasting two years ahead.

As described in table 8, our country level results, when statistically significant, support findings for our pooled models. Both capital and portfolio investment flows present highly economically significant slope coefficients signaling a positive relationship between inflows and subsequent economic

activity. [20]

Results for the US are strikingly different in the cases of capital and portfolio investment flow ratios. In particular, while we find a positive relationship between capital and portfolio flow ratios and future output growth in emerging markets, our results suggest that in the US, increases in the ratios of flows to GDP are followed by subsequent declines in output growth. On the other hand, net capital and portfolio outflows signal subsequent increases in GDP growth. This could be interpreted as a flight to quality effect. In periods of global turmoil, investors will move their capital away from riskier investments such as emerging markets, to safer allocations in the US.

4.4 Commodities

It is well known that commodities are a vital engine for economic growth in many emerging market countries. Periods of higher prices in international commodity markets are expected to be related to higher output growth, while market declines will negatively impact the growth prospects of many emerging economies. In table 5, panel A, we investigate the predictive power of commodity market returns at the global and sector level to forecast economic activity. The set of commodity sectors include agriculture, energy, livestock and precious metal. Overall, we find strong evidence of predictability both at the aggregate market level as well as across sectors. In particular, coefficients for commodity markets are economically and statistically significant across models and horizons at the aggregate level. Nevertheless, the predictive power of commodity market returns appears to be strongest when forecasting subsequent output growth. Given the inelastic nature of demand and supply for commodities, these findings could be interpreted in terms of the effect of demand shocks. As demand for commodities increases, commodity prices rise, having a positive impact on the terms of trade and output of the export countries. These results are in line with Chen, Rogoff, and Rossi (2010) who find that commodity prices Granger-cause exchange rates in-sample when regressions are robust to parameter instability[21].

At the sector level, agricultural and precious metal commodities appear as the most economically significant predictors when forecasting subsequent GDP growth. Also results suggest a positive

[20]The only exception is Turkey that presents a negative relationship between portfolio flows growth rate and subsequent GDP. This however, is economically meaningless.

[21]They also analyze the reverse predictive relationship and find in and out-of-sample evidence that exchange rates are robust predictors of commodity prices.

predictive relationship between energy commodities and future output, with economically and statistically significant coefficients across horizons. However, as we extend the forecasting horizon there is evidence of a decrease in the information content of sector commodity prices with regard to future economic growth. Furthermore, in the two years forecasts, the livestock sector loses predictability across models.

Findings from our time series regressions validate our pooled results. Slope coefficients of commodity markets are statistically significant in twelve of our countries, suggesting a positive relationship between lagged returns on commodities and output growth. The only exception is Morocco that presents a negative slope coefficient. This result does not contradict our findings given the specific characteristics of this country. More than half of their GDP comes from the service sector while the industry sector represents around 30% of their output. All sector level predictive regressions point in the same direction as the aggregate market. Higher commodity prices are followed by higher economic growth in emerging markets. For example, we find a positive and significant relationship between energy prices and output growth for Russia, among other countries.

We compare our results in emerging markets against the US. As shown in table 7, we find significant differences in the information content of commodity markets. While the performance of global and sector commodity markets convey information about future business conditions in our panel of developing countries, they show no forecasting ability when predicting output growth in the US. Slope coefficients are neither economically nor statistically significant. These results can be related to structural differences between the US and emerging market countries. While in the latter group, their economies are heavily dependent on commodities exports, growth in the US is mostly related to services (around 77% of its GDP) and the industry sector to a lesser extent (22%). Moreover, there is a large literature that finds evidence of predictability of energy commodities such as oil prices in the US (Hamilton, 2003, 2010). However, their results suggest a nonlinear relationship between oil prices and output growth.

4.5 US Interest Rates

There is a large literature that finds that the US economy leads the cycle of many developed economies. Traditionally, trade has been considered the most common transmission channel. Periods of growth in the US would be accompanied by increases in its imports, which in turn would boost economic growth of the trade partner. An extreme example of this direct relationship could

be Mexico, whose GDP growth is known to be highly correlated with that of the US. However, as financial markets become more integrated, they can be expected to be more relevant in the transmission of shocks from the US to the rest of the world.

In this section we also test whether expectations regarding the US economy, that are contained in interest rate aggregates, can help predict output growth in emerging countries. We find evidence that the term and default spreads contain information about subsequent GDP growth. In particular, the lagged US term spread has a positive relationship with future growth in emerging markets. Conversely, we find that increases in the US default spread are followed by subsequent declines in output growth. Furthermore, under the pooled and fixed effects settings, the predictive power of the term spread increases as we extend our forecasting horizon to two years. On the other hand, the default spread loses its predictive power as we move to longer term horizons. The short interest rate, represented by the 3 month US treasury bill, shows no signs of predictability in the short term. However, its predictive power emerges when we look at a two years ahead forecasting horizon, where we find economically and statistically significant negative slope coefficients.

As described in table 8, evidence of predictability is limited when we look at individual time series regressions. Results on the term spread lack statistical significance across countries. The US short interest rate helps predict output growth only in the case of China. Finally, the default spread, has a economically and statistically significant negative relationship with growth only in 8 of our 22 countries.

4.6 Book-to-Market, Size, and The Market Portfolio

In this section we test whether well known factors such as book-to-market, size, and the market portfolio convey information about the future state of the real economy. As presented in table 6, we find strong evidence of the predictive power of the size factor and market portfolio. Slope coefficients for the size factor are economically and statistically significant across models over the one and two years ahead forecasting horizons. Positive slope coefficients suggest that outperformance of small over large capitalization stocks precede periods of output growth. Conversely, periods in which large capitalization stocks dominate are followed by declines in future economic activity. As described in table 6, we also find a positive predictive relationship between returns on the market portfolio and future GDP growth. Slope coefficients are statistically significant across horizons,

with one year ahead forecasts presenting the strongest economic significance. On the other hand, the book-to-market factor shows no evidence of predictive power over one quarter and one year horizons. Only when forecasting two years ahead, and in the context of the forward demeaning model, we find a negative relation between book-to-market and future output growth.

These results confirm and extend some previous findings of Liew and Vassalou (2000). Using time-series regression analysis and Fama and French risk factors (Fama and French (1993)), they test for output growth predictability in a group of 10 developed markets. They document that the book-to-market, the size factor, and market portfolio are positively related to future GDP growth. In the context of emerging markets, we find similarities in the cases of the size factor and market portfolio, where both variables contain information about the future state of the real economy. On the other hand, our results differ in the case of the book-to-market ratio, where we find only mild evidence of predictability.

5 Robustness Analysis

In this section we perform a series of additional exercises to evaluate the robustness of our results to different scenarios. We first allow for global innovations in our data generating process. Secondly, we split our sample into sub-periods, 1992-1999 and 2000-2010. We then test for output growth predictability at the regional level. We also group our set of countries based on GDP per capita. We then run our analysis in a multivariate setting. Finally, we perform a cross-validation exercise to check the stability of our results.

As in our baseline scenario, we run bivariate regressions including lagged GDP growth and the variable of interest as regressors[22]. We also normalized our series by their standard deviation to allow for comparison across variables.

5.1 Accounting for Common Factors

We use Hjalmarsson's (2010) framework that in addition to idiosyncratic factors, allows for the effect of common shocks to returns and proposes a set of pooled estimators that are robust to cross-

[22]For convenience we only report results for our set of financial predictors. Results for lagged GDP coefficients are available upon request.

sectional dependence. This could be of particular relevance when considering the phenomenon of emerging markets, since these countries are known to be more vulnerable to external shocks and episodes of contagion. As a result, it is reasonable to consider that there will be shocks to output growth that will impact the asset class as a whole while others will be country-specific.

The data generating process accounting for common factors can be describe as follows:

$$y_{i,t} = \alpha_i + \beta' x_{i,t-1} + u_{i,t} + \delta_i' f_t \tag{19}$$

$$x_{i,t} = A_i x_{i,t-1} + v_{i,t} + \Gamma_i' z_t \tag{20}$$

$$z_t = A_g z_{i,t-1} + g_t \tag{21}$$

$$A_g = I + C_g/T \tag{22}$$

Where f_t represents the common factor in the error term, and z_t is the common term in the predictor $x_{i,t}$. z_t is an AR(1) process with near unit roots defined by A_g[23].

To perform estimation and inference in our panel setting we use the following estimators that account for common factors:

Robust Pooled Estimation:

$$\hat{\beta}_{RP} = \left(\sum_{i=1}^{n} X_{i,-1}' M_{\bar{H}} X_{i,-1} \right)^{-1} \left(\sum_{i=1}^{n} X_{i,-1}' M_{\bar{H}} Y_i \right) \tag{23}$$

$$M_{\bar{H}} = I - \bar{H}(\bar{H}'\bar{H})^{-1} \tag{24}$$

where Y_i is T x 1, X_i is T x m and $\bar{H}$ is also T x m with $\bar{H}_t = \frac{1}{n}\sum_{i=1}^{n} x_{i,t-1}$

Robust Fixed Effects Estimation:

$$\hat{\beta}_{RFE} = \left(\sum_{i=1}^{n} \underline{\hat{X}}_{i,-1}' \underline{\hat{X}}_{i,-1} \right)^{-1} \left(\sum_{i=1}^{n} \underline{\hat{X}}_{i,-1} \underline{\hat{Y}}_i \right) \tag{25}$$

with $\hat{Y}_i = M_{\bar{H}} Y_i$, $\hat{X}_{i,-1} = M_{\bar{H}} X_{i,-1}$, and $\underline{\hat{Y}}_i$ and $\underline{\hat{X}}_{i,-1}$ being their demeaned versions.

Robust Recursive Demeaning Estimation:

$$\hat{\beta}_{RRD} = \left(\sum_{i=1}^{n} \hat{X}_{i,-1}'^{dd} \hat{X}_{i,-1} \right)^{-1} \left(\sum_{i=1}^{n} \hat{X}_{i,-1}' \hat{Y}_i^{dd} \right) \tag{26}$$

[23] All variables defined in the estimation section remained unchanged.

where $\hat{Y}_i^{dd}$ and $\hat{X}_{i,-1}^{\prime dd}$ are the recursively demeaned versions of $\hat{Y}_i$ and $\hat{X}_{i,-1}$.

Table 9 presents results for this new setting. As in our baseline case, we run bivariate regressions including lagged GDP and the variable of interest to forecast subsequent GDP growth[24]. Overall, our baseline results are validated when we allow for common factors. In particular, our set of valuation measures, interest rates and flow aggregates present similar patterns as in table 3. We find a positive predictive relationship between stock returns and subsequent output growth. On the other hand, our measure of capitalization ratio shows no evidence of predictability. Similarly, the dividend yield and price-earnings ratio do not present any predictive power when we allow for individual effects and correct for endogeneity and persistence. We also find that the term spread and real short interest rate convey information about future economic activity. However, under this new setting the government default spread lose its predictive power. Finally, results for capital and portfolio flows also suggest a strong positive relationship with future economic growth in emerging markets.

5.2 Sub-sample Analysis

Our sample encompasses very different market conditions. Starting in the early stages of this new asset class, we cover the financial liberalization process of many developing countries, the Tequila crisis (1995), the Asian crisis (1997), the Ruble crisis (1998), the Tech bubble (1999-2000), the expansion of the European Union (2004), the rise of China as well as the last global financial and economic crisis, among other key episodes. As described in table 10, we split our sample into two sub-periods, 1993-1999 and 2000-2010, to test for output growth predictability under different business conditions.

Overall, we find that financial aggregates that lead economic growth in our baseline case are validated when we test for predictability in our subsample analysis. Results for stock returns, the term spread, dividend yield and capital flows ratio, among other variables, present some similar patterns in both subsamples. However, there are differences. For example, the real short interest rate, portfolio investment flows and returns on global commodity markets show evidence of predictability only in the last decade, a period of higher economic growth and stronger stock market

[24]For convenience we only present estimates and t-statistics for our set of country-specific variables. Results for lagged GDP are available upon request.

performance [25]. At the commodity sector level, results also suggest that energy and livestock commodities convey information about output growth only during the 2000-2010 period. On the other hand, we also find that the price-earnings ratio, an aggregate that lacks predictive power in our baseline scenario, presents evidence of predictability during the 90's, signaling a positive relationship with GDP growth. However, predictability vanishes in the last decade when correcting for the small sample bias.

The most striking differences between our subsample and baseline results are related to our set of risk factors. In particular, in our baseline setting estimates for the book-to-market factor lack statistical significance when forecasting subsequent GDP growth. However, when we split our sample we find evidence of predictability. Results suggest a negative predictive relationship during the 90's while, in line with previous findings in developed countries (Liew and Vassalou (2000)), it becomes positive during the last decade.

Finally, we also test for output growth predictability excluding the period covering the last global crisis. Overall, we find similar patterns as in our baseline results. However, the dividend yield that lacks any predictive power in our baseline case, now shows evidence of predictability even when correcting for the small sample bias. Results suggest a negative predictive relationship with future GDP growth. Also, although the direction of the relationships remains unchanged, we find slight differences in the predictive power of the term spread and commodity returns. The information content of the term spread decreases when we include the period covering the crisis. On the other hand, the predictive power of returns on commodity markets increases when we consider the full sample in our analysis.

5.3 Regional Analysis

To gain further insights on the relationship between financial aggregates and future economic activity we split our panel of countries according to their geographic location. Following standard classifications we define three different regions, Asia, Latin America and EMEA (Europe, Middle

[25] During 2000-2010, emerging markets' annual average GDP growth reached 5.7% while for 1993-1999 GDP growth was 3.7%. Also, average annual returns on emerging equity markets represented by the MSCI Emerging Markets index was 17.6% for the last decade versus 14% during the 90's. In terms of stock market volatility, we find similar volatility levels (39.5% and 40.3%) across sub-samples.

East and Africa)[26]. We find strong evidence that our set of financial aggregates can be used as leading indicators of economic activity across regions. However, Latin America presents the strongest evidence of output growth predictability overall. As table 11 shows, results suggest that return and valuation measures such as stock returns and capitalization ratio have the strongest forecasting ability in Latin America. In particular, slope coefficients are economically more significant in this region than in Asia and EMEA. Also, portfolio investment flows measured as a ratio of flows to GDP, although economically and statistically significant across regions, presents the strongest results in Latin America. As in our baseline case, we find a positive relationship between lagged portfolio flows and GDP growth. Furthermore, interest rate variables such as the short interest rate and the term spread also proved to have higher predictive power in this region than in the rest of the group. On the other hand, we find that the information content about future economic activity of the default spread and capital flows is the strongest in Asia, while returns on global commodity markets appear to play a bigger role in EMEA.

For robustness we also test for predictability in Asia excluding China, a key driver of regional and global growth in the past years. The goal is to analyze whether the predictive relationships in the region are mainly driven by this country. Overall, results present similar predictive relationships in both scenarios. However, we do find a slight decrease in the information content of stock return when we exclude China. Conversely, the predictive power of the default spread and global commodity returns improves under this new scenario.

5.4 GDP per Capita

As part of our robustness analysis we split our sample based on GDP per capita. We grouped the countries in our sample into three categories, high, middle and low income [27]. Table 12 presents

[26] Asia includes China, Indonesia, India, South Korea, Malaysia, Philippines, Taiwan and Thailand. Czech Republic, Egypt, Hungary, Israel, Morocco, Poland, Russia, South Africa and Turkey Represent the EMEA region. In Latin America we consider Argentina, Brazil, Chile, Mexico and Peru.

[27] High income is composed by countries with a PPP-adjusted GDP per capita higher than 13,000 USD per year. This group includes Taiwan, South Korea, Israel, Czech Republic, Hungary and Poland. GDP per capita for middle income countries ranges from 13,000 to 9,000 USD per year. Russia, Argentina, Chile, Malaysia, Mexico, Turkey, Brazil and South Africa fall in this category. GDP per capita for low income countries covers those with less than 9,000 USD per year. In this group we consider Peru, Thailand, China, Egypt, Morocco, Indonesia, Philippines and India.

results for this new setting. Overall, results for our set of financial aggregates are validated. However, we do find some differences across groups. In particular, stock and commodity returns present the strongest predictive power in our group of middle income countries. Flows prove to be a helpful predictor across groups, with strongest economic significance in low income countries. On the other hand, the set of interest rate variables show evidence of predictability only in the middle and low income countries.

5.5 Multivariate Regressions

In this section we test the predictive power of the set of financial aggregates to forecast GDP growth in a multivariate setting. In doing so we group our variables into four categories. Namely, return and valuation measures, interest rates, flows and commodities. We use principal component analysis to reduce the number of predictors while still accounting for most of the variance in the observed variables. As shown in table 13, results suggest that our four set of variables can be useful predictors of output growth. In particular, coefficients related to our return and valuation measures are positive and significant when forecasting subsequent and one year ahead GDP. Commodities present similar patterns, with estimates signaling a positive relationship with future output. On the other hand, interest rate variables show a negative predictive relationship with subsequent GDP. Finally, there is a reversal in the predictive relationship of flows and GDP. While results suggest a positive relationship in the short term, coefficients are statistically significant and negative when forecasting two years ahead.

5.6 Cross-Validation Analysis

For robustness, we also perform a cross validation exercise to check the stability of our estimates. The goal is to study whether results are driven by a particular country. In a bivariate setting that includes lagged GDP and the variable of interest as the regressors, we randomly exclude three countries from our sample and estimate coefficients and t-statistics. We repeat this exercise twenty times for each variable. Table 14 presents results for this analysis[28]. For each variable we report the average estimate, its standard deviation and the number of times (out of the twenty random draws) that the coefficient is statistically significant. Results provide evidence in favor of the stabil-

[28]For convenience, we only present results for financial aggregates. Results for lagged GDP are available upon request.

ity of our estimates across models and horizons. The predictive ability of the variables that proved helpful in our baseline case are validated by this analysis.

6 Conclusion

This paper provides empirical evidence on the predictive dynamics of emerging market growth. We ask whether there is information content in financial aggregates that allows us to predict economic growth in emerging markets. To tackle this question, we develop a comprehensive dataset on output growth, country-specific and global financial aggregates for a large panel of developing economies. We document empirically that financial aggregates can be used as leading indicators of economic activity in emerging markets.

We find evidence that stock returns, flows, the term spread and default spreads, among other aggregates, convey information about the future state of the economy. In particular, our analysis of portfolio flows suggests that investors are well informed about future economic conditions in emerging markets. Large financial inflows into local debt and equity securities precede periods of higher GDP growth. Conversely, net outflows are followed by declines in economic activity. We do not take a stand on whether this is a causal relation or whether it simply reflects information in forward-looking financial aggregates.

Empirical results also suggest that some variables, such as capital flows, stock returns and the term spread, have a stronger predictive power during the 90's. Conversely, portfolio investment flows, proved more useful during the last decade. Furthermore, our regional level analysis shows that Latin America presents the strongest evidence of output growth predictability across our sample of emerging markets.

We argue that a set of global and regional financial aggregates can be useful predictors of GDP growth in these transitional economies. We find evidence of the predictive power of global commodity prices, US interest rates and a set of regional return-based risk factors. Specifically, higher prices in international commodity markets positively impact the growth prospect of developing countries that heavily rely on exports of raw materials. These results are validated at the commodity sector level. Related to our risk factors, results indicate that greater outperformance of small capitalization stocks precedes periods of higher output growth, as do higher returns on

the regional market portfolio. Also, our findings suggest that economic developments in the US will impact output growth of these transitional economies. In particular, information about the US business cycle contained in interest rate aggregates, such as the term spread, appear to predict economic activity in our panel of developing countries.

Finally, we compare results for emerging markets and the US and find that there are differences in information flows and the role of capital markets in predicting economic growth. In particular, the term spread, stock market returns, and global commodity prices that conveyed information about future business conditions in emerging markets show no forecasting ability when predicting output growth in the US. Further, while we find a positive relationship between capital and portfolio flow ratios and future output in these transitional economies, results for the US suggest that increases in these ratios are followed by subsequent declines in GDP growth. These findings could be interpreted as a flight to quality effect where in periods of global turmoil investors move their capital away from riskier investments to safer allocations in developed markets.

Overall, by identifying a set of financial aggregates that convey information on future output growth, our analysis sheds light on the relationship between the state of the economy and financial markets in developing economies. These findings could be of great benefit to policy makers and market participants who try to understand and predict the business cycles of emerging markets.

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Table 1. GDP Growth Summary Statistics

Country	Dates	Obs.	Mean	StdDev	Skewness	Kurtosis	AR(1)
Argentina	Q1 1993-Q1 2010	68	0.896	2.940	-0.055	11.379	0.3546
Brazil	Q1 1995-Q1 2010	60	0.859	2.435	0.758	16.564	-0.244
China	Q4 1999-Q4 2009	40	3.047	2.326	4.222	24.328	0.0495
Chile	Q1 1996-Q4 2009	55	0.887	1.226	-1.099	5.078	0.307
Czech Republic	Q1 1994-Q1 2010	64	0.839	1.585	0.999	9.080	0.076
Egypt	Q1 2002-Q4 2009	31	1.312	1.246	1.143	4.890	-0.2657
Hungary	Q1 1995-Q1 2010	60	0.659	1.050	-1.409	6.071	0.5148
Indonesia	Q1 1997-Q1 2010	52	0.862	2.256	-4.002	19.399	0.4188
India	Q1 2004-Q4 2009	50	1.408	1.891	0.212	3.985	0.4869
Israel	Q4 1992-Q1 2010	69	1.005	1.598	0.322	3.546	-0.1459
Korea	Q4 1992-Q4 2009	68	1.220	1.876	-2.862	16.598	0.1797
Malasya	Q4 1992-Q4 2009	68	1.340	1.700	-1.477	5.785	0.5994
Mexico	Q4 1992-Q1 2010	69	0.608	1.698	-2.338	9.797	0.3369
Morocco	Q4 1992-Q4 2009	68	1.099	4.160	0.499	5.463	-0.4559
Peru	Q4 1992-Q4 2009	68	1.283	1.526	-0.626	2.832	0.3127
philippines	Q4 1992-Q1 2010	69	1.284	1.271	3.023	20.185	0.1233
Poland	Q1 1995-Q4 2009	59	1.141	1.525	0.039	6.921	-0.2384
Russia	Q1 1995-Q3 2009	58	0.887	2.551	-2.316	11.466	0.097
South Africa	Q4 1992-Q4 2009	68	1.131	1.689	0.319	6.888	-0.0804
Taiwan	Q4 1992-Q1 2010	69	1.165	1.604	-1.621	8.458	0.3495
Thailand	Q1 1993-Q1 2010	68	1.004	2.067	-0.855	5.238	0.393
Turkey	Q4 1992-Q4 2009	68	0.976	2.870	-1.109	4.377	0.075

Table 1 shows descriptive statistics for real seasonally adjusted GDP growth of emerging market countries. AR(1) represents the autocorrelation coefficient. The sample spans from December 1992 to March 2010. GDP series are at the quarterly frequency.

Table 2a. Autocorrelation Coefficients for Financial Aggregates

Panel A: Returns and Valuation Measures

	Stock Returns	Capitalization	Capitalization Ratio	Dividend Yield	PE Ratio
Argentina	-0.121	0.142	0.726	0.830	0.825
Brazil	-	0.017	0.890	0.801	0.284
Chile	0.289	0.011	0.863	0.783	0.881
China	0.052	0.207	0.862	0.781	0.560
Czech Republic	-	0.090	0.867	0.815	0.590
Egypt	-	0.150	0.887	0.882	0.688
Hungary	0.068	-0.017	0.726	0.749	0.274
Indonesia	-0.010	-0.085	0.798	0.660	0.709
India	0.210	0.206	0.744	0.789	0.907
Israel	-0.077	0.008	0.912	0.784	0.134
Korea	0.037	-0.018	0.891	0.718	0.714
Malasya	-0.118	-0.073	0.867	0.822	0.828
Mexico	0.051	0.094	0.879	0.695	0.666
Morocco	0.102	0.007	0.919	-	-
Peru	0.059	0.268	0.917	0.723	0.726
philippines	0.057	0.027	0.861	0.839	0.783
Poland	0.343	0.192	0.932	0.845	0.581
Russia	-0.044	0.054	0.946	0.661	0.594
South Africa	-0.086	-0.108	0.897	0.788	0.831
Taiwan	-0.060	-0.075	-	0.884	0.806
Thailand	-0.104	-0.096	0.901	0.743	0.670
Turkey	0.029	-0.016	0.850	0.632	0.254
US	0.117	0.045	0.901	0.926	0.793

Panel B: Global Aggregates

Commodities	0.032
Agriculture	0.001
Energy	-0.052
Livestock	-0.243
Precious Metals	0.024

This table shows country-specific and global autocorrelation coefficients for the set of financial aggregates. Panel A presents coefficients for stock returns and valuation measures, illustrating the high persistence in the Capitalization Ratio, Dividend Yield, and P/E Ratio time series. Panel B describes autocorrelation coefficients for global variables related to commodity markets. Commodities is the Goldman Sachs Commodity Index, while Agriculture, Energy, Livestock, and Precious Metals are sector commodity indices from S&P.

Table 2a. Autocorrelation Coefficients for Financial Aggregates

Continued

	Panel C: Interest Rates		
	Default Spread	**Term Spread**	**Short Interest Rate**
Argentina	0.185	0.623	0.541
Brazil	0.151	0.571	0.704
Chile	-0.043	-	0.943
China	0.063	0.734	0.619
Czech Republic	-	0.615	0.808
Egypt	0.057	-	0.810
Hungary	0.088	0.642	0.741
Indonesia	0.324	-	0.541
India	-	-	0.755
Israel	-	-	0.816
Korea	0.021	0.767	0.893
Malasya	0.188	0.677	0.684
Mexico	0.168	0.637	-0.081
Morocco	0.001	0.796	0.742
Peru	0.093	0.786	0.727
Philippines	0.063	0.616	0.774
Poland	-0.015	0.930	0.853
Russia	0.130	0.586	0.321
South Africa	0.121	0.824	0.864
Taiwan	-	-	0.726
Thailand	-	0.822	0.713
Turkey	-0.091	0.422	0.595
US	0.082	0.863	0.818
	Panel D: Flows		
	Portfolio Flows (%)	**Capital Flows Ratio**	**Portfolio Flows Ratio**
Argentina	-0.031	0.756	0.410
Brazil	-0.090	0.323	0.103
China	-	0.064	-
Czech Republic	0.000	0.215	0.279
Hungary	-0.026	0.046	-0.056
Indonesia	-0.002	0.500	0.116
India	0.087	0.542	0.368
Israel	-0.018	0.364	0.160
Korea	-0.034	0.321	0.412
Malasya	0.017	0.199	0.273
Mexico	-0.015	0.339	0.418
Morocco	-0.125	-0.255	0.056
Peru	0.000	0.387	0.030
Philippines	-0.038	0.253	0.191
Poland	-0.042	0.302	0.248
Russia	-0.073	0.372	0.335
South Africa	0.055	0.470	0.208
Thailand	0.012	0.672	0.151
Turkey	-0.015	0.392	0.308
US	-0.018	0.491	0.512

This table shows country-specific autocorrelation coefficients for the set of financial aggregates. Panel C presents coefficients for the default spread, the term spread and the short interest rate,with the latter two time series illustrating high levels of persistence. Panel D describes autocorrelation coefficients for our measures of portfolio and capital flows.

Table 2b. Cross-correlation Coefficients for Financial Aggregates

Panel A: Returns and Valuation Measures

	Stock Returns	**Capitalization**	**Capitalization Ratio**	**Dividend Yield**	**PE Ratio**
Argentina	0.039	-0.024	0.157	-0.061	0.158
Brazil	-	-0.002	**0.299**	-0.063	-0.004
Chile	-0.105	-0.001	-0.026	-0.031	0.059
China	-0.008	-0.052	0.124	-0.193	0.009
Czech Republic	-	-0.011	**0.338**	**-0.201**	0.012
Egypt	-	-0.035	0.040	**0.281**	0.050
Hungary	-0.019	-0.002	-0.157	0.168	0.015
India	0.003	0.025	0.013	0.004	-0.057
Indonesia	0.012	-0.006	0.073	-0.093	-0.093
Israel	0.005	-0.004	**0.197**	-0.011	0.037
Korea	-0.004	0.008	**0.431**	**-0.246**	**0.262**
Malasya	0.051	0.034	0.140	-0.163	-0.117
Mexico	-0.019	-0.039	**0.445**	-0.127	0.058
Morocco	0.002	-0.010	-0.020	-	-
Peru	0.000	-0.056	**0.285**	-0.111	-0.108
philippines	0.005	0.003	0.060	0.113	0.055
Poland	0.001	-0.011	0.019	-0.161	0.012
Russia	0.016	-0.010	**0.344**	-0.232	0.033
South Africa	0.015	0.010	-0.031	-0.128	0.019
Taiwan	0.042	0.057	-	**-0.390**	**0.275**
Thailand	0.021	0.022	**0.344**	0.013	0.043
Turkey	-0.017	-0.015	**0.244**	**-0.288**	-0.011
US	-0.049	-0.017	**0.223**	**-0.373**	**-0.214**

This table shows correlation coefficients of the error terms in the predictive regression and the predictor's first-order autoregressive process. Panel A presents results for stock returns and valuation measures. Coefficients in bold indicate statistical significance at the 5% level or better.

Table 2b. Cross-correlation Coefficients for Financial Aggregates

Continued

	Panel B: Interest Rates		
	Default Spread	**Term Spread**	**Short Interest Rate**
Argentina	0.013	-0.176	0.034
Brazil	0.012	**0.304**	-0.215
Chile	-0.001	-	-0.008
China	0.003	-0.191	-0.088
Czech Republic	-	-0.083	-0.069
Egypt	0.153	-	-0.142
Hungary	0.001	0.158	0.036
India	0.067	-	0.157
Indonesia	-	-	0.075
Israel	-	-	0.005
Korea	0.006	-0.037	0.184
Malasya	0.037	0.119	0.013
Mexico	0.048	-0.079	-0.025
Morocco	-0.024	-0.104	0.160
Peru	-0.013	0.018	0.127
philippines	-0.037	-0.086	0.083
Poland	0.017	-0.160	0.160
Russia	0.008	0.097	-0.079
South Africa	0.026	0.166	**-0.268**
Taiwan	-	-	-0.152
Thailand	-	0.003	-0.160
Turkey	-0.008	-0.125	-0.083
US	0.012	-0.125	-0.157
	Panel C: Flows		
	Portfolio Flows (%)	**Capital Flows Ratio**	**Portfolio Flows Ratio**
Argentina	-0.029	0.124	0.010
Brazil	-0.004	0.072	0.008
China	-	-0.003	-
Czech Republic	-0.004	-0.031	0.001
Hungary	-0.006	-0.025	-0.010
India	-0.003	-0.032	-0.043
Indonesia	-0.011	0.285	-0.064
Israel	0.001	0.013	0.005
Korea	0.000	0.025	0.054
Malasya	0.002	-0.048	-0.099
Mexico	-0.002	0.070	0.083
Morocco	-0.013	-0.079	0.003
Peru	0.016	0.050	-0.007
philippines	-0.002	0.056	0.008
Poland	0.033	0.018	0.060
Russia	0.026	0.061	0.025
South Africa	0.003	0.119	0.013
Thailand	-0.005	-0.025	0.006
Turkey	-0.003	0.001	-0.041
US	-0.001	0.059	0.140

This table shows correlation coefficients of the error terms in the predictive regression and the predictor's first-order autoregressive process. Panel B presents results for the interest rate variables, while Panel C for our measures of net inflows. Coefficients in bold indicate statistical significance at the 5% level or better.

Table 3. Output Growth Predictability

Pooled Estimation Results

	Panel A One Quarter Ahead			Panel B One Year Ahead			Panel C Two Years Ahead		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Returns and Valuation Measures									
Stock Returns (%)	**0.51**	**0.51**	**0.49**	**0.62**	**0.67**	**0.62**	**0.36**	**0.44**	**0.40**
	7.53	8.08	6.87	5.39	6.23	5.19	3.72	4.39	3.99
Capitalization Ratio	-0.04	0.01	0.22	-0.08	**-0.12**	0.11	-0.07	-0.13	0.11
	-0.67	0.24	0.79	-1.49	-2.66	0.59	-1.56	-1.50	0.86
Dividend Yield	**-0.27**	**-0.30**	-0.30	-0.07	-0.06	0.58	-0.02	0.02	1.40
	-4.51	-3.59	-0.59	-1.24	-0.77	0.43	-0.38	0.30	0.59
PE Ratio	0.05	0.06	0.06	-0.01	0.01	-0.02	0.05	**0.07**	0.01
	1.58	1.89	1.62	-0.27	0.38	-0.60	1.56	2.60	0.21
Interest Rates									
Short Interest Rate	-0.10	-0.09	-0.12	-0.01	0.04	-0.04	0.01	0.01	-0.12
	-1.30	-1.12	-1.24	-0.06	0.39	-0.36	0.21	0.19	-0.83
Term Spread	**0.28**	**0.47**	**0.33**	**0.22**	**0.47**	0.24	0.10	0.23	0.04
	3.70	4.94	4.41	2.44	2.35	1.94	1.06	1.20	0.22
Default Spread	**-0.43**	**-0.45**	**-0.36**	**-0.42**	**-0.53**	-0.29	**-0.16**	**-0.32**	**0.35**
	-3.98	-4.15	-3.09	-3.80	-5.06	-1.59	-2.29	-4.54	2.14
Flows									
Capital Flows Ratio	**0.26**	**0.34**	**0.43**	-0.05	-0.04	0.10	**-0.19**	**-0.29**	-0.14
	2.76	3.10	3.47	-1.16	-0.55	1.39	-4.48	-3.56	-1.79
Portfolio Flows Ratio	**0.29**	**0.30**	**0.30**	0.10	0.10	0.11	-0.03	-0.05	-0.01
	3.12	3.21	3.14	1.45	1.30	1.38	-0.68	-0.74	-0.11

This table shows estimated coefficients and t-statistics for our standard pooled, fixed effects, and forward demeaning output growth estimation. The predictive regressions are estimated variable-by-variable in a bivariate setting that also includes lagged GDP growth. Panel A describes results for one quarter ahead forecasts, while Panel B and C for one and two years ahead forecasting horizons. Coefficients in bold indicate statistical significance at the 5% level or better.

Table 4. Portfolio and Direct Investment Capital Flow Ratios

	One Quarter Ahead			One Year Ahead			Two Years Ahead		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Debt Securities	**0.13**	**0.14**	**0.19**	-0.02	-0.05	0.07	-0.09	-0.15	0.03
	2.43	2.61	3.79	-0.38	-0.59	0.67	-1.67	-1.95	0.30
Direct Investment	0.04	0.08	**0.14**	0.02	**0.12**	0.11	-0.04	0.09	0.02
	0.81	1.29	2.33	0.51	2.12	1.80	-1.21	0.88	0.13
Equity Securities	**0.15**	**0.16**	0.06	0.12	**0.15**	-0.07	0.09	0.12	-0.31
	2.30	2.29	0.81	1.81	2.07	-0.73	1.23	1.14	-1.49

This table presents slope coefficients and t-statistics for our standard pooled, fixed effects, and forward demeaning models. We test the predictive power of net inflows related to direct investment capital, debt, and equity securities. over subsequent, one-year, and two-years ahead periods. Direct investment capital is the sum of direct investment abroad and direct investment in the reporting economy. Debt Securities is the net sum of both inflows and outflows of assets and liabilities covering fixed income instruments. Equity Securities is the sum of assets and liabilities covering stocks, and similar instruments that represent ownership of equity. We run bivariate regressions that include the variable of interest and lagged GDP growth. Coefficients in bold indicate statistical significance at the 5% level or better.

Table 5. Global Aggregates

Pooled Estimation Results

Panel A: Commodity Markets	One Quarter Ahead			One Year Ahead			Two Years Ahead		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Commodity Index (%)	**0.39**	**0.40**	**0.41**	**0.22**	**0.28**	**0.34**	**0.15**	**0.21**	**0.37**
	7.00	7.30	6.71	3.00	4.23	5.00	2.36	3.37	5.21
S&P Agricultural Index (%)	**0.35**	**0.35**	**0.39**	**0.18**	**0.21**	**0.35**	0.01	0.03	**0.38**
	9.00	9.07	10.16	2.36	2.84	6.38	0.21	0.62	12.85
S&P Energy Index (%)	**0.30**	**0.31**	**0.31**	**0.17**	**0.22**	**0.25**	0.11	**0.15**	**0.23**
	5.11	5.40	4.91	2.72	4.07	4.39	1.95	2.84	3.38
S&P Livestock Index (%)	**0.16**	**0.16**	**0.14**	**0.21**	**0.24**	**0.19**	0.06	0.10	0.01
	2.71	2.82	2.51	3.08	3.49	2.80	0.91	1.55	0.18
S&P Metal Index (%)	**0.37**	**0.36**	**0.47**	**0.30**	**0.30**	0.19	**0.20**	**0.20**	0.12
	6.50	6.57	11.66	4.67	4.56	0.65	3.55	3.19	0.31
Panel B: US Interest Rates									
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Moody's Default Spread	**-0.23**	**-0.27**	0.09	0.00	-0.07	-0.23	0.10	0.04	-0.40
	-3.36	-4.13	0.33	-0.01	-0.86	-1.55	1.68	0.71	-1.86
US T-bill	-0.03	-0.04	-0.02	-0.05	-0.06	0.02	**-0.14**	**-0.15**	0.07
	-0.60	-0.68	-0.25	-0.91	-1.09	0.37	-2.80	-2.94	1.69
US Term Spread	**0.09**	**0.09**	**0.17**	**0.10**	**0.08**	0.08	**0.21**	**0.20**	0.10
	2.21	2.04	2.08	2.39	2.04	0.85	4.12	3.89	1.26

This table presents slope coefficients and t-statistics for our standard pooled, fixed effects, and forward demeaning output growth estimation when we test the predictive power of global financial aggregates. Panel A tests the predictive power of the performance of commodity markets while Panel B describes results for the set of US interest rates variables. We consider one quarter, one year, and two years ahead forecasting horizons. Regressions are estimated variable-by-variable in a bivariate setting that also includes lagged GDP growth. Coefficients in bold indicate statistical significance at the 5% level or better.

Table 6. Size, Style and Market Risk Factors

	One Quarter Ahead			One Year Ahead			Two Years Ahead		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Size	-0.01	-0.03	-0.08	**0.39**	**0.36**	**0.37**	**0.47**	**0.45**	**0.52**
	-0.21	-0.41	-1.23	4.55	4.00	3.64	7.11	6.62	7.91
Book-to-Market	0.10	0.10	0.05	0.05	0.08	-0.05	-0.04	-0.03	**-0.37**
	1.73	1.80	0.79	1.17	1.89	-0.88	-0.89	-0.59	-5.72
Market	**0.55**	**0.56**	**0.55**	**0.59**	**0.65**	**0.67**	**0.28**	**0.37**	**0.47**
	8.38	8.62	8.82	8.49	9.82	9.19	4.03	5.36	6.65

This table presents slope coefficients and t-statistics for our standard pooled, fixed effects, and forward demeaning models when we test the predictive power of Fama and French factors for Emerging Markets. We test for subsequent, one-year, and two-years ahead output growth predictability. Regressions are estimated variable-by-variable in a bivariate setting that also includes lagged GDP growth. Coefficients in bold indicate statistical significance at the 5% level or better.

Table 7. Output Growth Predictability in the US

	Beta	T-stat	Beta GDP	T-stat
Panel A: Return and Valuation Measures				
Stock Returns (%)	0.14	1.80	0.25	2.09
Capitalization Ratio	0.00	-0.01	0.31	2.35
Dividend Yield	-0.04	-0.63	0.30	2.39
PE Ratio	0.03	0.38	0.33	2.04
Panel B: Interest Rates				
Short Interest Rate	0.18	1.90	0.26	2.39
Term Spread	0.00	-0.08	0.31	2.47
Default Spread	**-0.27**	-3.17	0.12	1.14
Panel C: Flows				
Capital Flows Ratio	**-0.16**	-2.04	0.30	2.23
Portfolio Flows Ratio	**-0.13**	-2.12	0.29	2.35
Panel D: Commodity Markets				
Commodity Index (%)	-0.04	-0.46	0.33	2.59
S&P Agricultural Index (%)	-0.02	-0.27	0.32	2.51
S&P Energy Index (%)	-0.05	-0.65	0.33	2.55
S&P Livestock Index (%)	0.05	0.98	0.31	2.48
S&P Metal Index (%)	-0.02	-0.34	0.31	2.48
Panel E: Risk Factors				
Book-to-market	0.06	0.73	0.31	2.24
Size	-0.24	-3.00	0.22	1.77

This table presents estimation results for the US over the period covering December 1992 to March 2010. FOr each variable we run bivariate regressions that include lagged GDP growth. We report estimates and t-statistics of the variable of interest and lagged GDP growth. Panel A shows results for returns and valuation measures, Panel B for our set of interest rates variables, Panel C for flows, Panel D for performance of global and sector commodity markets and Panel E for Fama and French risk factors.

Table 8. Country Level Estimation

Returns and Valuation Measures

Panel A: Dividend Yield	**Slope**	**T-stat**	**Obs.**	**Panel C: PE ratio**	**Slope**	**T-stat**	**Obs.**
Argentina	**-0.466**	-2.021	68	Argentina	0.104	1.874	68
Brazil	**-0.437**	-2.156	60	Brazil	-0.027	-0.586	60
China	0.841	1.636	40	China	**-0.051**	-2.449	40
Chile	-0.435	-1.443	55	Chile	0.081	0.860	55
Czech Republic	-0.042	-0.555	60	Czech Republic	0.003	0.729	60
Egypt	-0.080	-1.717	28	Egypt	**0.081**	2.262	28
Hungary	**-0.559**	-4.004	60	Hungary	**-0.003**	-3.006	60
Indonesia	-0.058	-0.238	52	Indonesia	0.030	0.656	52
India	0.748	1.220	50	India	-0.028	-0.442	50
Israel	-0.124	-1.169	65	Israel	0.000	0.234	43
South Korea	**-1.861**	-2.959	68	South Korea	**0.108**	2.895	68
Malaysia	**-0.477**	-2.676	68	Malaysia	**0.088**	2.503	68
Mexico	**-1.915**	-2.684	69	Mexico	0.005	0.043	69
Peru	-0.216	-1.735	64	Peru	**0.037**	2.103	67
Philippines	0.439	1.910	69	Philippines	0.003	0.193	69
Poland	-0.090	-0.708	59	Poland	-0.005	-0.181	59
Russian Federation	-1.154	-1.771	51	Russian Federation	**0.061**	3.434	54
South Africa	0.382	1.047	51	South Africa	-0.027	-0.506	68
Taiwan	-0.172	-1.033	69	Taiwan	**0.059**	2.223	69
Thailand	**-0.499**	-2.405	68	Thailand	0.041	1.487	68
Turkey	-0.251	-0.585	68	Turkey	0.001	1.404	68

Panel B: Capitalization	**Slope**	**T-stat**	**Obs.**	**Panel D: Capitalization**	**Slope**	**T-stat**	**Obs.**
Argentina	**0.085**	3.082	68	**Ratio**			
Brazil	**0.040**	2.462	60	Argentina	**18.867**	2.304	68
China	-0.002	-0.143	40	Brazil	0.452	1.572	60
Chile	0.030	1.587	55	China	0.030	0.172	40
Czech Republic	0.008	0.761	60	Chile	0.446	1.283	55
Egypt	0.010	1.016	31	Czech Republic	-0.897	-1.105	60
Hungary	**0.000**	-9.419	60	Egypt	**0.454**	3.861	31
Indonesia	0.010	1.024	52	Hungary	-0.004	-1.867	60
India	0.006	0.400	50	Indonesia	1.072	1.710	52
Israel	**0.021**	2.885	68	India	-1.093	-1.565	24
South Korea	0.029	1.875	67	Israel	0.092	0.749	69
Malaysia	**0.031**	2.617	67	South Korea	0.003	0.894	68
Mexico	**0.061**	3.077	68	Malaysia	**0.244**	3.429	68
Morocco	0.000	-0.002	64	Mexico	0.001	0.441	68
Peru	**0.047**	3.211	67	Morocco	-7.465	-0.490	64
Philippines	0.002	0.430	68	Peru	0.581	0.684	68
Poland	0.007	0.780	59	Philippines	-0.006	-0.408	69
Russian Federation	**0.027**	2.019	58	Poland	-0.327	-0.152	59
South Africa	0.007	0.478	67	Russian Federation	0.012	1.582	58
Taiwan	**0.036**	2.360	68	South Africa	0.000	-0.473	68
Thailand	**0.031**	3.237	68	Thailand	3.789	1.785	68
Turkey	**0.045**	3.996	67	Turkey	32.383	1.099	63

This table presents results for our time series predictive regressions over the entire sample period. We use Newey-West standard errors. Country results are grouped by financial aggregates. Panels A through E cover returns and valuation measures.

Table 8. Country Level Estimation
Continued

Returns and Valuation Measures

Panel E: Stock returns	**Slope**	**T-stat**	**Obs.**
Argentina	**0.047**	2.083	68
China	0.032	1.723	26
Chile	0.015	0.705	55
Hungary	0.010	0.745	60
Indonesia	0.014	1.199	52
India	0.002	0.120	50
Israel	**0.038**	3.825	68
South Korea	**0.040**	2.368	67
Malaysia	**0.033**	2.096	67
Mexico	**0.065**	2.956	68
Morocco	-0.013	-0.459	59
Peru	**0.034**	2.804	67
Philippines	**0.002**	0.204	68
Poland	0.010	0.977	59
Russian Federation	0.021	1.382	58
South Africa	0.018	1.042	67
Taiwan	**0.034**	2.482	68
Thailand	**0.038**	4.679	68
Turkey	**0.037**	2.488	67

Panel G: Short Interest Rate	**Slope**	**T-stat**	**Obs.**
Argentina	**-0.075**	-2.679	68
Brazil	**-0.062**	-2.670	59
China	-0.181	-1.142	40
Chile	-0.030	-1.306	55
Czech Republic	-0.218	-1.594	64
Egypt	-0.056	-1.348	31
Hungary	-0.148	-1.397	60
Indonesia	0.018	0.838	52
India	0.042	0.408	50
Israel	0.023	0.337	69
South Korea	0.077	0.799	68
Malaysia	0.089	0.384	68
Mexico	-0.030	-1.015	69
Morocco	0.031	0.238	68
Peru	**-0.047**	-2.279	68
Philippines	-0.072	-1.745	69
Poland	-0.070	-1.316	59
Russian Federation	-0.003	-0.349	58
South Africa	-0.017	-0.163	68
Taiwan	0.085	0.602	69
Thailand	-0.066	-0.641	68
Turkey	0.001	0.297	68

Interest Rates

Panel F: Default Spread	**Slope**	**T-stat**	**Obs.**
Argentina	**-0.030**	-4.908	64
Brazil	-0.012	-1.304	60
China	0.004	0.272	40
Chile	-0.006	-0.581	41
Egypt	0.004	0.839	29
Hungary	-0.006	-0.954	43
Indonesia	**-0.005**	-2.691	22
South Korea	**-0.025**	-6.941	41
Malaysia	**-0.023**	-3.788	51
Mexico	**-0.031**	-2.015	48
Morocco	-0.005	-0.677	33
Peru	**-0.017**	-2.515	50
Philippines	-0.002	-0.612	48
Poland	**-0.002**	-2.671	55
Russian Federation	-0.008	-0.796	46
South Africa	-0.002	-0.296	59
Turkey	-0.005	-0.362	53

Panel H: Term Spread	**Slope**	**T-stat**	**Obs.**
Argentina	**0.064**	3.315	23
Brazil	-0.003	-0.129	29
Chile	**0.341**	2.040	29
Czech Republic	0.066	0.701	52
Hungary	**-0.227**	-2.113	52
South Korea	0.501	1.301	36
Malaysia	0.248	1.088	68
Mexico	0.170	1.127	39
Morocco	0.264	1.023	63
Peru	**0.054**	2.810	38
Philippines	0.015	0.148	54
Poland	0.092	1.684	42
Russian Federation	0.040	0.572	51
South Africa	**0.285**	2.726	68
Thailand	**0.539**	3.259	68
Turkey	0.373	0.912	19

This table presents results for our time series predictive regressions over the entire sample period. We use Newey-West standard errors. Country results are grouped by financial aggregate. Panels F through H cover interest rates.

Table 8. Country Level Estimation
Continued

Flows

Panel I :Portfolio Flows Ratio	**Slope**	**T-stat**	**Obs.**
Argentina	27.696	1.430	68
Brazil	25.315	**2.733**	60
Czech Republic	0.465	0.096	64
Hungary	3.746	1.243	60
Indonesia	3.746	**2.158**	50
India	42.571	1.121	21
Israel	4.509	1.054	69
South Korea	6.816	1.113	68
Malaysia	7.136	1.780	40
Mexico	94.476	**2.644**	68
Morocco	38.122	1.015	27
Peru	18.486	**2.547**	68
Philippines	7.685	**2.836**	69
Poland	7.685	**4.669**	41
Russian Federation	2.903	0.217	58
South Africa	7.763	0.482	68
Thailand	-0.888	-0.082	68
Turkey	11.198	0.509	68

Panel K: Portfolio Flows	**Slope**	**T-stat**	**Obs.**
Argentina	-0.017	-0.522	67
Brazil	0.031	0.484	59
Czech Republic	0.003	0.914	63
Hungary	0.005	0.497	59
Indonesia	0.005	0.005	48
India	0.005	0.001	42
Israel	0.007	**12.022**	68
South Korea	-0.023	-0.292	67
Malaysia	0.013	**3.258**	39
Mexico	0.003	**2.699**	68
Morocco	0.025	**3.202**	26
Peru	-0.014	-0.676	67
Philippines	0.006	1.175	68
Poland	0.006	0.008	39
Russian Federation	-0.040	-1.468	57
South Africa	0.003	0.073	67
Thailand	0.028	0.731	67
Turkey	0.000	**-2.266**	67

Panel J: Capital Flows Ratio	**Slope**	**T-stat**	**Obs.**
Argentina	8.745	0.441	68
Brazil	17.601	**2.204**	60
Chile	-2.088	-0.620	55
Czech Republic	2.995	0.825	64
Hungary	2.662	1.852	60
Indonesia	31.931	**3.466**	52
India	17.379	0.803	21
Israel	-2.479	-1.082	69
South Korea	21.413	**2.426**	68
Malaysia	5.068	1.675	40
Mexico	58.012	1.658	68
Morocco	5.325	1.128	27
Peru	8.655	**2.351**	68
Philippines	-0.974	-0.926	69
Poland	-0.974	-0.949	41
Russian Federation	4.800	0.571	58
South Africa	29.153	1.424	68
Thailand	8.831	**2.089**	68
Turkey	-0.253	-0.044	68

This table presents results for our time series predictive regressions over the entire sample period. We use Newey-West standard errors. Country results are grouped by financial aggregates. Panels I through K cover our measures of portfolio and capital flows.

Table 8. Country Level Estimation
Global Variables

Commodities

Panel L: Commodities	**Slope**	**T-stat**	**Obs.**	**Panel N: Energy**	**Slope**	**T-stat**	**Obs.**
Argentina	0.032	1.231	68	Argentina	0.010	0.357	68
Brazil	0.050	**2.709**	60	Brazil	0.024	1.257	60
China	0.001	0.049	40	China	-0.007	-0.485	40
Chile	0.033	**3.278**	55	Chile	0.019	**2.218**	55
Czech Republic	0.055	**3.921**	64	Czech Republic	0.035	**2.976**	64
Egypt	0.002	0.100	31	Egypt	-0.002	-0.132	31
Hungary	0.036	**2.275**	60	Hungary	0.024	**2.011**	60
Indonesia	0.039	1.384	52	Indonesia	0.029	1.404	52
India	0.024	1.418	50	India	0.013	0.908	50
Israel	0.028	1.441	68	Israel	0.021	1.361	68
South Korea	0.043	**2.174**	67	South Korea	0.028	1.841	67
Malaysia	0.061	**3.609**	67	Malaysia	0.039	**3.210**	67
Mexico	0.058	**2.118**	68	Mexico	0.037	1.917	68
Morocco	-0.049	**-2.031**	67	Morocco	-0.041	-1.876	67
Peru	0.021	1.139	67	Peru	0.006	0.355	67
Philippines	0.024	**3.206**	68	Philippines	0.014	**2.445**	68
Poland	0.023	**2.602**	59	Poland	0.014	**2.164**	59
Russian Federation	0.097	**2.724**	58	Russian Federation	0.065	**2.373**	58
South Africa	0.019	1.329	67	South Africa	0.003	0.286	67
Taiwan	0.038	1.882	68	Taiwan	0.020	1.314	68
Thailand	0.041	1.887	68	Thailand	0.020	1.122	68
Turkey	0.073	**2.826**	67	Turkey	0.047	**2.281**	67

Panel M: Agriculture	**Slope**	**T-stat**	**Obs.**	**Panel O: Livestock**	**Slope**	**T-stat**	**Obs.**
Argentina	0.055	1.361	68	Argentina	0.030	0.969	68
Brazil	0.079	**3.542**	60	Brazil	0.037	1.376	60
China	0.043	1.529	40	China	0.049	1.435	40
Chile	0.038	1.773	55	Chile	0.013	0.633	55
Czech Republic	0.048	**2.344**	64	Czech Republic	0.024	0.907	64
Egypt	0.031	**2.445**	31	Egypt	0.025	0.804	31
Hungary	0.022	1.014	60	Hungary	0.022	1.499	60
Indonesia	0.012	0.653	52	Indonesia	0.002	0.133	52
India	0.015	0.785	50	India	0.078	**2.268**	50
Israel	0.029	1.563	68	Israel	-0.010	-0.268	68
South Korea	0.041	**2.119**	67	South Korea	0.050	**2.010**	67
Malaysia	0.054	**2.332**	67	Malaysia	0.016	0.682	67
Mexico	0.027	0.996	68	Mexico	0.020	0.692	68
Morocco	-0.003	-0.099	67	Morocco	0.061	1.032	67
Peru	0.050	**2.679**	67	Peru	-0.034	-1.533	67
Philippines	0.012	0.936	68	Philippines	0.057	1.837	68
Poland	0.043	**3.903**	59	Poland	-0.030	-1.112	59
Russian Federation	0.038	1.396	58	Russian Federation	0.080	**2.219**	58
South Africa	0.053	**2.751**	67	South Africa	0.051	1.464	67
Taiwan	0.046	1.587	68	Taiwan	0.013	0.779	68
Thailand	0.063	**2.042**	68	Thailand	-0.024	-0.704	68
Turkey	0.075	**2.418**	67	Turkey	0.003	0.063	67

This table presents results for our time series predictive regressions over the entire sample period. We use Newey-West standard errors. Country results are grouped by financial aggregates. Panels L through P cover commoditiy markets.

Table 8. Country Level Estimation

Global Variables, continued.

Panel P: Metal	**Slope**	**T-stat**	**Obs.**	**Panel R: US Term Spread**	**Slope**	**T-stat**	**Obs.**
Argentina	0.154	**2.287**	68	Argentina	0.188	0.569	68
Brazil	0.083	**3.024**	60	Brazil	0.093	0.541	60
China	0.123	**1.969**	40	China	0.296	0.958	40
Chile	0.035	1.090	55	Chile	0.065	0.384	55
Czech Republic	0.008	0.212	64	Czech Republic	0.014	0.072	64
Egypt	0.038	1.492	31	Egypt	-0.183	-1.895	31
Hungary	0.002	0.110	60	Hungary	-0.082	-0.510	60
Indonesia	0.058	1.285	52	Indonesia	0.276	1.006	52
India	0.001	0.035	50	India	-0.119	-0.401	50
Israel	0.029	1.055	68	Israel	-0.115	-0.952	69
South Korea	0.087	1.674	67	South Korea	0.130	0.680	68
Malaysia	0.072	**2.402**	67	Malaysia	0.344	1.626	68
Mexico	0.024	1.020	68	Mexico	-0.141	-1.236	69
Morocco	0.136	1.661	67	Morocco	-0.113	-0.541	68
Peru	0.077	**3.426**	67	Peru	0.292	1.298	68
Philippines	0.033	1.465	68	Philippines	0.076	0.565	69
Poland	0.033	1.278	59	Poland	-0.177	-1.386	59
Russian Federation	0.071	1.304	58	Russian Federation	0.041	0.145	58
South Africa	0.034	1.519	67	South Africa	-0.049	-0.279	68
Taiwan	0.074	1.947	68	Taiwan	0.186	0.971	69
Thailand	0.101	**2.323**	68	Thailand	0.403	1.766	68
Turkey	0.046	0.680	67	Turkey	0.251	0.764	68

US Interest Rates

Panel Q: US T-bill	**Slope**	**T-stat**	**Obs.**	**Panel S: US Default Spread**	**Slope**	**T-stat**	**Obs.**
Argentina	-0.358	-1.602	68	Argentina	-0.319	-0.665	68
Brazil	0.089	0.616	60	Brazil	-0.377	-0.951	60
China	-0.415	**-2.220**	40	China	-0.237	-0.658	40
Chile	0.052	0.375	55	Chile	-0.724	**-3.199**	55
Czech Republic	0.081	0.642	64	Czech Republic	-1.153	**-3.291**	64
Egypt	0.074	0.598	31	Egypt	-0.358	**-2.243**	31
Hungary	0.114	0.929	60	Hungary	-1.198	**-4.247**	60
Indonesia	-0.318	-1.190	52	Indonesia	0.559	0.895	52
India	-0.240	-1.494	50	India	-1.467	**-3.152**	50
Israel	0.127	1.755	69	Israel	-0.646	**-3.184**	69
South Korea	0.166	0.726	68	South Korea	-0.276	-0.610	68
Malaysia	0.042	0.171	68	Malaysia	-0.656	-1.197	68
Mexico	0.154	1.070	69	Mexico	-1.250	**-2.442**	69
Morocco	-0.098	-0.557	68	Morocco	0.513	1.533	68
Peru	-0.128	-1.011	68	Peru	-0.574	-1.801	68
Philippines	-0.192	-1.937	69	Philippines	0.256	0.711	69
Poland	0.117	1.771	59	Poland	-0.476	**-2.659**	59
Russian Federation	-0.125	-0.585	58	Russian Federation	-1.610	-1.549	58
South Africa	-0.114	-0.809	68	South Africa	-0.757	**-2.869**	68
Taiwan	0.212	0.939	69	Taiwan	-0.455	-0.854	69
Thailand	-0.080	-0.280	68	Thailand	-0.250	-0.380	68
Turkey	0.173	0.620	68	Turkey	-0.764	-1.118	68

This table presents results for our time series predictive regressions over the entire sample period. We use Newey-West standard errors. Country results are grouped by financial aggregates. Panels Q through S cover US interest rate variables.

Table 9. Common Factors

	Panel A: Returns and Valuation Measures		
	Beta RP	**Beta RFE**	**Beta RFD**
Stock Returns	**0.33**	**0.26**	**0.24**
	3.03	2.51	2.63
Capitalization Ratio	0.22	0.18	0.42
	1.56	1.21	0.10
Dividend Yield	0.01	**-0.30**	-0.30
	0.07	-2.70	-1.05
PE Ratio	**0.25**	0.09	0.10
	2.03	1.00	0.93
	Panel B: Interest Rates		
	Beta RP	**Beta RFE**	**Beta RFD**
Short Interest Rate	-0.11	**-0.16**	**-0.22**
	-1.41	-2.05	-2.17
Term Spread	**0.39**	**0.63**	**0.55**
	2.04	4.05	2.32
Default Spread	-0.15	-0.24	-0.24
	-0.66	-1.13	-1.04
	Panel C: Flows		
	Beta RP	**Beta RFE**	**Beta RFD**
Capital Flows Ratio	**0.30**	**0.31**	**0.39**
	3.31	2.89	2.78
Portfolio Flows Ratio	**0.29**	**0.26**	**0.29**
	2.52	2.21	2.32

This table shows estimated coefficients and t-statistics for our standard pooled, fixed effects, and forward demeaning output growth estimation when we account for common factors in the data generating process. Panel A describes results for returns and valuation measures, Panel B covers interest rates variables, and Panel C portfolio and capital flows. The coefficients in bold indicate statistical significance at the 5 % level or better.

Table 10. Sub-Sample Analysis

	Panel A: 1993-1999			Panel B: 2000-2010			Panel C: 1993-2007		
	Beta Pooled	Beta FE	Beta FD	Beta Pooled	Beta FE	Beta FD	Beta Pooled	Beta FE	Beta FD
Stock Returns	**0.55**	**0.59**	**0.50**	**0.47**	**0.47**	**0.44**	**0.46**	**0.46**	**0.43**
	3.80	4.58	3.51	4.86	4.97	4.28	5.74	6.18	5.21
Capitalization Ratio	0.06	0.15	0.01	-0.09	0.03	-13.75	-0.02	0.00	-0.03
	0.68	1.00	0.05	-1.79	0.96	-0.16	-0.30	0.04	-0.29
Dividend Yield	**-0.41**	**-0.80**	-1.18	**-0.20**	**-0.24**	-0.02	**-0.24**	**-0.25**	**-1.12**
	-3.79	-5.69	-0.98	-3.57	-2.77	-0.06	-2.63	-1.97	-2.44
PE Ratio	0.34	0.41	**0.60**	0.02	**0.03**	0.02	0.04	0.05	-0.06
	1.86	1.94	2.45	1.49	2.78	1.12	1.36	1.64	-1.60
Short Interest Rate	-0.09	-0.07	-0.10	**-0.13**	**-0.13**	**-0.29**	-0.15	-0.15	-0.18
	-0.68	-0.49	-0.60	-2.69	-2.10	-5.21	-1.43	-1.39	-1.69
Term Spread	**0.56**	**1.40**	**2.70**	**0.18**	**0.34**	**0.17**	**0.33**	**0.60**	**0.45**
	4.17	2.62	4.08	3.80	7.03	3.88	3.82	6.11	5.34
Default Spread	-0.56	-0.60	**-0.91**	**-0.42**	**-0.43**	**-0.26**	**-0.36**	**-0.38**	**-0.39**
	-1.52	-1.53	-2.57	-2.85	-2.86	-2.01	-2.28	-2.46	-2.67
Capital Flows Ratio	**0.64**	**0.70**	**1.12**	0.09	0.16	**0.27**	0.25	**0.32**	**0.42**
	2.76	2.44	3.60	0.94	1.30	2.60	1.91	2.05	2.52
Portfolio Flows Ratio	0.39	0.39	0.50	**0.26**	**0.27**	**0.27**	0.22	0.23	**0.30**
	1.34	1.39	1.72	4.36	4.63	4.62	1.75	1.76	2.17
Commodities	0.18	0.19	0.04	**0.39**	**0.43**	**0.41**	**0.20**	**0.20**	**0.14**
	1.68	1.72	0.25	5.42	6.34	5.91	4.70	4.63	2.66
Book-to-market	**-0.41**	**-0.42**	**-0.47**	**0.19**	**0.19**	**0.13**	0.03	0.04	0.09
	-2.37	-2.41	-2.40	3.12	3.16	2.18	0.59	0.70	1.41
Size	-0.01	-0.03	-0.12	-0.02	-0.02	**-0.11**	-0.05	-0.06	-0.12
	-0.06	-0.16	-0.75	-0.35	-0.37	-2.53	-0.69	-0.92	-1.48
Market	**0.59**	**0.59**	**0.57**	**0.49**	**0.51**	**0.49**	**0.44**	**0.44**	**0.38**
	4.80	4.79	4.23	5.96	6.27	5.77	7.58	7.68	6.55

This table shows sub-sample results for the periods covering 1993-1999, 2000-2010 and 1993-2007. The coefficients in bold indicate statistical significance at the 5 % level or better.

Table 11. Regional Emerging Markets

	Panel A: Asia			Panel B: EMEA			Panel C: LATAM		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Stock Returns	**0.41**	**0.41**	**0.41**	**0.52**	**0.54**	**0.52**	**0.66**	**0.66**	**0.62**
	4.23	4.25	4.09	6.01	6.45	5.40	7.96	7.70	6.49
Capitalization Ratio	-0.04	**0.14**	-14.11	0.01	-0.03	0.04	**-0.12**	0.05	**1.09**
	-0.60	3.81	-0.62	0.31	-1.08	0.49	-3.46	0.88	5.67
fDividend Yield	-0.10	-0.09	-0.11	**-0.25**	**-0.29**	0.35	**-0.40**	**-0.58**	-2.53
	-0.99	-0.75	-0.07	-2.84	-2.33	1.48	-3.21	-4.91	-1.55
PE Ratio	**0.20**	0.14	0.04	0.06	**0.08**	0.09	**0.27**	**0.24**	0.15
	2.52	1.11	0.49	1.75	2.08	1.68	2.55	1.99	1.50
Short Interest Rate	-0.04	-0.01	**-0.23**	-0.04	-0.04	-0.03	**-0.40**	**-0.44**	**-0.51**
	-1.20	-0.28	-2.07	-0.93	-0.86	-0.46	-5.39	-5.23	-5.20
Term Spread	0.25	0.44	-0.03	**0.22**	**0.27**	**0.27**	**0.24**	**0.56**	**0.23**
	1.41	1.75	-0.11	2.40	2.64	4.80	3.48	6.47	2.58
Default Spread	**-0.69**	**-0.71**	**-0.65**	**-0.25**	**-0.25**	**-0.11**	**-0.64**	**-0.64**	**-0.62**
	-3.86	-4.23	-4.19	-3.89	-3.63	-2.08	-8.49	-8.29	-5.38
Capital Flows Ratio	**0.56**	**0.60**	**0.55**	0.05	0.13	**0.35**	0.25	0.22	0.28
	2.47	2.51	1.98	0.77	1.70	3.60	1.45	1.23	1.49
Portfolio Flows Ratio	**0.45**	**0.44**	0.40	**0.11**	**0.13**	**0.14**	**0.47**	**0.49**	**0.55**
	2.10	2.10	1.79	3.94	4.38	3.60	4.29	4.19	4.56
Commodities	**0.25**	**0.27**	**0.31**	**0.44**	**0.44**	**0.47**	**0.38**	**0.39**	**0.35**
	4.96	6.64	5.78	3.56	3.56	3.61	3.75	3.79	3.10
Book-to-market	0.09	0.10	0.03	**0.20**	**0.20**	0.13	-0.05	-0.05	-0.08
	1.04	1.08	0.35	2.40	2.47	1.49	-0.50	-0.49	-0.85
Size	**0.17**	**0.16**	**0.14**	**-0.18**	**-0.18**	**-0.23**	0.04	0.04	-0.05
	2.43	1.98	1.97	-2.80	-2.89	-3.00	0.54	0.53	-0.51
Market	**0.45**	**0.47**	**0.48**	**0.52**	**0.52**	**0.54**	**0.65**	**0.65**	**0.59**
	5.01	5.19	5.08	4.38	4.34	4.87	6.38	6.43	6.06

This table shows results at the regional level. Panel A presents results for Asian emerging markets, Panel B for Europe, Middle East and Africa, and Panel C for Latin America. The coefficients in bold indicate statistical significance at the 5 % level or better.

Table 11. Regional Emerging Markets

Continued

	Panel D: Asia ex-China		
	Beta Pooled	**Beta FE**	**Beta FD**
Stock Returns	**0.38**	**0.38**	**0.35**
	3.86	3.91	3.54
Capitalization Ratio	0.02	**0.12**	-14.34
	0.88	3.38	-0.56
Dividend Yield	-0.14	-0.13	0.20
	-1.46	-1.12	0.25
PE Ratio	**0.24**	**0.26**	0.14
	4.72	4.86	1.42
Short Interest Rate	-0.01	-0.01	**-0.24**
	-0.52	-0.43	-2.10
Term Spread	0.25	0.44	-0.03
	1.41	1.75	-0.11
Default Spread	**-0.79**	**-0.79**	**-0.74**
	-4.17	-4.12	-4.65
Capital Flows Ratio	**0.56**	**0.60**	**0.55**
	2.47	2.51	1.98
Portfolio Flows Ratio	**0.45**	**0.44**	0.40
	2.10	2.10	1.79
Commodities	**0.29**	**0.30**	**0.35**
	7.83	7.87	7.33
Book-to-market	0.05	0.05	-0.02
	0.57	0.56	-0.23
Size	**0.22**	**0.22**	**0.19**
	3.66	3.60	3.55
Market	**0.47**	**0.48**	**0.48**
	4.85	4.88	4.68

This table shows results for Asia excluding China. The coefficients in bold indicate statistical significance at the 5 % level or better.

Table 12. GDP per Capita

	Panel A: High Income			Panel B: Middle Income			Panel C: Low Income		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Stock Returns	**0.45**	**0.46**	**0.43**	**0.63**	**0.65**	**0.56**	**0.39**	**0.36**	**0.40**
	4.21	4.57	3.80	5.68	6.02	5.09	3.23	3.27	2.92
Capitalization Ratio	**0.14**	**0.26**	-13.97	-0.06	-0.03	0.07	-0.01	**-0.10**	**-0.46**
	9.11	2.26	-0.63	-1.40	-0.78	0.55	-0.13	-2.60	-2.28
Dividend Yield	**-0.26**	**-0.24**	-2.38	**-0.41**	**-0.62**	-0.57	-0.13	-0.10	-0.31
	-2.80	-2.19	-0.58	-5.75	-6.03	-0.87	-1.43	-0.85	-0.57
PE Ratio	0.02	0.04	0.07	0.09	0.09	0.09	0.19	0.10	-0.01
	0.92	1.19	1.05	1.56	1.56	1.30	2.55	0.67	-0.10
Short Interest Rate	-0.02	-0.05	0.10	-0.07	-0.07	-0.13	**-0.23**	-0.21	**-0.29**
	-0.26	-0.48	1.08	-0.87	-0.82	-1.06	-2.01	-1.92	-2.72
Term Spread	0.03	0.06	0.20	**0.25**	**0.48**	**0.34**	**0.46**	**0.51**	0.34
	0.48	0.52	1.35	3.62	6.80	3.60	2.34	2.05	1.82
Default Spread	-0.64	-0.64	-0.51	**-0.49**	**-0.50**	**-0.41**	-0.12	-0.11	-0.08
	-1.86	-1.87	-1.48	-4.12	-4.25	-2.71	-1.15	-1.08	-0.82
Capital Flows Ratio	0.14	0.27	**0.51**	0.16	**0.22**	0.20	**0.51**	**0.52**	**0.61**
	1.00	1.31	2.45	1.94	2.02	1.89	2.44	2.20	2.40
Portfolio Flows Ratio	**0.12**	**0.13**	**0.15**	**0.30**	**0.31**	**0.27**	0.51	0.51	**0.53**
	3.94	4.46	4.39	3.39	3.37	2.57	1.92	1.91	2.02
Commodities	**0.41**	**0.41**	**0.48**	**0.56**	**0.56**	**0.56**	**0.19**	**0.20**	**0.17**
	9.42	9.75	10.11	5.12	5.15	4.81	3.35	3.57	2.90
Book-to-market	**0.16**	**0.17**	0.09	0.14	0.14	0.08	0.00	0.01	-0.04
	2.24	2.26	1.05	1.32	1.33	0.78	0.02	0.11	-0.42
Size	0.03	0.03	-0.01	-0.08	-0.08	**-0.17**	0.03	0.01	-0.03
	0.34	0.33	-0.10	-1.11	-1.13	-2.19	0.27	0.08	-0.26
Market	**0.44**	**0.44**	**0.47**	**0.75**	**0.75**	**0.72**	**0.41**	**0.42**	**0.39**
	4.21	4.23	4.61	8.48	8.54	8.67	4.63	4.72	4.77

This table shows results for panels grouped by PPP-adjusted GDP per capita (at constant 2005 USD). Panel A presents results for emerging market countries with a GDP per capita of $13,000 or higher, Panel B for countries ranging between $13,000 and $9,000, and Panel C for those with a GDP per capita lower than $9,000. The coefficients in bold indicate statistical significance at the 5 % level or better.

Table 13. Multivariate Analysis

	One Quarter Ahead			One Year Ahead			Two Years Ahead		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Return and	**0.40**	**0.43**	**0.40**	**0.32**	**0.34**	**0.30**	**-0.27**	-0.15	1.77
Valuation Measures	3.61	4.40	2.81	3.36	3.43	2.39	-2.61	-0.87	0.62
Interest Rates	**-0.27**	**-0.30**	**-0.32**	-0.16	-0.16	-0.16	-0.17	-0.08	-0.35
	-4.28	-3.60	-4.97	-1.37	-1.18	-1.26	-1.14	-0.29	-0.70
Flows	**0.06**	**0.09**	0.10	-0.01	0.04	0.06	**-0.28**	**-0.37**	**-0.10**
	2.07	2.20	1.27	-0.12	0.27	0.49	-2.27	-2.44	2.15
Commodities	**0.29**	**0.29**	**0.31**	0.07	0.07	**0.22**	0.29	0.29	-0.12
	5.24	5.48	5.26	1.04	0.92	3.04	1.67	1.43	-0.14

This table presents results for our multivariate analysis. We group our variables into four categories, return and valuation measures, interest rates, flows and commodities. The coefficients in bold indicate statistical significance at the 5 % level or better.

Table 14. Cross-Validation

	One Quarter Ahead			One Year Ahead			Two Years Ahead		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Stock Returns	0.51	0.52	0.49	0.63	0.67	0.63	0.37	0.44	0.40
Stdv.	0.03	0.03	0.03	0.04	0.04	0.05	0.03	0.03	0.05
No. Sig.	20	20	20	20	20	20	20	20	20
Capitalization Ratio	-0.04	0.02	0.48	-0.08	-0.13	0.30	-0.07	-0.15	3.12
Stdv.	0.03	0.06	0.94	0.03	0.05	0.71	0.03	0.10	10.80
No. Sig.	0	2	0	4	20	0	1	2	0
Dividend Yield	-0.27	-0.30	-0.34	-0.07	-0.06	0.27	-0.02	0.02	1.35
Stdv.	0.03	0.04	0.20	0.02	0.03	2.13	0.02	0.04	1.08
No. Sig.	20	20	0	0	0	0	0	0	0
PE Ratio	0.05	0.06	0.06	-0.01	0.01	-0.03	0.05	0.07	0.01
Stdv.	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
No. Sig.	0	4	0	0	0	0	1	17	0
Short Interest Rate	-0.11	-0.09	-0.12	-0.01	0.03	-0.05	0.01	0.01	-0.12
Stdv.	0.03	0.03	0.03	0.05	0.05	0.05	0.03	0.04	0.05
No. Sig.	0	0	1	0	0	0	0	0	2
Term Spread	0.29	0.48	0.34	0.23	0.50	0.26	0.11	0.27	0.05
Stdv.	0.03	0.06	0.04	0.04	0.12	0.05	0.05	0.10	0.05
No. Sig.	20	20	20	19	19	6	4	4	0
Default Spread	-0.42	-0.44	-0.36	-0.42	-0.53	-0.30	-0.17	-0.33	0.36
Stdv.	0.05	0.05	0.05	0.04	0.03	0.08	0.03	0.03	0.11
No. Sig.	20	20	20	20	20	4	18	20	12

This table presents results for our cross-validation analysis. For each variable we report the average estimate, its standard deviation and the number of times, out of the twenty random draws, that the coefficient is statistically significant.

Table 14. Cross-Validation (Continued)

	One Quarter Ahead			One Year Ahead			Two Years Ahead		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Capital Flows Ratio	0.26	0.33	0.44	-0.05	-0.05	0.11	-0.19	-0.29	-0.13
Stdv.	0.03	0.04	0.05	0.02	0.03	0.05	0.02	0.03	0.05
No. Sig.	20	20	20	2	0	2	20	20	5
Portfolio Flows Ratio	0.30	0.30	0.31	0.10	0.10	0.12	-0.04	-0.05	-0.01
Stdv.	0.03	0.04	0.03	0.03	0.03	0.04	0.02	0.03	0.04
No. Sig.	20	20	20	0	0	3	0	0	0
Debt securities	0.13	0.14	0.19	-0.02	-0.04	0.07	-0.09	-0.15	0.03
Stdv.	0.03	0.03	0.03	0.04	0.04	0.05	0.03	0.03	0.07
No. Sig.	16	18	20	0	0	1	6	7	0
Direct Inv. flows	0.04	0.08	0.13	0.02	0.11	0.10	-0.04	0.07	0.01
Stdv.	0.02	0.03	0.03	0.01	0.02	0.03	0.02	0.04	0.05
No. Sig.	0	2	11	0	7	4	2	0	0
Equity securities	0.16	0.16	0.07	0.12	0.15	-0.06	0.09	0.11	-0.29
Stdv.	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.06	0.08
No. Sig.	15	15	0	4	11	0	0	1	0
Size	-0.01	-0.03	-0.08	0.39	0.35	0.37	0.47	0.45	0.51
Stdv.	0.02	0.02	0.03	0.04	0.04	0.05	0.03	0.03	0.03
No. Sig.	0	0	0	20	20	20	20	20	20
HML	0.09	0.10	0.05	0.05	0.08	-0.05	-0.05	-0.04	-0.37
Stdv.	0.02	0.02	0.02	0.01	0.01	0.03	0.02	0.02	0.05
No. Sig.	3	3	0	1	3	0	0	0	20

This table presents results for our cross-validation analysis. For each variable we report the average estimate, its standard deviation and the number of times, out of the twenty random draws, that the coefficient is statistically significant.

Table 14. Cross -Validation (Continued)

	One Quarter Ahead			One Year Ahead			Two Years Ahead		
	Beta Pooled	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**	**Beta Pooled**	**Beta FE**	**Beta FD**
Market	0.11	0.10	-0.99	-0.08	-0.09	-1.44	-0.16	-0.17	-1.54
Stdv.	0.02	0.02	0.18	0.02	0.03	0.64	0.02	0.03	0.74
No. Sig.	12	9	20	2	3	3	20	20	0
Commodity Index (%)	0.38	0.39	0.40	0.22	0.27	0.33	0.15	0.21	0.36
Stdv.	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.03
No. Sig.	20	20	20	20	20	20	14	20	20
S&P Agricultural Index (%)	0.35	0.35	0.39	0.18	0.21	0.35	0.01	0.04	0.38
Stdv.	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.05
No. Sig.	20	20	20	17	20	20	0	0	20
S&P Energy Index (%)	0.29	0.30	0.30	0.17	0.22	0.25	0.11	0.15	0.22
Stdv.	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03
No. Sig.	20	20	20	19	20	20	8	20	20
S&P Livestock Index (%)	0.15	0.16	0.14	0.21	0.24	0.19	0.06	0.10	0.01
Stdv.	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
No. Sig.	18	20	12	20	20	19	0	0	0
S&P Metal Index (%)	0.38	0.37	0.47	0.30	0.30	0.59	0.20	0.21	0.83
Stdv.	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.11
No. Sig.	20	20	20	20	20	20	20	20	20

This table presents results for our cross-validation analysis. For each variable we report the average estimate, its standard deviation and the number of times, out of the twenty random draws, that the coefficient is statistically significant.