Forecast Dispersion Following ADR Listings: Does U.S. Trading Promote Herding?

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1. Introduction

In this paper I use the effect of the listing of American Depositary Receipts (ADRs) by non-U.S. firms on the forecast dispersion of analysts to test for a "differential herding effect" within the analyst population. I investigate this effect by comparing the dispersion of analyst earnings forecasts across the ADR listing for two subsets of analysts; (1) those who covered the firm prior to the ADR listing and continued to do so, and (2) those analysts who begin to cover the firm following the ADR listing.

I find no difference between the two subsets of analysts. This indicates that the new analysts have the same disagreement among firms' earnings as do the analysts who have followed the firm for some time.

The remainder of this paper is organized as follows. Section 2 provides the relevant literature on ADRs and analyst behavior and presents my hypotheses. Section 3 describes the data and empirical methods. The empirical findings are presented in Section 4. Section 5 concludes.

2.1 *Literature Review*

The dispersion of earnings forecasts is considered to be significant information by Malkiel (1981) who contends that the dispersion of analysts' forecasts is a better risk proxy than Beta. Ajinkya and Gift (1985) use forecast dispersion as a measure of earnings riskiness. Given its significance, forecast dispersion has been the subject of recent theoretical studies. Barry and Jennings (1992) show that estimation risk across traders decreases as the amount of information possessed by the traders increases; however, consensus of opinion also depends on the mix between public and private information, and on how private information is distributed across analysts. Specifically, consensus increases as private information is distributed more equally across analysts even if the aggregate amount of private information is held constant. If markets *aggregate* information as well as *communicate* information, then new information—private or public—drives market participants toward consensus, although noisy markets, in which informed traders can hide behind a sufficient number of liquidity traders, will tend to have greater diversity of beliefs.

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International differences

Because there are various institutional and accounting differences across countries, researchers have examined the nature of earnings forecasts in an international setting. Allen, Cho, and Jung (1997) find that forecast errors in the less-established Pacific-Basin capital markets are greater than in more-established markets, and the difference remains even after controlling for other factors. Firth and Gift (1999) find that South and Central America have the poorest forecast accuracy, followed by the Scandinavian nations. U.S. forecasts are only average among the developed or mature nations. Ang and Ma (1999) find that the aggregate analyst forecast errors of all Chinese shares are around twice that of their control group, the shares of Hong Kong companies. They are also much higher than those of several developed and developing Asia-Pacific countries. The authors also show that this difference depends on factors related to the transparency of a market such as the location of the exchange and the market value of the firm.

Chang, Khanna, and Palepu (2000) provide important empirical findings about cross-country differences in analyst forecasts. Defining forecast error as the mean absolute forecast error normalized by actual earnings, they find that forecast error is lower in the U.S. than in all other countries (n = 46). They also find that forecast dispersion, defined as the standard deviation of analysts' EPS forecasts divided by the mean forecast, is substantially lower for the U.S. than for all other countries. Using country-level data, they also find that forecast dispersion is inversely related to the number of analysts covering a firm. While their empirical findings are, of course, dependent on the firms being forecasted as well as the nature of the analysts covering them, they do lead to the issues being addressed in this paper. First, would trading in the U.S, and coverage by additional U.S. analysts, reduce forecast dispersion? And, second, would the forecast dispersion following ADR listing differ among two subsets of analysts, those that have followed the firm prior to ADR listing ("continuing" analysts) and those that began following the firm subsequent to the ADR listing ("new" analysts).

Ang and Ciccone (2001) compartmentalize international differences in forecast properties into country-specific, firm-specific, and discretionary components. Country-specific factors include country size, inflation, ownership structure, and the accounting-disclosure environment. Firm specific factors include firm size and other such variables. The discretionary component can include analyst bias and management manipulation of the firm's information. Ang and Ciccone (2001), like Chang, Khanna, and Palepu (2000), focus on country-level differences. Ang and Ciccone (2001) also find that U.S. forecast dispersion is low by international standards, and that forecast dispersion is negatively related to the number of covering analysts. They find that transparency and forecast dispersion are related to all three components (country-, firm-, and discretionary-factors). This study, which focuses on individual firms at the time they list in the U.S., explores whether transparency improves and forecast dispersion declines. My data is firm-specific instead of country-specific, and the issue is whether ADR listing alters the informational environment of listing firms.

Because analyst coverage is costly, coverage is initiated and maintained only if the analyst's firm expects to profit from the activity. The primary revenues from analyst coverage are from stimulating investment banking activity (seasoned equity offerings, merger and acquisition fees, and underwriting fees) and institutional trading. Bhushan (1989) finds firm size and trading volume to be correlated with analyst coverage, and with these two revenue sources.

Brennan and Hughes (1991) assume that investors trade only in stocks that they "know about," and that those investors utilize brokers who analyze the firms that will generate the greatest trading volume and brokerage fees. They find that analyst coverage is positively related to the magnitude of stock splits, as the stock split is presumed to be an indication of management's favorable information.

O'Brien and Bhushan (1990) discuss the informational setting within which firm and industry characteristics affect analyst coverage decisions. An ADR listing could signal investment banking opportunities if the company is planning to raise new capital in the U.S. Institutional and individual investors in the U.S. also constitute a new source of commission and spread income when an ADR begins trading. If the presence of ADRs alters the consensus of analyst opinion or the amount of analyst coverage, this may have important implications for market efficiency and integration.

2.2. Hypothesis

This leads to the null hypothesis and its alternative:

$H1_0$: The forecasts of new and continuing analysts do not differ in their dispersion.
$H1_a$: The forecasts of new and continuing analysts do differ in their dispersion.

3. Data definitions and empirical methods

3.1. Data definitions

The data for this study come from the Institutional Brokers Estimate System (I/B/E/S) database. This data includes analyst forecasts of earnings for over 10,000 U.S. firms and 18,000 firms in 52 countries around the globe.[1] The data are included in two primary files, called the *summary* file and the *detail* file. The detail file contains individual analyst forecasts for each firm followed by an analyst, while the summary file contains the average forecast from all analysts following each firm, along with the standard deviation of the forecasts and other data. This study uses data from both files through June 1999.

U.S. market firms covered by the database are identified in the I/B/E/S U.S. *identifier* file by CUSIP, while internationally traded firms are identified in the I/B/E/S international identifier file by SEDOL number, preceded by a two-digit country identifier.

I identify ADRs for this study by consulting the 1997 version of *The Complete Depositary Receipt Directory* (hereafter, "*The Directory*") published by The Bank of New York. This source provides the country of issue for the underlying shares, the effective date of the ADR, exchange, CUSIP number, and other information about the ADRs. I use the 1997 version of *The Directory,* rather than the current online version, in order to control for survivorship bias. For firms that had ADRs listed in the 1997 edition of *The Directory* and that have not subsequently cancelled their ADRs, at least 30 months of data will be available in the I/B/E/S database. The presence of fewer than 30 months of data for a firm would indicate that there were months during which there were no forecasts on that firm. ADRs listed on the New York Stock Exchange, American Stock Exchange, or NASDAQ are included in the sample.

I focus on the dispersion of the annual (fiscal year) forecasts, although additional forecasts (such as quarterly or semiannual) are also available. Using an annual forecast may avoid problems presented by seasonal differences between firms.

[1] This information was obtained from the documentation provided with the I/B/E/S database.

3.2. Empirical Methods

The data subsets of interest are those analysts who made earnings forecasts in the pre-listing period that also continued to make forecasts during the post-listing period (referred to as *continuing analysts*), and those analysts who did not make earnings forecasts during the pre-listing period but *did* make forecasts during the post-listing period (referred to as *new analysts*). The comparison of these two subsets of analysts requires use of the I/B/E/S detail file, as standard deviations for each subset of analysts for each firm must be calculated for each month (the summary file includes the standard deviation calculated for *all* analysts following a firm). These monthly standard deviations are then averaged within the two subsets of analysts during the post-ADR-listing period to provide the average monthly standard deviation for the new and continuing analysts for each firm. This analysis provides information about the relative consensus obtained within the two subsets. Less dispersion in the continuing analyst subset would indicate that those continuing analysts had reached a greater consensus than the new analysts had in a particular security.

The analysis provides descriptive statistics for the dispersion of forecasts generated by groups of either new or continuing analysts from the entire sample, the emerging markets, and the developed markets sub-samples, and tests for differences between the new and continuing analysts. Results are presented in Table I. These difference results are not significant, indicating that there is no difference in dispersion between forecasts made by analysts who begin to follow firms within the year following ADR listing and analysts who were already following the firm during the year preceding ADR listing.

4. Results

Table I presents the descriptive statistics for all markets, and the emerging and developed markets sub-samples. None of the dispersion results are statistically significantly different between the new and continuing analyst groups. Even though the results are not significantly different from zero, it is interesting to note that the differences are greater in the emerging markets subset, and the new analysts actually have a greater consensus in the developed markets (the dispersion among the new analysts is almost 10 percent smaller than the continuing analysts. This raises a significant issue, and opportunity for further research, as discussed in the next section.

5. Conclusions and ideas for further research

This paper provides evidence that the dispersion of analyst earnings forecasts is the same for new and continuing analysts in a sample of ADR listing firms. I conclude that ADR listing does not change the informational environment of the listing firms via the analyst forecasting process. This research provides a starting point for the study of herding behavior among analysts across countries. The listing of an ADR should bring more attention to a firm as it begins to trade in the U.S. market. While the ADR listing did coincide with new analysts beginning to cover many firms (N = 78 in the entire sample), the new and continuing analysts did not differ with respect to their forecast dispersion. This is not consistent with the idea that there is a learning curve for analysts as they choose to cover new firms. Rather, the new analysts seem to behave similar to their predecessors. This is unfortunate, as one would hope that the new analysts would bring new ideas to light, especially since these are foreign firms beginning to trade in a U.S. market, so presumably the new analysts are largely U.S.-based.

One idea for potentially fruitful research was developed from these results. That idea is that the new analysts covering the developed market ADR-listing firms actually had less dispersion in their forecasts than the continuing analysts. This makes one wonder where the analysts reside who cover the firms. Further research into who the analysts are, and where they are located, would provide an opportunity to further understand what influences new analysts' behavior as they begin to cover new firms.

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Table I

Descriptive Statistics
New and Continuing Analysts in the Post-ADR-Listing Period
All Markets

Measure	N (Firms)	Mean	Std. Dev.	Skewness	Fifth Percentile	Median	Ninty-fifth Percentile
Standard Deviation of Forecasts (New Analysts)	78	29.2789	142.925	6.87142	0.01807	1.43218	100.687
Standard Deviation of Forecasts (Continuing Analysts)	76	25.5857	112.732	5.76306	0.0154	1.28198	133.589
Difference (New Analysts Minus Continuing Analysts)	76	4.4583	42.503	7.44206	-3.22538	0.00478	18.324
Price-Standardized Standard Deviation of Forecasts (New Analysts)	78	0.0145	0.017	3.01169	0.00339	0.00845	0.062
Standard Deviation of Forecasts (Continuing Analysts)	76	0.014	0.019	4.07776	0.00166	0.00847	0.043
Price-Standardized Difference (New Analysts Minus Continuing Analysts)	76	0.0007	0.007	-0.07774	-0.01163	0.00039	0.014

Emerging Markets

Measure	N (Firms)	Mean	Std. Dev.	Skewness	Fifth Percentile	Median	Ninty-fifth Percentile
Standard Deviation of Forecasts (New Analysts)	26	57.6228	229.864	4.67998	0.01492	0.68895	290.058
Standard Deviation of Forecasts (Continuing Analysts)	24	45.0374	167.057	4.38003	0.0159	1.1404	232.481
Difference (New Analysts Minus Continuing Analysts)	24	17.37	72.59	4.66122	-0.65955	0.07429	57.577
Price-Standardized Standard Deviation of Forecasts (New Analysts)	26	0.0176	0.022	2.93776	0.00376	0.0094	0.071
Standard Deviation of Forecasts (Continuing Analysts)	24	0.018	0.029	3.08828	0.00166	0.00852	0.095
Price-Standardized Difference (New Analysts Minus Continuing Analysts)	24	0.0004	0.01	-0.79541	-0.02239	0.00066	0.014

Developed Markets

Measure	N (Firms)	Mean	Std. Dev.	Skewness	Fifth Percentile	Median	Ninty-fifth Percentile
Standard Deviation of Forecasts (New Analysts)	52	15.1069	65.7754	6.45347	0.03536	2.00062	90.9374
Standard Deviation of Forecasts (Continuing Analysts)	52	16.6079	76.4379	6.52177	0.0154	2.04724	70.452
Difference (New Analysts Minus Continuing Analysts)	52	-1.501	12.8715	-4.24385	-3.22538	-0.00723	4.6297
Price-Standardized Standard Deviation of Forecasts (New Analysts)	52	0.013	0.0139	2.4814	0.00339	0.00787	0.0504
Standard Deviation of Forecasts (Continuing Analysts)	52	0.0121	0.0108	1.74032	0.00233	0.00847	0.0412
Price-Standardized Difference (New Analysts Minus Continuing Analysts)	52	0.0009	0.0061	1.25121	-0.00705	0.00012	0.0113