Analyst Recommendations and International Stock Market Returns

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Abstract

This paper shows that analyst recommendations aggregated at the country level predict international stock market returns. A trading strategy based on past country-level recommendations yields an abnormal return of around 0.9 percent per month. Aggregate analyst recommendations also predict one-quarter ahead gross domestic product, industrial production and one-year ahead aggregate earnings. Overall, our results suggest that analyst recommendations aggregated at the country level provide useful information to guide international asset allocation.

Keywords: analyst recommendation, international asset allocation, aggregate information, stock return prediction

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1. Introduction

This paper examines whether analyst recommendations aggregated at the country level have predictive value. We define the aggregate recommendation for a country as the average of all outstanding recommendations for shares listed in the domestic stock market. By averaging across firms, we eliminate firm-specific information contained in analyst recommendations and obtain a country-level recommendation. This country-level recommendation is used in our main trading strategy which consists of buying the MSCI market index (in USD) of countries in the quintile with the highest average recommendation and selling the MSCI market index of the quintile of countries with the lowest average recommendation. Depending on the international asset pricing model used, this strategy yields an abnormal return of 0.6 to 0.9 percent per month.

Prior studies show that analyst recommendations provide valuable information at the firm level. For example, Barber, Lehavy, McNichols, and Trueman (2001) find that buying stocks with the most favourable consensus analyst recommendations and short selling stocks with the least favourable consensus recommendations, yields annual abnormal returns of more than four percent. Jegadeesh, Kim, Krische, and Lee (2004) show that changes in consensus recommendations over the previous quarter predict future returns of individual firms.[1] A small number of studies take an international perspective. For example, Jegadeesh and Kim (2006) evaluate the value of analyst recommendations in the G7 countries. They show that calendar time trading strategies that buy upgraded stocks and sell downgraded stocks are profitable in six of the seven countries. [2]

[1] See also Davies and Canes (1978), Beneish (1991), Stickel (1995), Green (2006) and Irvine, Lipson, and Puckett (2007).
[2] See also Moshirian, Ng, and Wu (2009).

This study extends the literature on analyst recommendations by examining the information content of analyst recommendations at the country level. Our research is related to Howe, Unlu, and Yan (2009) and Boni and Womack (2006). Howe et al. (2009) show that changes in aggregate analyst recommendations for US stocks forecast future excess returns for the US stock market. However, their evidence with regard to the ability of industry-aggregated analyst recommendations to predict industry returns is substantially weaker. Examining the same issue, Boni and Womack (2006) conclude there is no predictive value in industry-aggregated analyst recommendations.

We use IBES analyst recommendations for stocks from 33 different countries for the period from January 1994 to June 2015, to construct a monthly country-level recommendation measure. In our base case, we focus on the average consensus forecast using three-month outstanding recommendations and one-month-ahead stock market returns. Buying the market index of the quintile of countries with the highest average recommendation and selling the market index of countries with the lowest average recommendation yields a monthly abnormal return of 0.9% based on the international asset pricing model in Brusa, Ramadorai, and Verdelhan (2015) and a monthly abnormal return of 0.7% based on the international five factor asset pricing model in Fama and French (2015b). Additional tests show these results are robust to changes in research design and also hold in the more recent period after the regulatory changes that affected the brokerage industry around the world in 2002 and 2003.

To provide insight into the channel through which analyst recommendations predict international stock market returns, we examine whether country-level recommendations predict future growth in gross domestic product (GDP) and industrial production (IP), and whether country-level recommendations predict aggregate earnings growth for the countries in our sample. We find a highly significant relation between country level analyst recommendations and next quarter's GDP growth and next quarter's IP growth in a model that

includes country fixed effects. To construct measures of aggregate annual earnings changes for the countries in our sample, we follow Kothari, Lewellen, and Warner (2006). We relate these aggregate earnings measures to country-level recommendations and show that firms in countries for which analysts have a more optimistic view tend to experience higher aggregate earnings growth. Again, these results hold after controlling for country- and year fixed effects. Overall, our results suggest that aggregate analyst recommendations contain information that predicts unexpected changes in cash flows at the country level, and that this is an important reason why country-level recommendations predict international stock market returns.

We contribute to the literature by showing that aggregate analyst recommendations for individual countries contain information about the cross-section of future international stock market returns. We also show that country-level recommendations predict GDP-growth, IP-growth and aggregate earnings growth. We thus contribute to a small emerging literature that focuses on the information content of firm-specific variables that are aggregated at the market level (see for example, Anilowski, Feng, and Skinner (2007) for earnings guidance; Kothari et al. (2006) for aggregate earnings surprises; and Hirshleifer, Hou, and Teoh (2009) for aggregate accruals and aggregate cash flows). In line with these studies, we show that by aggregating firm-level information (in our case at the country level), useful information that is not yet reflected in prices can be obtained.

2. Data, Variable definitions, and Descriptive Statistics

In this section, we first discuss data sources, sample selection, and the descriptive statistics for the sample. Next we present the construction of aggregate analyst recommendation.

2.1 Data sources and sample selection

We obtain analyst recommendations from the I/B/E/S Recommendation Detail files for US stocks and the I/B/E/S Recommendation Detail files for International stocks for the period from

January 1994 to June 2015.[3] We include the 33 countries that have more than 10,000 recommendations in I/B/E/S for stocks listed on their domestic stock exchanges and for which data are available in Compustat. Analysts may have individual recommendation scales, but I/B/E/S standardizes recommendations as 1 (strong buy), 2 (buy), 3 (hold), 4 (sell) and 5 (strong sell).[4] Following previous studies, we reverse the ordering of the recommendation labels so that large (small) numbers represent positive (negative) recommendations. Recommendations can be upgrades, downgrades, reiterations or initial recommendations. Since we focus on the aggregate recommendation content, the sample consists of all types of recommendations.

The final sample of recommendations is constructed using the following criteria[5]:

(1) The recommended stock must have a CUSIP or SEDOL identifier;

(2) The recommendation must be from an analyst with a non-missing analyst code;

(3) The recommendation must range from 1 to 5;

(4) The announcement date should not be later than the activation date;[6]

(5) The country domicile code for the firm is available[7];

Each firm-recommendation is merged with Compustat. We require that the GVKEY, Issue ID, stock prices, number of shares outstanding, incorporation country code and exchange country code are available in Compustat.[8] For each firm, we only retain share issues with the same

[3] For 31 of the 33 countries in our sample, calendar year 1994 is the first full year with recommendations in the IBES database. The coverage for Russia and Poland starts from July, 1997 and June, 1995 respectively.
[4] I/B/E/S Manual- Methodology for Estimates.
[5] Based on Jegadeesh and Kim (2006) and Howe et al. (2009).
[6] The Activation Date is the date that the recommendation was recorded by Thomson Reuters.
[7] For each company we obtain the country domicile code from the I/B/E/S Summary History-Company Identification file and match it with the corresponding country name using the IBES Summary History Manual.
[8] For observations with the same GVKEY, same Issue id, same analyst and same announcement date, we only keep the observation with largest market capitalization in U.S. dollar.

exchange country code and incorporation country code, so that we exclude recommendations for cross-listed issues from our sample.[9]

We obtain monthly exchange rates from Compustat North America, and we obtain monthly value-weighted gross total return indices for each of the individual countries and the world market from the MSCI Index Performance Website.[10] We use country returns based on the MSCI index expressed in US dollars in our main tests. For country *i*, month *t*, this return is indicated as $MSCI\_Ret\_USD_{i,t}$. One particularly attractive feature of MSCI country indices is that there are ETFs denominated in U.S. dollars on these indices.[11] We also present the results of robustness tests based on a value-weighted market return (expressed in US dollars) that is strictly based on the stocks used in the calculation of the corresponding aggregate recommendation for that country-month.

We use the one-month US Treasury bill rate as the risk free rate and obtain global factor returns from Kenneth French's website.[12] Finally, we get the monthly currency risk factors, the carry factor and the dollar factor, from Adrien Verdelhan's website.[13]

2.2 Descriptive statistics

After imposing the criteria discussed previously, we obtain a sample of 1,881,953 analyst recommendations from 33 countries for the period January 1994 to June 2015. Following Howe et al. (2009), we separate these recommendations into "initial recommendations" and "revised

[9] Because of this requirement we are more likely to base our country-level recommendation on recommendations from local analysts. For a sample of 32 countries, Bae, Stulz, and Tan (2008) find that local analysts typically have a significant information advantage over foreign analysts. When we include recommendations for cross-listed stocks our results are marginally weaker but our conclusions do not change.

[10] *https://www.msci.com/end-of-day-data-search*

[11] Take iShares by BlackRock as an example, by June 2016, after the introduction of ETF on MSCI China A, all of the countries in our sample have ETFs on their market's MSCI index. Based on BlackRock website, the average expense ratio for MSCI country index ETF is 0.48% per annum. For further details, see appendix 1.

[12] *http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html*. The global factors are expressed in U.S. dollar values and are based on 23 developed markets in the world.

[13] *http://web.mit.edu/adrienv/www/Data.html*. Specifically, we download data from "The Monthly Currency Excess Returns File", where the "RX" variable is the dollar factor and the "HML" variable is the carry factor according Lustig, Roussanov, and Verdelhan (2011).

recommendations".[14]An initial recommendation is a recommendation by an analyst without a recommendation on the same stock in the past 12 months. A revised recommendation is a recommendation by an analyst on a stock for which (s)he issued at least one recommendation in the previous 12 months.

Using this definition, there are 896,706 first recommendations and 985,247 revised recommendations. Table 1 presents the distribution of all recommendations across the five tiers of the I/B/E/S rating scale. These data are presented in two panels. Panel A provides the distribution of initial recommendations, and Panel B provides the distribution for revised recommendations. Table 1, Panel B also gives information about the direction of revised recommendation changes. Each cell shows the number of recommendations changes from the rating of the row index to the rating of the column index. More than 80 percent of all recommendations are neutral or favourable regardless of whether they are the first or a revised recommendation. Analysts are more likely to make small changes. About 70 percent of the revised recommendations changes are within a range from -1 to 1. For example, strong buys are typically downgraded to buy whereas analysts with strong sells are relatively more likely to upgrade to sell.

[Table 1]

Table 2 shows the descriptive statistics of all recommendations in the sample for each year between 1994 and 2015. The sample coverage column in Table 2 shows that these 33 countries' recommendations cover approximately 95% of all the available recommendations in IBES through time. The number of firms covered doubles during the period from 1994 to 2015, and the number of analysts who issue recommendations almost triples in this period.

[14] Some analysts are masked with code '00000000', which could be because the analyst is undesignated or the broker choose not to reveal its identity. We delete these masked recommendations, which make up about 6% of all observations.

As shown in Table 2, the mean number of analysts for each covered firm is 7.01 and the average number of companies that each analyst covers is 8.31. These statistics are similar to Howe et.al (2009) for the U.S. The last column of Table 2 shows that the average recommendation is somewhere between buy and hold (greater than 3), which is also consistent with the findings of previous studies.

[Table 2]

Table 3 shows the recommendation statistics for each country in our sample. The variables related to recommendation characteristics in columns 2-8 represent annual averages across the whole sample period. The stock market return variables in columns 9-12 are based on monthly averages in U.S. dollar across the sample period. Panel A and Panel B report the descriptive statistics for developed countries and emerging countries respectively, where countries are classified based on the MSCI classification.[15] The average number of recommendations for developed countries is more than twice as large as the average number of recommendations for emerging countries. Similar observations can be made for the number of analysts and the number of firms covered. The average number of firms per analyst in developed countries (5) is lower than in emerging countries (7). At the same time, the average number of analysts per firm in developed countries (9) is higher than it in emerging countries (7). Columns 9-12 show that emerging markets have higher average monthly returns and are more volatile (mean 1.01%, standard deviation 10.26% per month) compared to developed markets (mean 0.84%, standard deviation 6.31% per month).

[Table 3]

Table 4 presents descriptive statistics for the world market return, the currency factors and the risk free rate for the period from January 1994 to June 2015. Panel A shows that the average

[15] https://www.msci.com/market-classification.

value-weighted world market excess return denominated in U.S. dollar is 0.48% per month and the standard deviation is 4.33% per month. Similarly, the average value-weighted global market excess return denominated in local currencies is 0.45% per month and the standard deviation is 4.05% per month. Panel B of Table 4 shows the Pearson correlations. The global market excess return in U.S. dollar is highly correlated with the world market excess return in local currencies (0.97), the Dollar factor (0.52) and the Carry factor (0.40). The correlation between the dollar factor and the carry factor is 0.21, which is consistent with the evidence of Brusa et al. (2015) that the dollar factor and carry factor are not orthogonal.

[Table 4]

2.3 Measures of aggregate analyst recommendation

The country-specific measure of aggregate analyst recommendations is the value-weighted average of all outstanding recommendations in that country. For each firm *j*, we first calculate the consensus recommendation at the end of each calendar month *t*, $Rec_{j,t}$. In our main tests, this consensus recommendation is defined as the mean of all outstanding recommendations for a firm *j*, issued a minimum of two days and a maximum of 3 months prior to the end of calendar month *t*, where for each analyst we only use the most recent recommendation. [16] Next, for each country *i*, we weigh the consensus recommendation for each firm *j* based on the previous month's market capitalization, $Mkt\_Cap_{j,t-1}$, to obtain the aggregate value-weighted average recommendation for country *i* at the end of month *t*.

$$Value\_Rec_{i,t} = \sum_{j=1}^{n} Rec_{j,t} * \frac{Mkt\_Cap_{j,t-1}}{\sum_{j=1}^{n} Mkt\_Cap_{j,t-1}} \quad (1)$$

By calculating the average recommendation across all stocks in each country, idiosyncratic firm-specific information contained in these recommendations is averaged out and what

[16] We use a similar method as Jegadeesh et al. (2004) when constructing the consensus recommendation. An alternative method is to only use the most recent recommendation. Results for this method are discussed in the robustness tests.

remains is the average recommendation across firms incorporated in country *i*. To ensure a reasonable amount of diversification, and to ensure that we only select country-months with a reasonable interest from analysts and international investors, we only include country-months if there are at least 50 firms with outstanding recommendations (see Bae et al.,2008).

3. The informativeness of aggregate analyst recommendation

In this paper we test if the information content of the average recommendation across analysts in a country is accurately incorporated into the stock market index for that country. Our tests involve a simple strategy that buys 'winner' countries (countries with a relatively high average recommendation) and sells 'loser' countries (countries with a relatively low average recommendation). We first present results based on calendar-time portfolio strategies.[17] In our second set of tests, we examine the question whether country-level recommendations predict future stock market returns in a panel setting that allows for time-varying risk exposure for the individual countries and also controls for country-specific momentum, year fixed effects and country fixed effects.

3.1 Calendar time portfolio strategy

To test the investment value of country-level analyst recommendations, we construct portfolios each month based on the relative position of value-weighted average recommendation for each country. Consistent with earlier papers that examine individual stocks within a country (e.g. Barber et al., 2001; Jegadeesh et al., 2004), we split all countries into quintile portfolios based on the relative position of the average country recommendation observed at the end of month *t-1*. For each portfolio, we then calculate the return for month *t* as the equally-weighted average

[17] Note that these strategies are easy to implement in practice as the country returns used in our tests are based on value-weighted gross total return MSCI indices for individual countries (expressed in US dollars), which are exactly replicated by tradable ETFs.

market return across all countries in the portfolio.[18] Our main test is based on a zero-cost portfolio that takes a long position in the quintile of countries with the most favourable recommendations and a short position in the quintile of countries with the least favourable recommendations.

We use four different international asset pricing models to examine the profitability of our trading strategy. First, we use a simple world-CAPM, which incorporates the global market return (in USD) but does not account for currency risk (see, Sharpe, 1964; Lintner, 1965). Second, we use the International CAPM Redux model presented in Brusa et al. (2015), which in addition to the global market return includes a carry factor and a dollar factor to capture the exchange rate risk faced by US-based investors.[19] Third, we use the international five factor asset pricing model presented in Fama and French (2015b).[20] Finally, we present the results for an extended Fama and French (2015b) model that also includes the carry factor and the dollar factor. [21]

More specifically, for each portfolio, we estimate the following four time-series models for PR_t, the monthly portfolio return (in USD) in month *t*:

Model 1 is the world-CAPM. RF_t is the 30 days U.S. T-bill rate in month *t*, and $WMKT_t$ is the excess return on the world market portfolio in month *t*, denominated in USD.

$$PR_t - RF_t = \alpha + \beta_1 * WMKT_t + \varepsilon_t \quad (2)$$

[18] Using market capitalization data from the World Development Indicator, we also form value-weighted portfolios, where we weigh each country's return by its market capitalization at the beginning of each calendar year. Results of this test and several other robustness tests are presented in section 5.
[19] See also Lustig et al. (2011) and Verdelhan (2015).
[20] Brusa et al. (2015) compare the performance of several international asset pricing models and find that International CAPM Redux model outperforms the World CAPM and the Fama-French three factor model. While they do not examine the Fama French five factor model, evidence in Fama and French (2015b) suggests that the five factor model displays the same (limited) ability to explain variation in international stock market returns as the international three factor model.
[21] We also test the extended International CAPM Redux model by adding the four Fama-French international factors, HML, SMB, RMW, and CMA. The monthly abnormal return for the zero-cost trading strategy based on this model is 0.9% (t-statistic is 2.82).

Model 2 is the International CAPM Redux. $LWMKT_t$ is the month *t* excess return on the world market portfolio denominated in local currencies. The dollar factor is defined as the average change in the exchange rate between the U.S. dollar and all other currencies, and the carry factor is defined as the difference in exchange rates between baskets of high and low-interest rate currencies (see, Lustig et al., 2011)

$$PR_{i,t} - RF_t = \alpha + \beta_1 * LWMKT_t + \beta_2 * Dollar_t + \beta_3 * Carry_t + \varepsilon_t \quad (3)$$

Model 3 is the five-factor international asset pricing model proposed in Fama and French (2015b). SMB_t is the return on a value-weighted portfolio that is long small-cap stocks and short large-cap stocks; HML_t is the return on a value-weighted portfolio that is long value stocks and short growth stocks; RMW_t (Robust Minus Weak) is the return on a value-weighted portfolio that is long robust operating profitability stocks and short weak operating profitability stocks; CMA_t (Conservative Minus Aggressive) is the average return on a value-weighted portfolio that is long conservative investment stocks and short aggressive investment stocks (Fama & French, 2015).

$$PR_t - RF_t = \alpha + \beta_1 * WMKT_t + \beta_2 * SMB_t + \beta_3 * HML_t + \beta_4 * RMW_t + \beta_5 * CMA_t + \varepsilon_t \quad (4)$$

The final model, Model 4, is an extension of the Fama French five factor model and also includes the dollar factor and the carry factor to capture exchange rate risk faced by US investors.

$$PR_t - RF_t = \alpha + \beta_1 * WMKT_t + \beta_2 * SMB_t + \beta_3 * HML_t + \beta_4 * RMW_t + \beta_5 * CMA_t + \beta_6 * Dollar_t + \beta_7 * Carry_t + \varepsilon_t \quad (5)$$

Table 5 reports the monthly abnormal returns (alphas) for the various portfolios, for each of the four international asset pricing models. Group 1 represents the group of countries with the least favourable recommendations and group 5 represents the group of countries with the most

favourable recommendations. The self-financing hedge portfolio is long group 5 countries and short group 1 countries.

[Table 5]

For each pricing model, we find that countries with more favourable recommendations tend to have higher abnormal returns than the less favourable group of countries. For example, for the International CAPM Redux the alphas increase almost monotonically from a significant negative alpha of -0.665% per month for group 1 to an insignificant positive alpha of 0.227% per month for group 5. The zero-cost hedge portfolio alpha from the CAPM Redux is 0.893% per month, indicating a substantial outperformance of our simple trading strategy based on country-level recommendations. The results based on the World CAPM, the global Fama-French five factor model, and the extended Fama French five-factor model all provide strong evidence that the gross returns on our proposed trading strategy of buying winner countries and selling loser countries cannot be explained by global factors and currency risk factors. Hence, analyst recommendations aggregated at the country level provide valuable information regarding the future cross-section of international stock market returns. In section 5 we present a battery of robustness tests that show that this conclusion is not sensitive to alternative ways of defining aggregate recommendations or stock market returns. We also show that the results hold in the most recent subperiod, following the regulation changes that affected the brokerage industry in 2002 and 2003.

3.2. Panel Regressions results and time-varying risk exposure

Bursa et al. (2015) show that there are significant differences across international stock markets in both the magnitude of risk exposure and the degree to which these risk exposures vary over time (see also Dumas & Solnik, 1995). To account for this time-variation in risk exposures in our empirical tests, we use the following procedure to calculate the abnormal return of the stock market of each country *i* in month *t*. First, for each country *i* and each month *t*, we use the

previous 60-months and run a time-series regression to estimate the relevant factor loadings for each of the four international asset pricing models discussed before.[22] For each of these four models, we then multiply the relevant factor loadings with the corresponding factor realization in month *t* to obtain, $Expect\_Ret_{i,t}$, the predicted stock market return for country *i* in month *t*. Finally, we subtract this predicted return from the realized return and obtain the unexpected market return. This unexpected market return in month *t* for country *i*, $Unexpect\_Ret_{i,t}$, is then used as dependent variable in the following panel regression,

$$Unexpect\_Ret_{i,t} = \alpha + \beta_1 * Rank\_Value\_Rec_{i,t-1} + \beta_2 * Momentum_{i,t} + C_i + M_t + \varepsilon_{i,t} \quad (6)$$

where $Rank\_Value\_Rec_{i,t-1}$ indicates the relative position of the country-level recommendation each month. To obtain this rank value, we sort all aggregate recommendations into ten groups and allocate a value that ranges from -0.5 for the smallest decile to +0.5 for the largest decile.[23] $Momentum_{i,t}$ measures the abnormal return for country country *i* over the previous 6 months (*t-1*, *t-6*). The variables C_i indicates country fixed effects and M_t indicates month fixed effects.

Table 6 presents the results for model (6) based on each of the four international asset pricing models with and without the fixed effects. The t-statistics reported in Table 6 are based on standard errors clustered by country. For all four asset pricing models the results show aggregate analyst recommendations at the country level significantly predict stock market returns one month ahead. The coefficient on $Rank\_Value\_Rec_{i,t-1}$ is consistent with the results in Table 5. For example, based on the International CAPM Redux, a portfolio that buys

[22] As the Fama French Five factors are available from July 1990, in order to get enough data for estimation, our sample period starts from July 1995 to June 2015 for this part.

[23] We use ranks instead of the actual average recommendations to mitigate the impact of possible structural changes in the level of average recommendations through time. For example, there is evidence that after the regulation changes around 2002, analysts, on average, issue less optimistic recommendations than before (see Barber et al., 2006; Kadan, Madureira, Wang, and Zach, 2009). Our results do not materially change when we base our measure on relative position of the country-level recommendation across the whole sample period, or when we use the unadjusted value of the country-level recommendations.

the decile 10 country indices and sells decile 1 country indices yields an abnormal return 0.773 percent per month. When we include country fixed effects and month fixed effects, this coefficient increases from 0.773 to 0.797, which indicates that our findings are not the result of the exceptional or persistent outperformance of only some of the countries in our sample.[24]

[Table 6]

Overall, we conclude that country-level recommendations predict one-month-ahead international stock market returns.

4. Do country level recommendations predict aggregate cash flow news?

Campbell (1991) argues that unexpected stock returns are explained either by changes in expectations about future cash flows or changes in expectations about future discount rates. In this section, we examine one of these channels and test whether the country-level recommendations predict changes in aggregate cash flows for the countries in our sample.

We use three different proxies as indicator for the growth in countries' aggregate cash flows: growth in gross domestic product (GDP), growth in industrial production (IP) and growth in aggregate earnings. We obtain the quarterly GDP and IP data from the OECD database.[25] We obtain earnings data and the other inputs to construct measures of aggregate earnings changes

[24] The finding that a stock market tends to perform better if the previous month's average recommendation is relatively high compared to its own average across all periods is confirmed in Fama McBeth type regressions of the impact of lagged recommendations on stock market returns. In these regressions, for each of the countries in our sample, we first regress country excess returns on the previous month's average recommendation decile. The excess returns here is also based on the International CAPM Redux. Next, we average the relevant coefficients across all countries and find a significant positive coefficient that indicates that, on average across these countries, a decile 1 month has a 0.89 percent lower unexpected return than a decile 10 month (t-statistic is 3.13).Or if do the Fama MacBeth on average recommendation itself, the coefficient is 0.94, with a t-statistic is 2.33. If we include country fixed effect, the coefficient on average recommendation itself is 0.996, with a t-statistic is 3.06 whereas the coefficient on the average recommendation rank is 0.995 with a t-statistic is 3.49.

[25] https://data.oecd.org/ Quarterly GDP data is available for 27 countries and IP data is available for 24 countries. The database does not include GDP data for Hong Kong, Malaysia, Philippines, Singapore, Thailand and Taiwan. For IP data, the database does not include China, Hong Kong, Indonesia, Malaysia, Philippines, Singapore, Thailand, Taiwan, and South Africa.

from the Compustat annual files. We use annual earnings data because quarterly earnings data are only infrequently available for the firms in our sample from 33 countries.

GDP changes and IP changes are defined as the percentage change relative to the same quarter in the previous year (seasonally-differenced).[26] Cash flow news proxied by aggregate earnings changes is based on three measures suggested in Kothari et al. (2006). For each firm, we first calculate the change in annual earnings (dE) as income before extraordinary items in year *y* ($IB_{\ y}$) minus income before extraordinary items in year *y-1* (IB_{y-1}) . To ensure that firms within each country have the same fiscal year end, we determine the most common fiscal year end month for each country and retain only firms reporting earnings in that month.[27] To be included in the sample, we also require that earnings change data is available for at least 50 firms for each country-year. We trim the sample at the top and bottom 0.5% based on these three measures (See Kothari et al., 2006; Howe et al., 2009).

The first measure scales the earnings change in country *c* in year *y* aggregated across all firms *i*, i.e. the sum of $dE_{c,i,y}$by the market capitalization at the end of the previous fiscal year aggregated across these firms, i.e. the sum of $MktCap_{c,i,y-1}$. Thus the first measure is:

$$E1_{c,y} = \frac{\sum_{i=1}^{N} dE_{c,i,y}}{\sum_{i=1}^{N} MktCap_{c,i,y-1}} \tag{7}$$

The second aggregate earnings change measure is defined in a similar way, but now the scalar is last year's book equity aggregated across all firms, i.e. the sum of $BE_{c,i,y-1}$:

$$E2_{c,y} = \frac{\sum_{i=1}^{N} dE_{c,i,y}}{\sum_{i=1}^{N} BE_{c,i,y-1}} \tag{8}$$

[26] We can get similar results if we use the percentage change to the previous period.
[27] The typical fiscal-year end month is stable through time for each country and covers most of the firms in that country.

The third measure of aggregate earnings changes, is based on last year's earnings aggregated across all firms, i.e. the sum of $IB_{c,i,y-1}$:

$$dE3_{c,y} = \frac{\sum_{i=1}^{N} dE_{c,i,y}}{\sum_{i=1}^{N} IB_{c,i,y-1}} \quad (9)$$

4.1 Changes in GDP and IP

To examine whether aggregate analyst recommendations can predict cash flow news proxied by future GDP changes and IP changes, we estimate the following panel regressions:

$$\Delta GDP_{c,q} = \alpha + \alpha_1 Rec_{c,q-1} + \alpha_2 \Delta GDP_{c,q-1} + C_i + \varepsilon_{c,q} \quad (10)$$

$$\Delta IP_{c,q} = \alpha + \alpha_1 Rec_{c,q-1} + \alpha_2 \Delta IP_{c,q-1} + C_i + \varepsilon_{c,q} \quad (11)$$

Where $\Delta GDP_{c,q}$ ($IP_{c,q}$) is the percentage change in GDP (IP) for country *c* (from quarter *q-4* to quarter *q*). $Rec_{c,q-1}$ is the aggregate analyst recommendation for each country *c* at the end of the previous quarter *q-1*. Since growth in GDP (IP) is highly auto-correlated, we also include lagged GDP/IP growth in the model. Finally to allow for systematic differences in growth rates across countries, we also include country fixed effects.

The first two columns in Table 7 report the results for panel regressions 10 and 11. The evidence in Table 7 clearly shows that country level recommendations contain information about next quarter's GDP/IP growth with positive and significant coefficient for both models.

In columns 3 and 4 we present the results from the Anderson Hsiao estimator. We also include these results to deal with the well-known problem that using fixed effects in a model that includes lagged values of the dependent variable results in biased estimates. The use of the Anderson Hsiao estimator in case of equation 10 involves differencing equation 10 to remove the country fixed effects and replacing ($GDP_{c,q-1} - GDP_{c,q-2}$) by $GDP_{c,q-2}$ as instrument. Similarly, the Anderson Hsiao estimator for equation 11 involves differencing equation 11 to remove the country fixed effects and replacing ($IP_{c,q-1} - IP_{c,q-2}$) by $IP_{c,q-2}$ as instrument.

The coefficient estimates based on the Anderson Hsiao estimator are smaller but again show that aggregate analyst recommendations predict next-quarter GDP/IP growth.

4.2 Changes in aggregate earnings

To examine whether aggregate analyst recommendation can predict cash flow news represented by aggregate earnings changes, we estimate the following panel regression:[28]

$$\Delta E_{c,y} = \alpha + \alpha_1 Rec_{c,y-1} + C_i + Y_y + \varepsilon_{c,q} \quad (12)$$

where $\Delta E_{c,y}$ is the annual aggregate earnings change for country *c* in year *y*, based on one of the three measures discussed before. $Rec_{c,y-1}$ is the aggregate analyst recommendation for country c at the end of the previous fiscal-year.

Table 8 present the original results and the ranked results. The first set of results are based on the original model after we trim our sample at top and bottom 0.5% to exclude extreme observations at firm level. The second set of results uses rank deciles to replace the aggregate earnings changes. The rank deciles range from -0.5 to 0.5 each year, where the decile of countries with the lowest aggregate earnings change is assigned a value of -0.5 and the decile of countries with the highest aggregate earnings change is assigned a value of 0.5. For each of the three measures we find that if aggregate earnings changes are replaced by their rank values, that country level analyst recommendations provide information with regard to next year's aggregate earnings change.

5. Robustness tests

This section presents a battery of robustness tests where we focus on the hedge portfolio results in Table 5. We show that the results in Table 5 are robust to changes in the definition of winner and loser groups, the definition of country level recommendations, the measurement of

[28] Since there is no evidence of significant autocorrelation in any of the three aggregate earnings measures, we do not include $\Delta E_{c,y-1}$. When we do include lagged earnings growth, the coefficient is insignificant for measure one and three, and α_1 is very similar compared to the models without lagged earnings growth.

international stock market returns and sample period. The results of these tests are presented in Table 9 and focus on the result for the hedge portfolio. The first row in Table 9, presents the base case results which is the same as the results in Table 5 for each of the four International Asset Pricing models.

Alternative definitions of winner group and loser group

The hedge portfolio in Table 5 is long the MSCI market index (in USD) of countries in the quintile with the highest average recommendation and short the MSCI market index of the quintile of countries with the lowest average recommendation. In line with the idea that more extreme values for country recommendations result in larger abnormal returns, we find that when we split the sample in deciles and go long the countries in the top decile and short the countries in the bottom decile, the trading strategy yields higher abnormal returns. Focusing on the International CAPM Redux, we see that the hedge portfolio has an average abnormal return of 0.922% (t-statistic is 2.0). In contrast, we split the sample in two halves and go long the countries above the median in terms of their country recommendation and short the countries below the median, the average abnormal return decrease to 0.445% per month (t-statistic is 2.59).

Regulation changes in financial analyst industries

The brokerage industry was confronted with significant regulatory changes in 2002 in the US and in 2003 in Europe. We expect that after the regulatory changes, recommendations are more comparable across countries potentially enhancing the returns of the trading strategy. On the other hand, the regulatory changes also resulted in a reduced information advantage of analysts relative to other market participants which might have negatively affected the ability of analysts to unearth new information (see, for example, Espahbodi, Espahbodi, and Espahbodi, 2015).

In the third panel in Table 9, we present the results of the base case trading strategy for the period 1994-2001, i.e. before the regulation changes. The fourth panel in Table 9 shows the results for the period 2004-2015, which is after the regulation changes. Focusing on the CAPM

Redux, we see a very high abnormal return of 1.724 percent per month in the pre-regulation period. In the post-regulation the abnormal return drops to 0.477 percent per month, but is still economically and statistically significant.[29]

Informativeness of aggregate analyst recommendation changes

Many studies on the information content of analyst recommendations focus on recommendation changes rather that recommendation levels. Panel C in Table 9 presents the results if we change our trading strategy and buy the MSCI market index (in USD) of countries in the quintile with the highest change in country level recommendation and sells the MSCI market index of the quintile of countries with the largest negative change in country level recommendation, where the country level recommendation change is measured from the end of the prior calendar month to the end of the current calendar month.[30] The results for this strategy indicate that analyst recommendation changes also provide valuable information to investors but the abnormal return are not as high as the strategy based on recommendation levels. For example, for the International CAPM Redux, the average monthly abnormal return is 0.646 percent (t-statistic is 2.17). This lower abnormal returns for a strategy based on recommendation changes is contrary to the studies of analyst recommendations at the firm level that tend to find that analyst recommendation revisions provide more useful advice to investors.[31]

Value-weighted portfolio performance

The trading strategies so far are based on portfolios where each country has an equal weight. In panel D of Table 9, we present the result of an alternative strategy where the weight of each country in the long and short portfolio is based on the total market capitalisation of that country

[29] The trading strategy performed poorly in the 24 month period during 2002 and 2003, with an insignificant and slightly negative abnormal return of 0.05 percent per month (t-statistic is -0.05).
[30] If we first calculate the consensus recommendation revision for each stock each month and then calculate the value-weighted average across all stocks for each country we obtain similar results.
[31] See Womack (1996), Jegadeesh et al. (2004).

at the start of the calendar year, based on data from the World Development Indicator.[32] The mean abnormal return based on the International CAPM Redux is 0.931% per month (t-statistic is 2.81), which is economically and statistically significant. These results again confirm our previous findings that analyst recommendation is useful for international asset allocation.

Alternative definition of the stock market index

In this test we replace the MCSI index returns used in our main tests by a value-weighted market return for each country that only includes the stocks with recommendations, resulting a closer match between the return measures and the country-level recommendations. To calculate the monthly value-weighted stock market return of all the companies with recommendations in country *i* in month *t* we weigh the return of each stock j, $Month\_Return_{j,t}$, by its market capitalisation in month *t-1*, $Mkt\_Cap_{j,t-1}$, using the following formula:

$$Value\_Ret_{i,t} = \sum_{j=1}^{n} Month\_Return_{j,t} * \frac{Mkt\_Cap_{j,t-1}}{\sum_{j=1}^{n} Mkt\_Cap_{j,t-1}} \quad (13)$$

Table 9, Panel E shows that, with the closer match between a country's market return and aggregate analyst recommendation, the abnormal return of the trading strategy is even larger and more significant. For example, based on the International CAPM Redux the average abnormal return equals 0.968% (t-statistic is 3.35) per month.

Alternative constructions of aggregate analyst recommendation

The base case results are based on the average consensus forecast using outstanding recommendations that were announced within the last quarter. Table 9, Panel F presents the results when we only consider outstanding recommendations within the last month, last half year and last year. For all four asset pricing models, we find that the results are stronger if

[32] Market capitalization data is based on listed domestic companies. Investment funds, unit trusts, and companies whose only business is to hold shares of other listed companies are excluded. Data are end of year values, converted to U.S. dollars using corresponding year-end foreign exchange rates. Market capitalization data is available from 1993 to 2012, and is available for all countries in our sample apart from Taiwan.

country-level recommendations are based on more recent forecasts. For the International CAPM Redux, the abnormal return is 1.234% (t-statistic is 3.82) when the consensus recommendation is based on last month's recommendations, whereas the average abnormal return is 0.251% (t-statistic is 0.87) if the consensus recommendation is based on all recommendations in the last year.[33]

The last section of Table 9, Panel F presents the results if the country-level recommendation is not based on the consensus recommendation across analysts for each stock, but uses the most recent recommendation across analysts for each stock instead. That is, for each stock at the end of each month, we only use the latest recommendation in past 3-months to calculate the country-level recommendation. The average abnormal returns based on this measure are smaller (0.632% per month), albeit still significant. The results suggest that the most recent recommendation is less informative with regard to aggregate stock market returns than aggregate recommendation, which is a measure that reflects a more general view of analysts.

The impact of prediction period

In the last 2 rows of Table 9 show that country level recommendations have predictive ability with regard to international stock market returns two months and three months ahead. The return of buying the most favourable group of countries and selling the least favourable group of countries based on the country-level recommendation at the end of month *t-2* yields a significant abnormal return of 0.6 percent (t-statistic is 1.99). The strategy still yields a significant abnormal return of 0.683 percent (t-statistic 2.27) three month after.[34]

[33] Note that the consensus forecasts only uses the most recent recommendation for each analyst.
[34] Four months after calculation of the value weighted country level recommendation, the strategy is no longer profitable.

5. Conclusion

This study shows that analyst information aggregated at the country level can predict one-month–ahead stock market returns across countries. The portfolio performance of a self-financing hedge portfolio that buys the most favourable recommended group of countries and sells the least desirable recommended group of countries yields a return of around 0.9 percent per month. Results are robust to different international asset pricing models, portfolio construction rules and measurement windows. We also show that aggregate analyst recommendations contain information that predicts unexpected changes in cash flows at the country level, and that this is an important reason why country-level recommendations predict international stock market returns. The results of this study should be of interest to practitioners as the MSCI country returns used in this study are closely approximated by tradable country ETFs.

Table 1 Descriptive Statistics for Analyst Recommendations from I/B/E/S

This table presents the distribution of all recommendations across five tiers of I/B/E/S rating scale. The sample consists of all international markets with at least 10,000 individual recommendations from January 1994 to June 2015. To comply with previous studies, we reverse the ordering of analyst recommendation, where 1 represents strong sell, and 5 represents strong buy. Specifically, these data are presented in two panels. Panel A provides the distribution of initial recommendation, and Panel B provides the distribution of revised recommendation. It also provides information about the direction of revised recommendation changes. Each cell in Panel B shows the number of recommendations changes from the rating of row index to the score of column index.

Panel A: Distribution of Initial Recommendation

Recommendation level	1	2	3	4	5	total
	38,948	63,796	312,259	267,350	214,353	896,706
% of initial recommendation	4.34	7.11	34.82	29.81	23.90	-

Panel B: Transition Matrix of Analyst Recommendation

	To Recommendation					
From recommendation	1	2	3	4	5	total
1	7,585	6,098	28,371	3,765	9,538	55,357
2	6,876	18,589	47,161	18,623	5,146	96,395
3	28,851	50,363	90,109	116,958	78,194	364,475
4	3,912	19,707	129,419	69,520	50,911	273,469
5	9,734	5,735	84,200	51,232	44,650	195,551
Subtotal	56,958	100,492	379,260	260,098	188,439	985,247
% of subtotal	5.78	10.20	38.49	26.40	19.13	-
Total	95,906	164,288	691,519	527,448	402,792	1,881,953
% of total	5.10	8.73	36.74	28.03	21.40	100.00

Table 2 Descriptive Statistics of all recommendations by year

The number of recommendations includes all the recommendations from 33 sample countries, by year. The sample coverage column shows the percentage of sample coverage relative to the IBES universe. The number of covered firms is the number of firms with at least one valid recommendation in our sample, by year. The number of analysts is the number of analysts that can be identified by the analyst masked code. The mean and median number of analysts issuing recommendations for each covered firm is shown by year. This is followed by the average number of firms each analyst covered. The number of average recommendation simply takes the arithmetic mean of all the available recommendation across all countries in our sample.

				Analyst per Firm		Firm per Analyst		
Year	Sample Coverage%	No. of Covered Firms	No. of Analysts	Mean	Median	Mean	Median	Average Recommendation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1994	0.98	6,030	3,620	6.30	3	10.49	4	3.45
1995	0.97	6,156	4,666	5.99	3	7.90	4	3.33
1996	0.96	8,033	6,588	6.46	3	7.87	4	3.42
1997	0.96	10,288	8,147	6.22	3	7.86	5	3.51
1998	0.96	12,249	9,276	6.41	3	8.47	6	3.56
1999	0.97	12,065	10,007	6.91	4	8.33	5	3.69
2000	0.97	11,848	10,388	6.35	3	7.24	5	3.73
2001	0.97	11,203	10,719	7.29	4	7.62	5	3.56
2002	0.98	11,106	10,850	9.89	5	10.12	7	3.48
2003	0.98	11,127	10,408	8.92	5	9.53	7	3.37
2004	0.98	12,442	10,272	7.47	4	9.05	7	3.46
2005	0.97	13,497	10,559	6.96	4	8.90	6	3.45
2006	0.96	14,242	11,367	6.89	4	8.63	6	3.49
2007	0.95	15,169	12,187	7.03	4	8.74	6	3.55
2008	0.94	14,106	12,129	7.90	4	9.19	6	3.41
2009	0.94	13,290	12,074	8.56	4	9.42	7	3.45
2010	0.93	13,934	12,830	7.35	4	7.98	6	3.61
2011	0.93	14,456	13,714	7.49	4	7.90	5	3.62
2012	0.93	14,340	13,239	7.30	4	7.90	5	3.53
2013	0.92	14,189	12,275	6.62	4	7.65	5	3.53
2014	0.92	15,027	12,242	5.94	3	7.29	5	3.58
2015	0.92	12,052	10,256	3.97	2	4.66	3	3.50
Average	0.95	12,130	10,355	7.01	3.68	8.31	5.41	3.51

Table 3 Descriptive Statistics by country for all recommendation

Table 3 shows the recommendation statistics for each country in our sample throughout the whole sample period. We only report the results of the 33 countries with more than 10,000 recommendations. These 33 countries issue more than 90% worldwide recommendations. Analysts are identified using the analyst masked code from I/B/E/S. The recommendation statistics for each country are the annual average across the whole sample period while the stock market return is the monthly average across the entire sample period. The sample period is from January 1994 to June 2015. Panel A reports statistic for developed countries and Panel B reports statistic for emerging countries, which is based on MSCI country classification.

Panel A: Developed country

			Firm per Analyst			Analyst per Firm		Stock Market Return			
Country	No. of Recommendations/year	No. of Analysts/year	Mean	Median	No. of Covered Firms/year	Mean	Median	Mean	Median	Std.	Num. of Obs
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Australia	3,577	408	9	9	469	8	8	0.88	1.16	6.03	257
Belgium	629	189	4	3	84	8	7	0.80	1.41	6.06	257
Canada	4,638	580	8	8	698	7	6	0.92	1.48	5.86	257
Denmark	618	179	4	4	80	8	8	1.17	1.75	5.74	257
Finland	992	218	4	4	94	10	10	1.25	1.10	9.30	256
France	3,724	823	5	4	382	10	10	0.74	1.11	5.91	257
Germany	3,547	759	5	5	350	10	10	0.85	1.32	6.62	257
Hong Kong	1,510	360	4	4	94	17	14	0.78	0.89	7.23	257
Italy	1,483	346	4	4	175	8	8	0.67	0.56	6.98	256
Japan	5,827	558	10	11	1,210	5	5	0.21	0.13	5.16	257
Netherlands	1,577	398	4	4	126	13	12	0.83	1.34	5.84	257
New Zealand	397	58	7	7	69	6	6	0.67	1.27	6.27	257
Norway	903	222	4	4	124	7	7	0.95	1.30	7.63	257
Singapore	1,481	250	6	6	177	9	8	0.68	0.80	7.26	257
Spain	1,437	337	4	4	111	13	14	0.97	1.29	6.97	257
Sweden	1,465	371	4	4	171	8	8	1.16	0.88	7.39	257
Switzerland	1,234	386	3	3	151	8	8	0.88	1.29	4.77	257
United Kingdom	6,898	1,112	7	6	989	7	7	0.63	0.70	4.59	257
United States	22,483	2,749	8	8	3,461	7	7	0.83	1.32	4.32	257
Average	3,391	542	5	5	474	9	9	0.84	1.11	6.31	-

Table 3 Cont'

Panel B: Emerging country

Country	No. of Recommendations/year	No. of Analysts/year	Firm per Analyst		No. of Covered Firm/year	Analyst per Firm		Stock Market Return			
			Mean	Median		Mean	Median	Mean	Median	Std.	Num. of Obs
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Brazil	1,313	195	7	7	147	9	9	1.26	1.85	10.84	256
China	2,690	412	5	6	651	4	4	1.18	0.99	8.56	174
India	3,091	425	7	7	395	7	6	0.96	1.13	8.62	257
Indonesia	857	135	7	6	108	8	8	1.04	1.18	12.60	257
Korea	3,166	528	6	6	396	7	8	1.02	0.21	10.98	257
Malaysia	1,956	248	8	8	251	8	7	0.57	0.87	8.19	257
Mexico	506	118	4	4	67	8	8	0.92	1.77	8.28	257
Philippines	453	75	6	6	64	7	6	0.54	0.60	8.53	257
Poland	502	92	6	6	84	6	5	0.73	0.92	10.82	256
Russia	556	106	5	5	103	5	5	1.98	2.06	14.78	239
South Africa	1,327	149	9	7	183	7	7	1.04	1.18	7.68	257
Taiwan	2,272	292	8	8	348	7	7	0.58	0.76	8.02	257
Thailand	1,711	188	9	9	217	8	9	0.69	0.74	10.87	257
Turkey	820	110	8	7	123	7	6	1.64	1.68	14.87	257
Average	1,516	219	7	7	224	7	7	1.01	1.14	10.26	-

Table 4 Descriptive Statistics for Aggregate Analyst Recommendation, Market Returns and Other Variables

This table presents descriptive statistics for the excess world market returns in U.S. dollar, and excess world market return denominated in local currencies, currency risk factors and one-month U.S. Treasury Bill Rate for the period from January 1994 to June 2015. All variables are monthly. WMKT is the excess world market return denominated in U.S. dollar, which is calculated by subtracting the one-month U.S. Treasury Bill rate from the world market return obtained from MSCI world market index . LWMKT is the excess return on the world market portfolio denominated in local currencies. Dollar is the average change in the exchange in the exchange rate between the U.S. dollar and all other currencies. Carry is defined as the difference in exchange rates between baskets of high and low-interest rate currencies. RF is the 30-day U.S. Treasury Bill Rate. In Panel B, we report Pearson correlations. The superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Univariate Statistics

	Mean	Median	Standard Deviation	Maximum	Minimum
MSCI world market-excess return (WMKT)-%	0.48	0.87	4.33	11.31	-19.01
MSCI World market-excess return (LWMKT)-%	0.45	1.09	4.05	10.42	-16.42
Dollar-%	0.11	0.17	1.80	4.69	-6.86
Carry-%	0.67	0.84	2.44	8.84	-7.43
30-day U.S. Treasury Bill Rate (RF)	0.22	0.20	0.18	0.56	0

Panel B: Correlation Matrix

	WMKT	LWMKT	Dollar	Carry	RF
WMKT	1				
LWMKT	0.969***	1			
Dollar	0.521***	0.319***	1		
Carry	0.401***	0.453***	0.207***	1	
RF	-0.044	-0.034	-0.072	0.081	1

Table 5 Monthly returns for long-short recommendation portfolios

This table presents monthly percentage returns earned by portfolios formed according to the rank of aggregate analyst recommendation. We require at least 50 firms that have an outstanding recommendation for each month-country when calculating aggregate recommendations. Raw returns are the mean percentage monthly returns earned by each portfolio. The World CAPM intercept is the estimated intercept from a time-series regression of the portfolio return (RP-RF) on the global market excess return denominated in the U.S. dollar (WMKT). The intercept for the International CAPM Redux is the estimated intercept from a time-series regression of the portfolio return on the world market excess return denominated in local currencies (LWMKT) and two currency risk factors, Dollar and Carry. The Global FF5 intercept is the estimated intercept from a time-series regression of the portfolio return on the WMKT, a zero-investment size portfolio (SMB), a zero-cost book-to-market portfolio (HML), and two additional factors, RMW (Robust Minus Weak), CMA (Conservative Minus Aggressive) variables. The Global FF5 Currency risk intercept is estimated by adding two additional currency risk factors, Dollar and Carry.The sample period ranges from January 1994 to June 2015. It also presents the alphas for each group. The results hold for quartile and decile group. The table provides the equal-weighted portfolio outcomes, which take the mean of return of all countries in each group to get the group return. The t-statistics for returns are clustered by country and month. The superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Portfolio (1)	Raw Return (2)	World CAPM (3)	CAPM Redux (4)	Global FF5 (5)	Global FF5 Currency (6)
1 (least favorable)	0.546	-0.297	-0.665	-0.448	-0.685
	1.21	-1.08	-2.64***	-1.53	-2.50**
2	0.780	-0.017	-0.113	-0.237	-0.281
	2.02**	-0.09	-0.58	-1.14	-1.35
3	0.895	0.120	0.055	-0.020	-0.034
	2.37**	0.67	0.32	-0.11	-0.19
4	0.986	0.290	0.157	0.232	0.180
	2.83***	1.56	0.89	1.23	0.99
5 (most favorable)	1.071	0.278	0.227	0.232	0.187
	2.77***	1.39	1.13	1.14	0.90
P5-P1	0.525	0.575	0.893	0.681	0.872
	1.77*	1.94*	3.03***	2.11**	2.75***

Table 6 Regression results of aggregate recommendation level

This table presents the regression results. The dependent variable is the unexpected return of different international asset pricing models. Rank_Value_Rec$_{i,t-1}$refers to the relative position of the country-level recommendation each month, where all aggregate recommendations are sorted into ten groups that are ranged from -0.5 for the smallest decile to +0.5 for the largest decile. Sample period starts from July 1995 to June 2015 to allow a past 60-month window availiable for factor loadings estimation. The 6-month Country Momentum is the lagged six-month cumulative market excess return. The superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	CAPM Redux (1)	CAPM Redux (2)	CAPM Redux (3)	World CAPM (4)	World CAPM (5)	Global FF 5 (6)	Global FF 5 (7)	Global FF5 CUR (8)	Global FF5 CUR (9)
Rank_Value_Rec$_{i,t-1}$	0.773	0.797	0.781	0.752	0.728	0.928	0.918	0.908	0.909
	2.42**	2.44**	2.50**	2.85***	2.95***	2.63***	2.73***	2.29**	2.37**
6-month Country Momentum			0.006		0.009		0.004		-0.0002
			0.51		0.74		0.29		-0.02
Country FE	N	Y	Y	Y	Y	Y	Y	Y	Y
Month FE	N	Y	Y	Y	Y	Y	Y	Y	Y
Cluster by country	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 7 Regressions of One-Quarter-Ahead GDP/IP on Aggregate Analyst Recommendations

This table shows the regression results of one-quarter-ahead GDP/IP on aggregate analyst recommendations. The sample period is from 1995Q1 to 2015Q4. All variables are quarterly. We include 27 countries in GDP analysis and 24 countries in IP analysis due to data availability. The lagged one-quarter aggregate analyst recommendation is the aggregate analyst recommendation at the previous quarter-end month. We also require at least 50 firms that have an outstanding recommendation for that quarter-end-month in each country. GDP and IP data are from OECD and analyst recommendations are from IBES, respectively. For the percentage change of GDP/IP, we report results for the quarter to four quarter before change. In the OLS Estimator panel, Model 1 is the regression estimated with country fixed effect. Model 2 is the model estimated with country fixed effect plus the lagged GDP/IP growth. In the Anderson Hsiao Estimator panel, Model 1 is the regression estimated with lagged two quarters GDP/IP. All the t-statistics are clustered by country. The superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Panel A: OLS Estimator		Panel B: Anderson Hsiao Estimator	
Lagged one-quarter aggregate analyst recommendation	GDP(q+1)	IP(q+1)	GDP(q+1)	IP(q+1)
Model 1	2.499	0.049	0.638	0.683
	4.54***	5.17***	4.20***	2.59***
Model 2	0.894	0.016		
	3.43***	4.79***		

Table 8 Regressions of One-Year-Ahead Aggregate Earnings Changes on Aggregate Analyst Recommendations

This table shows the results for regressions of one-quarter-ahead aggregate earnings changes on aggregate analyst recommendations. We report the coefficient on aggregate analyst recommendations for three different measures of earnings changes. The sample period is from 1995 to 2015. All variables are annual. For each firm-annual observation, we calculate the annual changes of actual earnings (dE) as the income before extraordinary items (IB) minus its value from last year. To ensure that firms within each country have same fiscal year end, we simply choose the most typical fiscal year end month for each country and only keep companies that report earnings in that month. Similar to the previous studies, we keep only firms that have March, June, September, and December fiscal year end to ensure fiscal quarters are aligned. We trim our sample at top and bottom 0.5% based on these earnings changes measures. We also require at least 50 firms with outstanding recommendations are available within this country in a particular year when calculating the aggregate earnings changes. M1 is the first measure of earnings changes, which is computed as total individual firm's earnings changes scaled by the total market capitalization of these companies in country c at the previous year. M2 is computed as the total earnings changes within country c, scaled by the cross-sectional total book value of equity one year ago. M3 is calculated as the cross-sectional sum of earnings changes divided by the total earnings one year ago. The superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Earnings change	Original Results	Decile Ranks
M1	2.328	1.539
	1.45	2.72***
M2	0.038	1.642
	2.44**	2.98***
M3	0.063	1.638
	1.88*	3.34***

Table 9 Robustness test

This table presents the results of additional tests. Panel A presents the intercept from different asset pricing model using alternative definitions of winner and loser group,including deciles and halves, during the whole sample period. Panel B shows the results before and after the regulation changes in U.S. and Europe around 2002 and 2003. Panel C reports the portfolio performance based on the relative position of aggregate analyst recommendation changes. Panel D provides the value-weighted portfolio outcomes, which weighted country return with its market capitalization from last year in each group to get the group return. Panel E shows the results when using only stocks with recommendations to calculate the stock market return. Panel F presents the results of the additional tests for alternative recommendation outstanding period (current month, 6-month, 12-month and most recent in past three months). Panel G shows the results for different prediction periods. For example, 2-month prediction period intercepts are obtained from buying and selling the market index according to the relative position of the aggregate analyst recommendation two months ago. The superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Portfolio (1)	Raw Return (2)	World CAPM (3)	CAPM Redux (4)	Global FF 5 (5)	Global FF5 Currency (6)
Baseline Results: P5-P1	0.525	0.575	0.893	0.681	0.872
	1.77*	1.94*	3.03***	2.11**	2.75***
Panel A: Alternative definitions of winner group and loser group-Decile					
1 (least favorable)	0.754	-0.081	-0.435	-0.25	-0.435
	1.40	-0.20	-1.09	-0.57	-1.00
10 (most favorable)	1.236	0.46	0.486	0.387	0.403
	2.85***	1.57	1.59	1.26	1.27
P10-P1	0.482	0.54	0.922	0.638	0.839
	1.06	1.19	2.00**	1.28	1.68*
Panel A: Alternative definitions of winner group and loser group-Halves					
1 (least favorable)	0.692	-0.122	-0.309	-0.291	-0.397
	1.80*	-0.71	-1.95*	-1.62	-2.36**
2 (most favorable)	1.008	0.244	0.135	0.164	0.108
	2.90***	1.65*	0.97	1.16	0.79
P2-P1	0.316	0.366	0.445	0.455	0.505
	1.88*	2.19**	2.59***	2.52**	2.74***
Panel B: Before regulation changes (From Jan 1994 to Dec 2001)					
1 (least favorable)	0.121	-0.788	-1.551	-1.017	-1.711
	0.14	-1.19	-2.71***	-1.37	-2.65***
5 (most favorable)	0.755	-0.088	0.172	0.026	0.158
	1.22	-0.26	0.51	0.07	0.43
P5-P1	0.634	0.7	1.724	1.043	1.869
	0.93	1.02	2.91***	1.36	2.83***
Panel B: After regulation changes (From Jan 2004 to Jun 2015)					
1 (least favorable)	0.636	-0.237	-0.229	-0.397	-0.354
	1.17	-1.07	-1.13	-1.74*	-1.68*
5 (most favorable)	1.158	0.339	0.248	0.354	0.303
	2.15**	1.20	0.93	1.27	1.13
P5-P1	0.522	0.577	0.477	0.751	0.657
	1.85*	2.03**	1.68*	2.49**	2.18**

Table 9 Cont.'

Portfolio (1)	Raw Return (2)	World CAPM (3)	CAPM Redux (4)	Global FF 5 (5)	Global FF5 Currency (6)
Panel C: Aggregate analyst recommendation changes					
1 (least favorable)	0.622	-0.216	-0.448	-0.401	-0.525
	1.43	-0.87	-1.88*	-1.53	-2.06**
5 (most favorable)	1.172	0.35	0.199	0.18	0.135
	2.75***	1.40	0.81	0.69	0.53
P5-P1	0.55	0.567	0.646	0.58	0.661
	1.92*	1.97**	2.17**	1.85*	2.05**
Panel D: Value-weighted portfolio performance					
1 (least favorable)	0.222	-0.505	-0.826	-0.602	-0.83
	0.48	-1.95*	-3.30***	-2.18**	-3.11***
5 (most favorable)	0.829	0.169	0.105	0.16	0.027
	2.14**	0.83	0.50	0.73	0.12
P5-P1	0.606	0.674	0.931	0.762	0.857
	1.83*	2.05**	2.81***	2.18**	2.44**
Panel E: Alternative definitions of stock market return					
1 (least favorable)	0.234	-0.592	-0.956	-0.773	-1
	0.53	-2.21**	-3.89***	-2.73***	-3.79***
5 (most favorable)	0.838	0.049	0.012	0.003	-0.026
	2.18**	0.24	0.06	0.01	-0.13
P5-P1	0.604	0.641	0.968	0.776	0.973
	2.07**	2.19**	3.35***	2.45**	3.14***
Panel F: Alternative constructions of aggregate analyst recommendation: last month outstanding					
1 (least favorable)	0.211	-0.548	-0.748	-0.812	-0.945
	0.50	-1.94*	-2.65***	-2.67***	-3.10***
5 (most favorable)	1.31	0.589	0.486	0.467	0.396
	3.59***	2.64***	2.16**	1.97**	1.65*
P5-P1	1.099	1.137	1.234	1.28	1.341
	3.52***	3.63***	3.82***	3.76***	3.85***
Panel F: Alternative constructions of aggregate analyst recommendation: last 6-month outstanding					
1 (least favorable)	0.724	-0.139	-0.398	-0.206	-0.353
	1.59	-0.52	-1.58	-0.73	-1.30
5 (most favorable)	0.973	0.204	0.124	0.204	0.14
	2.61***	1.03	0.63	1.03	0.70
P5-P1	0.249	0.342	0.523	0.41	0.494
	0.90	1.26	1.90*	1.39	1.66*
Panel F: Alternative constructions of aggregate analyst recommendation: last 12-month outstanding					
1 (least favorable)	0.983	0.12	-0.161	0.027	-0.152
	2.16**	0.45	-0.64	0.09	-0.55
5 (most favorable)	1.022	0.231	0.089	0.201	0.105
	2.62**	1.11	0.43	0.95	0.50
P5-P1	0.039	0.112	0.251	0.174	0.257
	0.14	0.40	0.87	0.57	0.83

Table 9 Cont.'

Panel F: Alternative constructions of aggregate analyst recommendation: most recent individual recommendation					
1 (least favorable)	0.697	-0.162	-0.41	-0.323	-0.489
	1.57	-0.64	-1.69*	-1.18	-1.85*
5 (most favorable)	1.056	0.292	0.222	0.132	0.121
	2.80***	1.38	1.06	0.62	0.56
P5-P1	0.36	0.454	0.632	0.456	0.61
	1.27	1.62	2.20**	1.52	2.01**
Panel G: The impact of prediction period-two months					
1 (least favorable)	0.794	-0.065	-0.407	-0.162	-0.364
	1.69*	-0.22	-1.47	-0.52	-1.22
5 (most favorable)	1.072	0.277	0.191	0.3	0.246
	2.81***	1.45	0.99	1.52	1.24
P5-P1	0.278	0.343	0.598	0.463	0.61
	0.93	1.14	1.99**	1.42	1.87*
Panel G: The impact of prediction period-three months					
1 (least favorable)	0.854	-0.034	-0.352	-0.099	-0.3
	1.79*	-0.12	-1.33	-0.33	-1.06
5 (most favorable)	1.199	0.426	0.331	0.476	0.408
	3.15***	2.12**	1.65*	2.36**	2.00**
P5-P1	0.345	0.46	0.683	0.575	0.708
	1.14	1.54	2.27**	1.79*	2.19**

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Appendix A: BlackRock ETFs on MSCI country index

This table provides information about the ETFs on MSCI country index based on the BlackRock website. All the ETFs in the table are from equity asset class. By the end of Jun 2016, the ETFs for all sample countries are available. We include the information of two ETFs for China, as our sample includes MSCI China A index. But similar results can be obtained if we use MSCI China index. And for U.S., the U.S. MSCI is not available, but we can use iShares Dow Jones U.S. ETF (access to 95% of the domestic stock market) or iShares Russell 3000 ETF (access to 3000 domestic stocks) in the trading strategy.

Ticker	Name	Inception Date	Country	Net Expense Ratio
EWA	iShares MSCI Australia ETF	Mar 12, 1996	Australia	0.48
EWK	iShares MSCI Belgium Capped ETF	Mar 12, 1996	Belgium	0.48
EWZ	iShares MSCI Brazil Capped ETF	Jul 10, 2000	Brazil	0.62
EWC	iShares MSCI Canada ETF	Mar 12, 1996	Canada	0.48
CNYA	iShares MSCI China A ETF	Jun 13, 2016	China	0.65
MCHI	iShares MSCI China ETF	Mar 29, 2011	China	0.62
EDEN	iShares MSCI Denmark Capped ETF	Jan 25, 2012	Denmark	0.53
EFNL	iShares MSCI Finland Capped ETF	Jan 25, 2012	Finland	0.53
EWQ	iShares MSCI France ETF	Mar 12, 1996	France	0.48
EWG	iShares MSCI Germany ETF	Mar 12, 1996	Germany	0.48
EWH	iShares MSCI Hong Kong ETF	Mar 12, 1996	Hong Kong	0.48
INDA	iShares MSCI India ETF	Feb 2, 2012	India	0.68
EIDO	iShares MSCI Indonesia ETF	May 5, 2010	Indonesia	0.62
EWI	iShares MSCI Italy Capped ETF	Mar 12, 1996	Italy	0.48
EWJ	iShares MSCI Japan ETF	Mar 12, 1996	Japan	0.48
EWY	iShares MSCI South Korea Capped ETF	May 9, 2000	Korea	0.62
EWM	iShares MSCI Malaysia ETF	Mar 12, 1996	Malaysia	0.48
EWW	iShares MSCI Mexico Capped ETF	Mar 12, 1996	Mexico	0.48
EWN	iShares MSCI Netherlands ETF	Mar 12, 1996	Netherlands	0.48
ENZL	iShares MSCI New Zealand Capped ETF	Sep 1, 2010	New Zealand	0.48
ENOR	iShares MSCI Norway Capped ETF	Jan 23, 2012	Norway	0.53
EPHE	iShares MSCI Philippines ETF	Sep 28, 2010	Philippines	0.62
EPOL	iShares MSCI Poland Capped ETF	May 25, 2010	Poland	0.62
ERUS	iShares MSCI Russia Capped ETF	Nov 9, 2010	Russia	0.62
EWS	iShares MSCI Singapore ETF	Mar 12, 1996	Singapore	0.48
EZA	iShares MSCI South Africa ETF	Feb 3, 2003	South Africa	0.62
EWP	iShares MSCI Spain Capped ETF	Mar 12, 1996	Spain	0.48
EWD	iShares MSCI Sweden ETF	Mar 12, 1996	Sweden	0.48
EWL	iShares MSCI Switzerland Capped ETF	Mar 12, 1996	Switzerland	0.48
EWT	iShares MSCI Taiwan ETF	Jun 20, 2000	Taiwan	0.62
THD	iShares MSCI Thailand Capped ETF	Mar 26, 2008	Thailand	0.62
TUR	iShares MSCI Turkey ETF	Mar 26, 2008	Turkey	0.62
EWU	iShares MSCI United Kingdom ETF	Mar 12, 1996	United Kingdom	0.48
IWV	iShares Russell 3000 ETF	May 22, 2000	United States	0.2
IYY	iShares Dow Jones U.S. ETF	Jun 12, 2000	United States	0.2