Analyst Recommendations and International Stock Market Returns

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Abstract

This paper documents 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 one percent per month. Aggregate analyst recommendations also help to predict changes in gross domestic product after accounting for survey-based forecasts. 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, GDP 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 value-weighted 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 measure that potentially contains unique information about the aggregate company outlook for each of the 33 countries in our sample. 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 recommendations and selling the MSCI market index of countries in the quintile with the lowest average recommendations. Depending on the international asset pricing model and portfolio formation window used, this strategy yields an abnormal return that ranges from 0.6 to 1.0 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 also 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

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

calendar time trading strategies that buy upgraded stocks and sell downgraded stocks are profitable in six of the seven countries.[2]

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 monthly average country-specific recommendations. In our base case, we focus on the value-weighted 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 recommendations and selling the market index of the quintile of countries with the lowest average recommendations yields a monthly abnormal return of 0.935% (t-statistic is 3.12) based on the international asset pricing model in Brusa, Ramadorai, and Verdelhan (2014), and a monthly abnormal return of 0.802% (t-statistic is 2.46) based on the international five factor asset pricing model in Fama and French (2015b). Similar results are obtained in a panel setting that allows for time-variation in risk exposures of international stock markets. Additional tests show these results are robust to changes in research design and also hold in the more recent period

[2] See also Moshirian, Ng, and Wu (2009).

after the regulatory changes affecting the brokerage industry around the world in 2002 and 2003.

We build on the result that international stock market returns are predictable and test the conjecture that one of the reasons our trading strategy is successful is that country level recommendations contain useful information about future macroeconomic conditions. Brown, Call, Clement and Sharp (2015) report that private communication with management is the most important input to analysts' earnings forecasts and stock recommendations. Aggregating stock recommendations across analysts might, therefore, provide a unique insight into the aggregate outlook for the corporate sector of different countries and be useful in predicting future macroeconomic conditions in these countries. To test this conjecture, we examine whether country-level recommendations predict future growth in gross domestic product (GDP) for the countries in our sample. We find a highly significant relation between country-level analyst recommendations and next quarter's GDP growth in a model that includes country fixed effects, quarter fixed effects, and last quarter's GDP growth. Country-level recommendations still have predictive power for GDP growth two-quarters later, but do not after that. Consistent with our claim that country-level recommendations provide an additional and unique insight into the outlook for the corporate sector for the different countries, we find that our results do not change when we include the average score from the World Economic Survey (WES) for each country-quarter pair regarding the state of the economy over the next 6 months.

Our results should be of interest to practitioners. For example, Busse, Goyal and Wahal (2014) find little evidence of superior performance by actively managed global equity funds. Similarly, Gallagher, Harman, Schmidt and Warren (2016) report that country selection does not contribute significantly to excess returns of global equity managers. The simple trading strategy proposed in our study has the potential to contribute to the performance of global equity funds considerably. Our finding that country-level recommendations help to predict

future GDP growth for a broad cross-section of countries should be of interest to several economic actors given the importance of macroeconomic predictions for policy decisions at a national and international level.

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 and the cross-section of future GDP-growth. We thus contribute to an 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 aggregating firm-level information provides useful information that is not yet reflected in expectations and prices.

2. Data, Variable definitions, and Descriptive Statistics

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

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

[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 in July, 1997 and June, 1995 respectively.

data are available in Compustat.[4] 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). 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 information content of aggregate recommendations across all firms in a country, 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];

We merge the recommendation data with Compustat and require that the GVKEY, Issue ID, stock prices, the 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 exchange country code and incorporation country code, so that we exclude recommendations for cross-listed issues from our sample.[9]

[4] On average, these 33 countries represent around 80% observations in the IBES Recommendation database with 110 countries' recommendations available in total.
[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 and same Issue id, we only keep the observations with largest market capitalization in U.S. dollars.
[9] Because of this requirement, the country-level recommendation is more likely to be based on recommendations from local analysts. For a sample of 32 countries, Bae, Stulz, and Tan (2008) find that local analysts typically

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* and 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 so that our starategies can easily be replicated in practice.[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 Country-level of aggregate analyst recommendations

The country-specific measure of aggregate analyst recommendations used in our main test is the value-weighted average of all outstanding recommendations in that country. More specifically, for each firm *j*, we first calculate the consensus recommendation at the end of each calendar month *t*, $Rec_{j,t}$, based on all outstanding recommendations issued a minimum of two days and a maximum of 3 months prior to the end of calendar month *t*.[14] $Rec_{j,t}$, therefore, is

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] After the introduction of an ETF on MSCI China A in June 2016, all of the countries in our sample have ETFs on their market's MSCI index in the form of ishares offered by BlackRock. Based on BlackRock's website, the average expense ratio for MSCI country index ETF's is 0.48% per annum.

[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.

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

[14] 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 based on this method are discussed in the robustness tests.

an average across all analysts with an outstanding recommendation for stock *j*, where for each analyst we only use the most recent recommendation. Specifically, a recommendation is outstanding if it has not been stopped by the broker (Loh and Stulz, 2011).[15] Next, for each country *i*, we weigh the consensus recommendation for each stock *j* based on the previous month's market capitalization, $Mkt\_Cap_{j,t-1}$. This value-weighted average recommendation across all *n* stocks in country *i* is defined as follows:

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

By calculating the average recommendation across all stocks in each country, idiosyncratic firm-specific information contained in these recommendations is averaged out. To ensure a reasonable amount of diversification, we follow Bae et al. (2008) and only include country-months if there are at least 50 firms with outstanding recommendations.

2.3 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 recommendations." An initial recommendation is a recommendation by an analyst without a recommendation for 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, we get 896,706 initial recommendations and 985,247 revised recommendations. Table 1 presents the distribution of all recommendations across the five tiers of the revised I/B/E/S rating scale, where Panel A provides the distribution of initial

[15] This information is available in the IBES Recommendations-Stop Recommendations File.

recommendations, and Panel B provides the distribution for revised recommendations. Table 1, Panel B also gives information about the direction of revised recommendation changes, with each cell showing the number of recommendations changes from the rating of the row index to the score of the column index.

From Table 1, we see that more than 80 percent of all recommendations are neutral or favorable regardless of whether they are initial or revised recommendations. Panel B shows that analysts are more likely to make no changes or small changes in their recommendations. About 23 percent of the recommendations updates are unchanged, and 47 percent of the changes are one step up or one step down (e.g. from buy to strong buy or hold).

[Table 1]

Table 2 shows the descriptive statistics of all recommendations in the sample for each year between 1994 and 2015. The sample coverage in column (2) in Table 2 indicates that the recommendations for the stocks listed in the 33 countries in the sample represent approximately 79% of all available recommendations in IBES through time. From column (3), we see that the number of firms covered more than doubles during the period from 1994 to 2015, and column (4) shows that the number of analysts who issue recommendations almost triples in this period.

As shown in column (5) in the last row of Table 2, the mean number of analysts per firm is 7.01 and column (7) in the last row shows that the average number of companies covered per analyst is 8.31. These statistics are similar to Howe et.al (2009) for the U.S. The last column of Table 2 shows that for each year in the sample period 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 descriptive statistics for the recommendations for domestic stocks for each country in our sample. Table 3, Panel A reports the descriptive statistics for developed countries and Table 3, Panel B reports the descriptive statistics for emerging countries.[16] 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. Generally, analyst coverage on IBES is most extensive for the U.S. Column 3 and 4 report the average and median recommendation scores for each of the countries. The highest average recommendation is for China (4.06) and the lowest average recommendation is for New Zealand (3.26). To illustrate the evolution of the country-level recommendations over time, Figure 1 plots the average recommendation level for G7 countries for each month during the sample period. The average number of firms per analyst in developed countries equals five, which is lower than the average number of firms per analyst in emerging countries, which equals seven. At the same time, the average number of analysts per firm in developed countries at nine is higher than it in emerging countries at seven.

[Table 3]

[Figure 1]

Table 4 Panel A (B) presents descriptive statistics for the monthly stock market returns in US dollars for each of the developed (emerging) countries in our sample. The highest average return across all countries is for Russia at 1.99%, and the lowest average return is for Japan at 0.27%. The results also show that emerging markets have higher average monthly returns and are more volatile (the mean return is 1.02% per month with a standard deviation of 10.32% per

[16] Countries are classified based on the MSCI classification, see https://www.msci.com/market-classification.

month) compared to developed markets (the average return is 0.86% per month with a standard deviation of 6.33% per month).

[Table 4]

3. The informativeness of aggregate analyst recommendations

In this paper, we test if the information content of the average recommendation across analysts in a country is fully incorporated in the stock market index of 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. These strategies are easy to replicate as the country returns used in our tests are based on value-weighted gross total return MSCI indices (expressed in US dollars), which are exactly replicated by tradable ETFs. These ETFs trade on a continuous basis and can be sold short.

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

Each month *t*, we split all countries in our sample 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 market return across all countries in that portfolio.[17] Our main test is based on a zero-cost hedge portfolio that takes a long position in the quintile of countries with the most favorable

[17] 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.

recommendations and a short position in the quintile of countries with the least favorable 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 US dollars) 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. (2014), which in addition to the global market return denominated in local currencies includes a carry factor and a dollar factor to capture the exchange rate risk faced by US-based investors.[18] Third, we use the international five-factor asset pricing model presented in Fama and French (2015b). Finally, we present the results for an extended Fama and French (2015b) model that also includes the carry factor and the dollar factor.[19]

More specifically, we estimate the following four time-series models for $PR_{i,t}$, the return (in US dollar) in month *t* on each quintile portfolio *i*. The first model, given in equation (2), is the world-CAPM:

$$PR_{i,t} - RF_t = \alpha + \beta_1 * WMKT_t + \varepsilon_t \quad (2)$$

where 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 US dollar.

The second model, in equation (3), is the International CAPM Redux:

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

[18] See also Lustig et al. (2011) and Verdelhan (2015).

[19] 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 Fama-French three factor model.

where $LWMKT_t$ 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)

The third model is the five-factor international asset pricing model proposed in Fama and French (2015b):

$$PR_{i,t} - RF_t = \alpha + \beta_1 * WMKT_t + \beta_2 * SMB_t + \beta_3 * HML_t + \beta_4 * RMW_t + \beta_5 * CMA_t + \varepsilon_t \quad (4)$$

where 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.

The final model, equation (5), is an extension of the Fama-French five-factor model and also includes the dollar factor and the carry factor.

$$PR_{i,t} - RF_t = \alpha + \beta_1 * WMKT_t + \beta_2 * SMB_t + \beta_3 * HML_t + \beta_4 * RMW_t + \beta_5 * CMA_t + \beta_6 * Dollar_t + \beta_7 * Carry_t + \varepsilon_t \quad (5)$$

Table 5 reports the monthly abnormal returns (alphas) for the various portfolios, for each of the four international asset pricing models. Group one represents the quintile of countries with the least favorable recommendations, and group five represents the quintile of countries with the most favorable recommendations. The self-financing hedge portfolio is long quintile five countries and short quintile one countries.

[Table 5]

For each pricing model, we find that countries with more favorable recommendations have higher average abnormal returns than countries with less favorable recommendations. For example, for the International CAPM Redux, the alphas increase monotonically from a significant negative alpha of -0.65% per month for group 1 to an insignificant positive alpha of 0.285% per month for group 5. The zero-cost hedge portfolio based on the CAPM Redux has an alpha of 0.935% per month (t-statistic is 3.12).

The results based on the World CAPM, the global Fama-French five-factor model, and the extended Fama-French five-factor model all show 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 country-level recommendations or stock market returns. We also show that the results hold for 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

Brusa et al. (2014) 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.[20] 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 for country *i* in month *t*. This unexpected market return, $Unexpect\_Ret_{i,t}$, is the dependent variable in the following panel regression,

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

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.[21] $Momentum_{i,t-1,t-6}$ measures the abnormal return for 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 equation (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 next month's stock market returns. 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 the decile 10 country indices and sells decile 1 country indices, yields an abnormal return 0.858 percent per month. When we include country fixed effects and month fixed effects this coefficient

[20] Because the Fama French Five factors are available from July 1990, the first observations used in the panel regressions in this section are for July 1995, allowing for a 60-month period to estimate the factor loadings.

[21] 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). The conclusions do not change when we base our measure on the unadjusted value of the country-level recommendations.

decreases from 0.858 to 1.103, which indicates that our findings are not the result of the exceptional or persistent outperformance of only some of the countries in our sample.[22]

[Table 6]

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

4. Do country level recommendations contain information about the macroeconomy?

In this section, we test the conjecture that one of the reasons our trading strategy is successful partly because average country level recommendations contain useful information about future macroeconomic conditions. To test our conjecture, we examine whether country-level recommendations predict future growth in gross domestic product (GDP) for the countries in our sample.

We obtain the quarterly GDP growth from the OECD database.[23] GDP growth is defined as the percentage change in GDP relative to the same quarter in the previous year (seasonally-differenced). To examine whether aggregate analyst recommendations can predict future GDP changes, we estimate the following panel regressions:

$$\Delta GDP_{i,q} = \alpha_0 + \alpha_1 Rec_{i,q-1} + \alpha_2 \Delta GDP_{i,q-1} + \alpha_3 WES_{i,q-1} + C_i + QRT_q + \varepsilon_{i,q} \quad (7)$$

Where $\Delta GDP_{i,q}$ is the percentage change in GDP for country *i* (from quarter *q-4* to quarter *q*). $Rec_{i,q-1}$ is the average analyst recommendation for country *i* at the end of the previous quarter *q-1*. $WES_{i,q-1}$ is the average score from the World Economic Survey on the country *i*'s expected

[22] When we run Fama McBeth-type regressions for each of the countries and for each of the months, we find that the strategy is effective for both the cross-section of countries and for each of the countries separately (time series). For each of the countries, we first regress excess returns (according to the International CAPM Redux) on the lagged recommendation decile. The average of these coefficients across the 33 countries is 1.079 (t-statistic is 2.57). When repeat this process for each of the months separately and regress excess country returns (according to the International CAPM Redux) on the lagged recommendation decile, then the average of the coefficients across the 235 months is 0.944 (t-statistic is 2.41).

[23] https://data.oecd.org/ Quarterly GDP data is available for 27 countries. The database does not include GDP data for Hong Kong, Malaysia, Philippines, Singapore, Thailand and Taiwan.

situation regarding the overall economy at the end of the next 6 months as measured in the first month on the previous quarter *q-1*. [24](Appendix II provides background information on the World Economic Survey). Since growth in GDP is highly auto-correlated, we also include lagged GDP growth in the model. Finally, to allow for systematic differences in growth rates across countries and years, we include country fixed effects, C_i and quarter fixed effects QRT_q (a unique dummy for each of the 82 quarters in the sample).

The first column in Table 7 report the results for panel regressions 7 without country fixed effects. The results in the second column are based on the panel regression including country fixed effects. In both cases, the results show that the average country level analyst recommendation is a significant predictor of next quarter's growth in GDP. In column 3, we present the results from the Anderson-Hsiao estimator of equation 7. We 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 (Anderson and Hsiao, 1982). The use of the Anderson-Hsiao estimator involves differencing equation 7 to remove the country and quarter fixed effects, and replacing $(GDP_{c,q-1} - GDP_{c,q-2})$ by $GDP_{c,q-2}$ as an instrument. The coefficient estimate based on the Anderson Hsiao estimator is similar to the previous results and again shows that aggregate analyst recommendations predict next-quarter GDP growth.

In the final three columns, we test whether the average country recommendation helps to predict economic growth in next two, three or four quarters, based on the Anderson-Hsiao estimator. The results in columns 4-6 show that the average country recommendation predicts GDP growth two-quarters ahead but has no predictive ability for the next two quarters.

[24] We collect the World Survey data from Datastream for all countries that in our sample. Specifically, we use the expected economic situation in next 6-month to measure growth expectations.

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 international stock market returns and sample period. The results of these tests are presented in Table 8 and focus on the results for the portfolio of countries in the lowest and highest recommendation quintiles and the hedge portfolio that is short the former and long the latter. The first row in Table 8, presents the base case results for each international asset pricing model, which are the same as the results in Table 5.

Alternative definition of winner group and loser group

In order to increase diversification of the long and short portfolio across countries, we split the sample into two halves and go long the countries above the median in terms of their country recommendation and short the countries below the median. The benefit of this strategy is increased diversification of the long and short portfolios across the sample countries. However, in line with the idea that portfolios with less extreme values for country recommendations result in smaller abnormal returns, we find that average abnormal returns decrease. For example, based on the CAPM Redux, the average monthly return decreases from 0.935 percent (t-statistic is 3.12) for the base case to 0.434% per month (t-statistic is 2.53) for this alternative strategy that has more than twice the number of countries in the long and short portfolios.

Regulation changes in the brokerage industry

The brokerage industry was confronted with significant regulatory changes in 2002 in the US and 2003 in Europe. We expect that after the regulatory changes, recommendations are more comparable across countries, potentially enhancing the returns of the trading strategy.

However, the regulatory changes also resulted in a decline in informativeness of recommendations in the US (see Kadan et al., 2009), and possibly other countries.

In panel B1 in Table 8, we present the results of the base case trading strategy for the period Jan 1994-Dec 2001, i.e. before the regulation changes. Panel B2, in Table 8 shows the results for the period Jan 2004- Jun 2015, after the regulation changes. Focusing on the CAPM Redux, we see a very high abnormal return of 1.887 percent per month in the pre-regulation period. In the post-regulation, the abnormal return drops to 0.491 percent per month but is still economically and statistically significant.[25]

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 8 presents the results for a strategy that buys the MSCI market index (in USD) of countries in the quintile with the largest positive changes in country level recommendations and sells the MSCI market index of the quintile of countries with the largest negative changes in country level recommendations, where the country level recommendation change is measured from the end of the prior calendar month to the end of the current calendar month.

The results for this strategy indicate that analyst recommendation changes also provide valuable information to investors, but the abnormal returns are not as high as the strategy based on recommendation levels. For example, for the International CAPM Redux, the average monthly abnormal return is 0.62 percent (t-statistic is 1.99). This finding that returns for the strategy based on recommendation changes results in lower abnormal returns than the strategy based on recommendation levels is contrary to studies of analyst recommendations at the firm

[25] The trading strategy performs poorly in the 24 month period between 2002 and 2003, with an insignificant and slightly negative abnormal return of -0.284 percent per month (t-statistic is -0.26).

level that tend to find that analyst recommendation revisions provide more useful information to investors.[26]

Value-weighted portfolio performance

The base case results are based on portfolios where each country has an equal weight. In Panel D of Table 8, 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 capitalization of that country at the start of the calendar year, based on data from the World Development Indicator.[27] The mean abnormal return based on the International CAPM Redux is 1.052% (t-statistic is 3.08), which is economically and statistically significant. These results again confirm our previous findings that country-level analyst recommendations are 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 with a value-weighted market return for each country that only includes the stocks with recommendations, resulting in 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*, $Mkt\_Cap_{j,t-1}$:

$$Value\_Ret_{i,t} = \sum_{j=1}^{n} Month\_Return_{j,t} * \frac{Mkt\_Cap_{j,t-1}}{\sum_{j=1}^{n} Mkt\_Cap_{j,t-1}} \quad (8)$$

Table 8, Panel E shows that, with a closer match between a country's market return and the aggregate analyst recommendation, the abnormal return of the trading strategy is slightly

[26] See, for example, Womack (1996) and Jegadeesh et al. (2004).

[27] 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.

larger and more significant. For example, based on the International CAPM Redux the average abnormal return equals 1.016% (t-statistic is 3.48) 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 8, 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 country-level recommendations are based on more recent forecasts. For the International CAPM Redux, the abnormal return is 1.137%% (t-statistic is 3.56) when the consensus recommendation is based on last month's recommendations only, whereas the average abnormal return is 0.295% (t-statistic is 1.1) if the consensus recommendation is based on all recommendations in the last year.[28]

The last panel in Table 8, Panel F presents the results if the country-level recommendation is based on the most recent recommendation across analysts for each stock. That is, for each stock at the end of each month, we only use the most recent recommendation in past 3-months to calculate the average country-level recommendation. The average abnormal returns based on this measure are higher than the base case results and lower than the results based on outstanding recommendations within the last month.

The impact of prediction period

Panel G of Table 8 shows that country level recommendations have some predictive ability about international stock market returns two months and three months ahead. The return of

[28] Note that the consensus forecasts only use the most recent recommendation for each analyst for each stock. By extending the window back to 12 months, there are approximately 65% more recommendations in the sample compared to the 3 month window (i.e. covering more stocks, but also potentially including more stale forecasts). Using the 12 month window, 35% of the outstanding recommendations were announced within the last 3 months, 28% were announced within the last 4 to 6 months, and 37% of the recommendations are more than 6 months old.

buying the most favorable group of countries and selling the least favorable group of countries based on the country-level recommendation at the end of month *t-2* yields a significant abnormal return of 0.62 percent (t-statistic is 2.06). The strategy still yields a significant abnormal return of 0.707 percent (t-statistic 2.27) three month after portfolio formation. However, four months after portfolio formation the strategy is no longer profitable (unreported).

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 stock market indices of the countries with the most favorable recommendations and sells the stock market indices of the countries with the least favorable recommendations yields a return of around one percent per month. Results are robust to different international asset pricing models, portfolio construction rules and measurement windows. We also show that country-level analyst recommendations predict next quarter's growth in GDP even when we control for survey-based forecasts by a panel of economists.

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

Column 2 is the number of firms with at least one valid recommendation in our sample, by year. Column 3 shows 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.

	No. of	No. of	Analyst per Firm		Firm per Analyst		Average
Year	Firms	Analysts	Mean	Median	Mean	Median	Recommendation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1994	6,030	3,620	6.30	3	10.49	4	3.45
1995	6,156	4,666	5.99	3	7.90	4	3.33
1996	8,033	6,588	6.46	3	7.87	4	3.42
1997	10,288	8,147	6.22	3	7.86	5	3.51
1998	12,249	9,276	6.41	3	8.47	6	3.56
1999	12,065	10,007	6.91	4	8.33	5	3.69
2000	11,848	10,388	6.35	3	7.24	5	3.73
2001	11,203	10,719	7.29	4	7.62	5	3.56
2002	11,106	10,850	9.89	5	10.12	7	3.48
2003	11,127	10,408	8.92	5	9.53	7	3.37
2004	12,442	10,272	7.47	4	9.05	7	3.46
2005	13,497	10,559	6.96	4	8.90	6	3.45
2006	14,242	11,367	6.89	4	8.63	6	3.49
2007	15,169	12,187	7.03	4	8.74	6	3.55
2008	14,106	12,129	7.90	4	9.19	6	3.41
2009	13,290	12,074	8.56	4	9.42	7	3.45
2010	13,934	12,830	7.35	4	7.98	6	3.61
2011	14,456	13,714	7.49	4	7.90	5	3.62
2012	14,340	13,239	7.30	4	7.90	5	3.53
2013	14,189	12,275	6.62	4	7.65	5	3.53
2014	15,027	12,242	5.94	3	7.29	5	3.58
2015	12,052	10,256	3.97	2	4.66	3	3.50
Average	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 statistics of the 33 countries with more than 10,000 recommendations over our sample period. These 33 countries issue about 80% 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. 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, based on the MSCI country classification.

Panel A: Developed Countries

	No. of	Recommendation level		No. of	Firm per Analyst		No. of	Analyst per Firm	
Country	Recommendations/year	Mean	Median	Analysts/year	Mean	Median	Firms/year	Mean	Median
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Australia	3,577	3.43	3	408	9	9	469	8	8
Belgium	629	3.38	3	189	4	3	84	8	7
Canada	4,638	3.60	4	580	8	8	698	7	6
Denmark	618	3.29	3	179	4	4	80	8	8
Finland	992	3.28	3	218	4	4	94	10	10
France	3,724	3.42	3	823	5	4	382	10	10
Germany	3,547	3.34	3	759	5	5	350	10	10
Hong Kong	1,510	3.40	3	360	4	4	94	17	14
Italy	1,483	3.37	3	346	4	4	175	8	8
Japan	5,827	3.44	3	558	10	11	1,210	5	5
Netherlands	1,577	3.38	3	398	4	4	126	13	12
New Zealand	397	3.26	3	58	7	7	69	6	6
Norway	903	3.40	3	222	4	4	124	7	7
Singapore	1,481	3.40	3	250	6	6	177	9	8
Spain	1,437	3.31	3	337	4	4	111	13	14
Sweden	1,465	3.31	3	371	4	4	171	8	8
Switzerland	1,234	3.36	3	386	3	3	151	8	8
United Kingdom	6,898	3.48	3	1,112	7	6	989	7	7
United States	22,483	3.64	4	2,749	8	8	3,461	7	7
Average	3,391	3.39	3.11	542	5	5	474	9	9

Table 3 Cont'

Panel B: Emerging countries

Country	No. of Recommendations/year	Recommendation level		No. of Analysts/year	Firm per Analyst		No. of Firm/year	Analyst per Firm	
		Mean	Median		Mean	Median		Mean	Median
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Brazil	1,313	3.47	3	195	7	7	147	9	9
China	2,690	4.06	4	412	5	6	651	4	4
India	3,091	3.60	4	425	7	7	395	7	6
Indonesia	857	3.38	3	135	7	6	108	8	8
Korea	3,166	3.73	4	528	6	6	396	7	8
Malaysia	1,956	3.36	3	248	8	8	251	8	7
Mexico	506	3.54	3	118	4	4	67	8	8
Philippines	453	3.47	3	75	6	6	64	7	6
Poland	502	3.31	3	92	6	6	84	6	5
Russia	556	3.46	3	106	5	5	103	5	5
South Africa	1,327	3.40	3	149	9	7	183	7	7
Taiwan	2,272	3.52	3	292	8	8	348	7	7
Thailand	1,711	3.33	3	188	9	9	217	8	9
Turkey	820	3.45	3	110	8	7	123	7	6
Average	1,516	3.51	3.21	219	7	7	224	7	7

Table 4 Descriptive Statistics for Stock Market Return

Table 4 presents descriptive statistics for the monthly MSCI stock market returns in U.S. dollar. We use the MSCI Gross index obtained from the MSCI website. The sample period is from January 1994 to June 2015. All the numbers in the table are in the percentage format. Panel A reports statistic for developed countries and Panel B reports statistic for emerging countries, based on the MSCI country classification.

Panel A: Developed Countries

Country	Mean	Median	Max	Min	Std.	Num. of Obs
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Australia	0.92	1.19	17.79	-25.51	6.05	258
Belgium	0.82	1.45	18.19	-36.56	6.05	258
Canada	0.94	1.51	21.26	-26.94	5.85	258
Denmark	1.20	1.80	18.34	-25.67	5.75	258
Finland	1.37	1.16	33.26	-31.76	9.38	258
France	0.75	1.13	15.74	-22.41	5.90	258
Germany	0.84	1.26	23.69	-24.35	6.61	258
Hong Kong	0.76	0.85	33.23	-28.86	7.22	258
Italy	0.68	0.56	19.67	-23.60	6.99	258
Japan	0.27	0.22	16.79	-14.78	5.25	258
Netherlands	0.85	1.39	14.39	-25.11	5.84	258
New Zealand	0.71	1.29	18.04	-22.44	6.29	258
Norway	1.00	1.34	21.47	-33.36	7.66	258
Singapore	0.67	0.80	25.84	-28.99	7.25	258
Spain	1.02	1.29	22.09	-25.27	6.99	258
Sweden	1.22	0.88	25.49	-26.66	7.44	258
Switzerland	0.91	1.30	14.56	-15.63	4.79	258
United Kingdom	0.65	0.70	13.87	-18.96	4.59	258
United States	0.84	1.32	10.99	-17.10	4.32	258
Average	0.86	1.13	20.25	-24.95	6.33	-

Panel B: Emerging Countries

Country	Mean	Median	Max	Min	Std.	Num. of Obs
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Brazil	1.45	1.88	36.78	-37.63	11.05	258
China	1.18	0.99	28.59	-25.08	8.56	174
India	1.02	1.17	36.68	-28.48	8.66	258
Indonesia	1.05	1.19	55.58	-40.54	12.57	258
Korea	1.07	0.25	70.60	-31.25	10.98	258
Malaysia	0.51	0.82	50.04	-30.20	8.23	258
Mexico	0.95	1.77	19.14	-34.25	8.28	258
Philippines	0.50	0.59	43.39	-29.22	8.54	258
Poland	0.76	0.92	40.21	-34.82	10.96	258
Russia	1.99	2.05	61.13	-60.57	15.16	246
South Africa	1.02	1.17	19.45	-30.51	7.67	258
Taiwan	0.58	0.73	29.24	-21.73	8.00	258
Thailand	0.65	0.70	43.24	-34.01	10.87	258
Turkey	1.56	1.59	72.30	-41.24	14.89	258
Average	1.02	1.13	43.31	-34.25	10.32	-

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. 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 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	World CAPM	CAPM Redux	Global FF5	Global FF5 Currency
(1)	(2)	(3)	(4)	(5)
1 (least favorable)	-0.278	-0.65	-0.471	-0.724
	-0.99	-2.49**	-1.55	-2.54**
2	-0.129	-0.228	-0.314	-0.35
	-0.67	-1.19	-1.53	-1.72*
3	0.21	0.148	0.082	0.061
	1.15	0.83	0.45	0.33
4	0.241	0.111	0.151	0.109
	1.29	0.64	0.79	0.60
5 (most favorable)	0.347	0.285	0.331	0.28
	1.73*	1.42	1.63	1.36
P5-P1	0.625	0.935	0.802	1.004
	2.07**	3.12***	2.46**	3.11***

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)	World CAPM (3)	World CAPM (4)	Global FF 5 (5)	Global FF 5 (6)	Global FF5 CUR (7)	Global FF5 CUR (8)
Rank_Value_Rec$_{i,t-1}$	0.858	1.103	0.833	0.960	1.006	1.221	0.959	1.257
	2.66***	3.54***	3.14***	3.29***	2.78***	3.60***	2.36**	3.47***
6-month Country Momentum	-0.005	0.002	-0.005	0.005	-0.011	-0.002	-0.011	-0.005
	-0.85	0.18	-0.78	0.41	-1.55	-0.13	-1.6	-0.39
Country FE	N	Y	N	Y	N	Y	N	Y
Month FE	N	Y	N	Y	N	Y	N	Y

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

This table shows the regression results of one-quarter-ahead GDP on aggregate analyst recommendations. The sample period is from 1995Q1 to 2015Q4. All variables are quarterly. We include 27 countries in GDP 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. $WES_{i,q-1}$ is the average score from the World Economic Survey on the country *i*'s expected situation regarding the overall economy at the end of the next 6 months as measured in the first month on the previous quarter *q-1*. The first column in Table 7 reports the results for panel regressions 7 without country fixed effects. The results in the second column are based on the panel regression including country fixed effects. In column 3, we present the results from the Anderson-Hsiao estimator of equation 7. Column 4-6 shows whether the average country recommendation helps to predict economic growth in next two, three or four quarters, based on the Anderson-Hsiao estimator. All the t-statistics are clustered by country. The superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	$\Delta GDP_{i,q}$ (1)	$\Delta GDP_{i,q}$ (2)	$\Delta GDP_{i,q}$ Anderson-Hsiao (3)	$\Delta GDP_{i,q+1}$ Anderson-Hsiao (4)	$\Delta GDP_{i,q+2}$ Anderson-Hsiao (5)	$\Delta GDP_{i,q+3}$ Anderson-Hsiao (6)
$Rec_{i,q-1}$	0.452	0.546	0.61	0.624	0.100	-0.209
	2.6***	2.05**	3.88***	3.95***	0.62	-1.26
$WES_{i,q-1}$	0.037	0.049	0.025	0.027	0.034	0.031
	3.00***	3.78***	2.1**	2.29**	2.87***	2.55**
Quarter FE	Y	Y	N	N	N	N
Country FE	N	Y	N	N	N	N

Table 8 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 (two groups) 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. The last panel in section B shows the results in most recent five years. 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)	World CAPM (2)	CAPM Redux (3)	Global FF5 (4)	Global FF5 Currency (5)
Baseline Results: P5-P1	0.625	0.935	0.802	1.004
	2.07**	3.12***	2.46**	3.11***
Panel A: Alternative definitions of winner group and loser group-Halves				
1 (least favorable)	-0.117	-0.307	-0.283	-0.39
	-0.68	-1.94*	-1.57	-2.31**
2 (most favorable)	0.233	0.127	0.156	0.099
	1.58	0.91	1.10	0.72
P2-P1	0.35	0.434	0.439	0.489
	2.09**	2.53**	2.42**	2.66***
Panel B1: Before regulation changes (From Jan 1994 to Oct 2002)				
1 (least favorable)	-0.539	-1.431	-0.938	-1.771
	-0.86	-2.50**	-1.32	-2.73***
5 (most favorable)	0.152	0.303	0.247	0.297
	0.49	0.94	0.75	0.85
P5-P1	0.691	1.734	1.186	2.067
	1.09	2.96***	1.67*	3.20***
Panel B2: After regulation changes (From Nov 2004 to Jun 2015)				
1 (least favorable)	-0.243	-0.205	-0.418	-0.347
	-1.05	-1.00	-1.78*	-1.63
5 (most favorable)	0.429	0.389	0.487	0.482
	1.46	1.42	1.71*	1.78*
P5-P1	0.672	0.594	0.905	0.829
	2.27**	2.00**	2.93***	2.67***
Panel B3: Most recent five years (From Jun 2010 to Jun 2015)				
1 (least favorable)	-0.967	-0.491	-1.137	-0.546
	-3.34***	-1.89*	-3.69***	-1.83*
5 (most favorable)	-0.204	0.253	-0.339	0.122
	-0.52	0.69	-0.85	0.30
P5-P1	0.763	0.744	0.798	0.668
	2.00**	1.80*	1.97**	1.46

Table 8 Cont.'

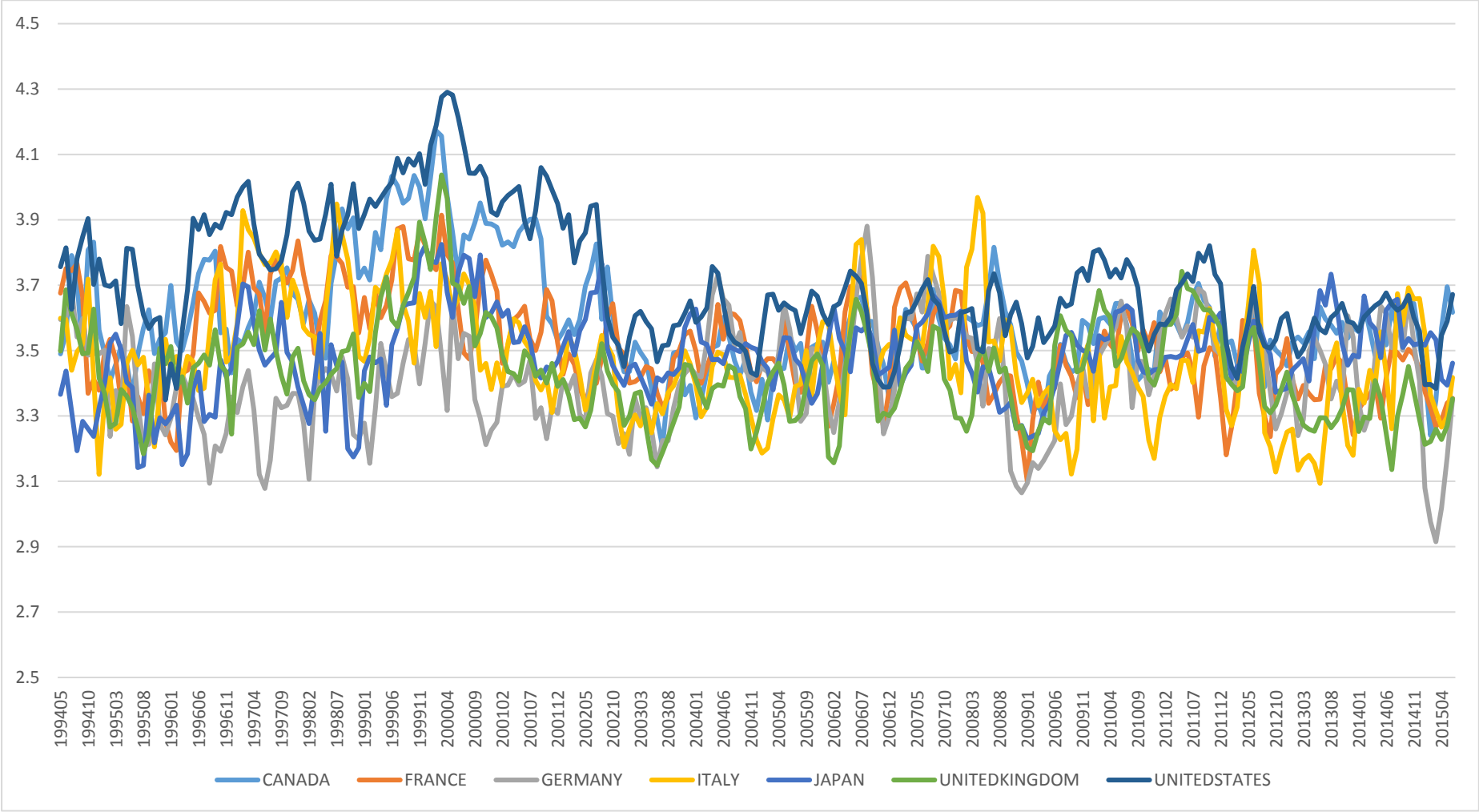
Portfolio (1)	World CAPM (2)	CAPM Redux (3)	Global FF5 (4)	Global FF5 Currency (5)
Panel C: Aggregate analyst recommendation changes				
1 (least favorable)	-0.168	-0.385	-0.397	-0.512
	-0.66	-1.57	-1.49	-1.96**
5 (most favorable)	0.402	0.235	0.261	0.199
	1.64	0.98	1.03	0.80
P5-P1	0.57	0.62	0.658	0.711
	1.89*	1.99**	2.01**	2.11**
Panel D: Value-weighted portfolio performance				
1 (least favorable)	-0.583	-0.887	-0.69	-0.904
	-2.20**	-3.45***	-2.44**	-3.28***
5 (most favorable)	0.269	0.165	0.243	0.081
	1.29	0.77	1.08	0.36
P5-P1	0.852	1.052	0.933	0.985
	2.53**	3.08***	2.61***	2.73***
Panel E: Alternative definitions of stock market return				
1 (least favorable)	-0.6	-0.975	-0.819	-1.065
	-2.18**	-3.85***	-2.80***	-3.89***
5 (most favorable)	0.079	0.04	0.051	0.023
	0.39	0.20	0.26	0.11
P5-P1	0.679	1.016	0.87	1.088
	2.29**	3.48***	2.72***	3.48***
Panel F1: Alternative constructions of aggregate analyst recommendation: last month outstanding				
1 (least favorable)	-0.52	-0.713	-0.775	-0.906
	-1.85*	-2.53**	-2.56**	-2.98***
5 (most favorable)	0.54	0.424	0.421	0.343
	2.40**	1.87*	1.75*	1.42
P5-P1	1.061	1.137	1.196	1.249
	3.43***	3.56***	3.56***	3.63***
Panel F2: Alternative constructions of aggregate analyst recommendation: last 6-month outstanding				
1 (least favorable)	-0.223	-0.507	-0.331	-0.503
	-0.81	-1.94*	-1.13	-1.78*
5 (most favorable)	0.317	0.236	0.354	0.274
	1.55	1.15	1.72*	1.31
P5-P1	0.54	0.744	0.685	0.778
	1.89*	2.59***	2.21**	2.51**
Panel F3: Alternative constructions of aggregate analyst recommendation: last 12-month outstanding				
1 (least favorable)	0.128	-0.154	0.024	-0.147
	0.49	-0.62	0.09	-0.55
5 (most favorable)	0.289	0.142	0.248	0.134
	1.42	0.71	1.19	0.65
P5-P1	0.161	0.295	0.225	0.28
	0.61	1.10	0.79	0.98

Table 8 Cont.'

Portfolio	World CAPM	CAPM Redux	Global FF5	Global FF5 Currency
(1)	(2)	(3)	(4)	(5)
Panel F4: Alternative constructions of aggregate analyst recommendation: most recent individual recommendations				
1 (least favorable)	-0.264	-0.584	-0.55	-0.75
	-1.00	-2.40**	-1.96**	-2.82***
5 (most favorable)	0.454	0.359	0.376	0.34
	2.26**	1.81*	1.90*	1.73*
P5-P1	0.717	0.942	0.926	1.09
	2.63***	3.42***	3.18***	3.74***
Panel G1: The impact of prediction period-two months				
1 (least favorable)	-0.13	-0.463	-0.168	-0.367
	-0.44	-1.65*	-0.53	-1.22
5 (most favorable)	0.262	0.157	0.299	0.226
	1.33	0.79	1.49	1.13
P5-P1	0.393	0.62	0.467	0.594
	1.32	2.06**	1.44	1.82*
Panel G2: The impact of prediction period-three months				
1 (least favorable)	-0.018	-0.369	-0.101	-0.333
	-0.06	-1.34	-0.32	-1.12
5 (most favorable)	0.386	0.338	0.452	0.417
	1.90*	1.65*	2.25**	2.05**
P5-P1	0.404	0.707	0.553	0.75
	1.30	2.27**	1.64	2.24**

Figure 1 Average recommendation levels in G7 countries

This figure shows the value-weighted average recommendation across all the firms in G7 countries. The calculation of the consensus recommendations for each firm is based on all outstanding recommendations issued a minimum of two days and a maximum of three months prior to the end of calendar month *t*. Specifically, a recommendation is outstanding if it has not been stopped by the broker. The sample period is from Jan 1994 to June 2015 and the recommendations range from 1 (strong sell) to 5 (strong buy).



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Appendix I: 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

Appendix II: Ifo World Economic Survey Facts[30]

The Ifo World Economic Survey (WES) is an economic confidence survey conducted in more than 90 countries by the Ifo Institute for Economic Research in Munich, in co-operation with the Paris-based International Chamber of Commerce (ICC) and with the financial support of the European Commission.

Purpose: assess worldwide economic trends

Time and Frequency:

- The survey was initiated in the early 1980s and has been conducted quarterly since 1989.
- It runs in the first month of every quarter. Experts are asked for their near-term expectation, which corresponds to a 6-month horizon. Survey participants are required to respond within a period of four weeks.

Participants:

- The survey respondents are domiciled in the country for which they answer the survey.
- The WES panel contains economic experts with a range of specializations in management, finance, and other business function.

Characteristic:

- For each quarterly survey, the WES receives in total about 1,100 questionnaires from 121 countries.
- It is comparable over time and across countries as the questionnaire is the same for all countries and the questionnaire has been used almost unchanged since 1983, except for few questions that were implemented in 1998.

[30] For more details, see Koijen, Schmeling and Vrugt (2015) and Stangl (2007).

- The survey is qualitative in nature and respondents can answer either “higher”, “about the same” or “lower”. There are eight standard questions, regularly recurring additional questions and one-time questions on current issues in the world economy.