

# **Value of Analyst Recommendations: International Evidence**

**Narasimhan Jegadeesh and Woojin Kim<sup>\*</sup>**

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<sup>\*</sup> Narasimhan Jegadeesh is the Dean's Distinguished Professor at the Goizueta Business School, Emory University, and Woojin Kim is a doctoral student at the University of Illinois at Urbana-Champaign. Contact Author: Narasimhan Jegadeesh, Goizueta Business School, 1300 Clifton Road, Atlanta, GA 30322. email: [Narasimhan.Jegadeesh@bus.emory.edu](mailto:Narasimhan.Jegadeesh@bus.emory.edu) (Jegadeesh); [wkin5@uiuc.edu](mailto:wkin5@uiuc.edu) (Kim)

## Abstract

This paper examines analyst recommendations in the G7 countries and evaluates the value of these recommendations over the 1993 to 2002 period. We find that the proportion of sell and strong sell recommendations in all of the countries are less than the proportion of the buy and strong buy recommendations. The frequency of sell recommendations is the lowest in the U.S. We also find that stock prices react significantly to recommendation revisions on the day of recommendation and on the following day in all of these countries except Italy. We find the largest price reactions in the U.S., followed by Japan. We evaluate trading strategies that buy upgraded stocks and sell downgraded stocks. Here again, the trading strategies have the highest profits in the U.S., followed by Japan.

Stock analysts form an integral part of the capital market operations. The analysts provide stock related research for their brokerage clients who use analysts' research reports, earnings forecasts and stock recommendations for investment decisions. Recently, their role as investment advisors has come under intense scrutiny. Media reports and some anecdotal evidence suggest that analysts compromise their objectivity and issue positive recommendations to curry favor with potential investment banking clients of their employers, rather than for the benefit of the investors who rely on their advice. For instance, a recent Forbes article claims that the investment advice offered by analysts are ``so dishonest and fraught with conflicts of interest that it has become worthless.''<sup>1</sup>

Analyst recommendations certainly do contain an element of bias towards being favorable. Earlier papers document that analysts rarely issue sell or strong sell recommendations. For instance, Jegadeesh, Kim, Krische and Lee (2003) report that the average analyst rating over the 1985 to 1999 period is close to a buy recommendation and sell are strong sell recommendation make up less than five percent of all recommendations, and Womack (1996) reports that there are seven upgrades to strong buy for every downgrade to strong sell. Furthermore, Lin and McNichols (1998) and Michaely and Womack (1999) find that the analysts employed by the lead underwriters for new equity offerings issue more favorable recommendations for the stocks than the other analysts who follow the same stocks.

In spite of any inherent biases, the extant literature finds that analyst recommendations do add value. For example, Stickel(1995) and Womack (1996) document that recommendation upgrades tend to outperform downgrades, and Barber,

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<sup>1</sup> See Gamein (2002).

Lehavy, McNichols and Trueman (2001), Jegadeesh et al. (2003), and Boni and Womack(2003) find that the stocks with the most favorable recommendations outperform the stocks with the least favorable recommendations. These findings indicate that investor could benefit from these recommendations if they consider the relative levels of recommendations across stocks, or if they pay attention to changes in recommendations.

The conflicts of interests due to the investment banking businesses of the brokerage houses that could potentially influence analyst recommendations has recently been subject to harsh criticism despite the evidence that analyst recommendations on average do convey useful information. In a recent settlement with the NY attorney general, major Wall Street firms agreed to a \$1.4 billion settlement that includes provisions to sever links between the investment banking and the stock research departments, and to promote independent research. The terms of the settlements appear to anticipate that if the conflict of interest is removed, then analyst recommendations will be able to more accurately discriminate undervalued stocks from overvalued stocks.

How much value can analysts potentially add? This question is certainly hard to answer because there is no natural benchmark. In a perfectly efficient market, analysts will not be able to add any value since any information they have will already be reflected in market prices. However, if analysts possess unique skills in collecting and analyzing value-relevant information, then they can add some value, but the magnitude of value that they potentially add can only be determined empirically. Several papers have examined the value of analyst recommendations in the U.S. to shed light on this issue. However, the recent controversy about the U.S. analysts' objectivity, and the debate about the usefulness of their recommendations indicate that our understanding of how much

value analysts can add is far from complete. An examination of the value of analyst recommendations in other developed countries will give us a more complete picture of the extent to which the unique skills of analysts are useful for investors.

This paper examines the value of analyst recommendations in the G7 countries. We first examine the levels of analyst recommendations in different countries. We find that the frequencies of sells and strong sells in all of the countries are less than the frequencies of the buys and strong buys. However, the frequency of sell recommendations is the lowest in the U.S. In fact, sell recommendations are about four to five times as frequent in the other countries as in the U.S.

We use two approaches to assess the value of recommendations. In the first approach, we follow Womack (1996) and examine the event time performance of analyst upgrades and downgrades. This approach allows us to determine the extent of mispricing analysts are able detect in various countries at the time of their recommendation changes. Among all of the countries in the sample, we find the largest price reactions to investment upgrades and downgrades in the U.S.

Our next set of tests analyzes the performance of calendar-time trading strategies that buy stocks with recommendation upgrades and sell stocks with recommendation downgrades. The calendar-time strategies are implementable in practice, and hence their performances provide an indication of the extent to which investors can profit by using analyst recommendation changes as inputs in their trading strategy. Our trading strategies consider different holding periods, and different levels of delays between the time when the revisions are made and the time when the stocks enter the portfolios. Here again, we find that the trading strategies perform the best in the U.S. in virtually all instances.

The rest of the paper is organized as follows. Section I describes our data source and our sample. Section II compares the level of recommendations across the countries we examine. Section III presents the event-time analysis and Section IV evaluates calendar-time trading strategies. Section V presents our conclusions.

## I. Data and Sample

### A. Data

We obtain the stock recommendations for the G7 countries and the recommendation dates from the IBES detailed file. We obtain stock returns, shares outstanding and trading volume data from Xpressfeed, which is a product of the Standard and Poor's corporation. Datastream market indices are our benchmarks for the respective countries. The sample period is from October 1993 to July 2002 for all countries except Italy. For Italy, our sample period is October 1993 to December 1998. Our sample period for Italy is shorter because we do not have stock return data for the longer period.

Our sample comprises all stocks that satisfy the following criteria:

- (a) There should be at least one analyst who issues a recommendation for the stock and revises the recommendation during the sample period,
- (b) The analyst code should be available on IBES,
- (c) The stock return data on the recommendation revision date should be available in Xpressfeed, and
- (d) The stock price should be at least \$1 on the day before the recommendation revision date.

We impose these criteria since our primary focus is on the performance of stocks after recommendation revisions. Therefore, we do not include recommendations in our sample

if an analyst makes only one recommendation for the stock, or if IBES does not provide an analyst code since we need the code to identify recommendation revisions.

Table I presents the descriptive statistics for the sample. The analyst coverage is by far the most extensive for the U.S. stocks. On average, there are 3,056 stocks per year in the U.S. sample. Outside the U.S., the sample contains 315 stocks per year per country. Italy has the fewest stocks in our sample, with 92 firms per year on average.

## B. Market Statistics

Figure 1 presents the cumulative market returns in each of the countries during our sample period. All the countries in the sample except Japan experience strong positive returns until 1999 or 2000, and large market declines in 2001 and 2002. The Japanese market is relatively flat during most of the sample period, except in 1999. In 1999, the Japanese stock price increases nearly 70 percent but most of this gain is reversed in the following two years. Overall, the sample period contains both bull markets and bear markets for all countries.

Panel A of Table II presents the size of the stock market in various countries at beginning of each year in the sample period. We obtain the market capitalization of publicly traded stocks in the G7 countries from Datastream. The U.S. is by far the largest market with capitalization ranging from a low of \$5,056 billion in 1994 to a high of \$16,590 billion in 1999. Panel B of this table presents the aggregate market capitalization of the stocks in our sample at the end of each year, and Panel C presents the percentage of the total market that is included in our sample. We obtain the data on prices and shares outstanding from Xpressfeed.

We have the most coverage in the U.S. at 83.4 percent on average, followed by Germany at 73.48 percent and Britain at 68.08 percent. The average aggregate market capitalization of our Japan sample is much larger than both Germany and Britain sample, although the percentage of market capitalization coverage is only 55.56 percent. For Italy, we do not have any stocks in the sample after 1999, because there is virtually no coverage for Italy in the Xpressfeed database, although IBES provides similar levels of coverage both before and after 1999. We report the results for Italy for completeness, but many of the results for Italy are fairly weak because the sample period is fairly short.

Panel D of Table II presents the median size of the firms in our sample for the G7 countries at the end of each year. The median size is quite similar across all countries except Japan. The average median size for Japan is \$1,838 billion, compared with median sizes ranging from \$234 billion in Canada, to \$540 billion in Germany. For comparison, we also present the median size of NYSE traded firms. The median size of the Japanese stocks in our sample is about twice that of the median NYSE firm, but the median sizes for the other countries are between about 25 percent and 60 percent of the NYSE median.

## **II. Average Recommendations**

This section examines the average recommendation levels in each country. Most commonly, analyst recommendations rate stocks as ``strong buy," ``buy," ``hold," ``sell," and ``strong sell." Analysts do use other labels such as ``market underperform" and ``market outperform," or ``underweight" and ``overweight," to convey their opinions, but IBES standardizes the recommendations, and converts them to numerical scores where ``1" is strong buy, ``2" is buy, and so on. However, we reverse-score the IBES numerical

ratings and assign a score of 5 for strong buy and 1 for strong sell so that more favorable recommendations receive larger numerical scores.

Table III presents the average recommendation levels in the G7 countries in each of the ten years in our sample period. To compute the statistics in this table, we average across all recommendations in our sample for each country. Since a recommendation is the unit of observation in this table, analysts who are more active get a higher weight in the average. Also, more analysts typically follow large firms than small firms, and therefore the larger firms get a bigger weight in the average.

On average, only 3.6% of the recommendations are either sell or strong sell in the U.S. Even the hold recommendations decline during the bull market of the nineties. The percentage of hold recommendations decline from 38% in 1995 to 30% in 1999, the year which marked the end of the recent market run up. Buys and strong buys increase from 57% to 67% during this period. However, the trend of rising buy recommendations reversed course in 2001 and 2002, and in these two years buy and strong buy recommendations account for 62% and 56% of all recommendations, respectively.

We observe the general pattern of changes in buy and sell recommendations in the U.S. in the other countries as well. The buy recommendations increase from 1993 to 2000, and then decrease in 2001, although we do not observe a sharp decline in 2002 relative to 2001 in these countries, as we do in the U.S. The sell recommendations follow the opposite path. This pattern indicates that analysts tend to issue more buy recommendations during bull markets than during bear markets, and more sell recommendations during bear markets than during bull markets. In unreported results, we found that the proportion of the buy recommendations is significantly related to the past

six-month market returns both in the U.S. and in all countries outside the U.S. as a group.<sup>2</sup>

Sell recommendations are generally less common than buy recommendations in countries outside the U.S. as well. Overall, there are 16% sell recommendations in these countries compared with 48% buy recommendations. However, the frequency of sell recommendations outside the U.S. is much larger than that in the U.S. This higher frequency cannot be explained by any relation between analysts recommendations and market performance, because the pattern of market returns in most of these countries is similar to that in the U.S. These results indicate that analysts in these countries are far less reluctant to issue sell recommendations than in the U.S.

One of the criticisms that the U.S. analysts encounter is that they do not sufficiently discriminate across stocks since they often do not use the full range of recommendations. Since the analysts in other countries have larger variability in their recommendations, this criticism of U.S. analysts implies that the recommendations outside the U.S. are likely to be more valuable. However, the bias in the average recommendation levels is fairly transparent, and the market can easily see through this bias. For instance, investors can treat a buy recommendation as a market perform rating, and a sell recommendation as a market underperform rating, and decide on their investments accordingly. Therefore, if investors are able to correctly read the signals then the particular label for a recommendation should not matter. In any event, our empirical tests will help us assess whether the higher propensity of analysts outside the U.S. to issues sell recommendations than the U.S. analysts adds value for investors in those countries.

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<sup>2</sup> Among the individual non-U.S. countries, the correlation between the difference between the proportion of the buy recommendations and sell recommendations and past six-month returns is statistically significant in France and Germany.

### **III. Recommendation Changes: Event-Time Analysis**

This section examines the performance of stocks that analysts either upgrade or downgrade in an event study framework. The methodology here is similar to that in Womack (1996), for U.S. stocks.

#### **A. Distribution of Upgrades and Downgrades**

We categorize recommendation revisions as either upgrades or downgrades by comparing them with the previous recommendation for the stock by the same analyst. We exclude any new recommendation that is a reiteration of the old recommendation.

Table IV presents the distribution of upgrades and downgrades within each country. We count each recommendation change as one observation. For instance, if two analysts make recommendation upgrades for a stock and one analyst makes a downgrade, then we count the stock twice in the upgrade category and once in the downgrade category. There are a total of 50,260 upgrades and 63,557 downgrades in the U.S., and 38,345 upgrades and 40, 669 downgrades in the other countries.

We also separately consider the upgrades to strong buys and upgrades from sell or strong sell, and downgrades to sell or strong sell and downgrades from strong buy. Since strong buy is the highest recommendation level, it is possible that a recommendation revision to or from this category conveys a stronger signal about the analyst's opinion than a revision to or from any of the other recommendation levels. Also, as we note in the last section, analysts rarely issue sell or strong sell recommendations. Therefore, additions to or removal from these categories may be viewed as a stronger signal by the market than other recommendation revisions.

Our U.S. sample size for upgrades to strong buy is 29,196. In comparison, Womack (1996)'s sample size for the corresponding category is 694. Womack's sample period is shorter (from January 1989 to June 1990) and his sample comprises only recommendation revisions issued by analysts from the top 14 brokerage houses. However, in unreported results, we find that even during Womack's sample period our sample contains more revisions to strong buys from the top 14 brokerage houses (based on the number of analysts in the IBES database) than the Womack sample. Therefore, the difference in our sample sizes is most likely due to the fact that Womack constructs his sample from a text search of First Call analyst reports while we rely on IBES codes for analyst recommendations.

## B. Past Returns and size

Table V presents the past three- and six-month return ranks and size ranks for various upgrade and downgrade categories. For each recommendation revision we compute the cumulative returns over the three- and six-month period prior the revision date. We then assign a return rank based on the return decile over the corresponding period, across all stocks in the sample for that particular country. We assign a rank of 10 to the highest return decile, 9 to the next decile, and so on.<sup>3</sup>

The average six-month return rank for upgrades in the U.S. is 6.12, which is significantly larger than the return rank of 5.57 for downgrades.<sup>4</sup> The average six-month return rank for upgrades to strong buy is 6.25 and for downgrades to sell or strong sell is 5.25. The three-month return ranks are also larger for upgrades than downgrades. Clearly,

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<sup>3</sup> If any stock in the revision sample does not have return data over a particular return period, we exclude the stock from the sample for computing the average past return rank, but we do include that stock in the sample when we compute future returns.

<sup>4</sup> The average past return ranks for both upgrades and downgrades are larger than the average rank for the entire sample because analysts tend to not actively follow many of the past losers.

the U.S. analysts favor high price momentum stocks, and this evidence is consistent with the findings in earlier papers by Womack (1996) and Jegadeesh et al. (2003).

Interestingly, we observe a similar pattern in all of the other G7 countries as well. Specifically, we find that the upgrades have higher price momentum rank than downgrades, and upgrades to strong buy have the highest rank while downgrades to sell or strong sell have the lowest. Jegadeesh et al. (2003) find that the value of analyst recommendation levels are largely attributable to the fact that analysts tilt their recommendations toward high momentum stocks. A momentum strategy that buys past winners and sells past losers is profitable in the U.S. as well as in Canada and in the European countries.<sup>5</sup> Therefore, to some extent, analyst recommendations in North America and in Europe benefit from this phenomenon. However, the momentum strategy is not profitable in Japan (see Chui, Titman and Wei, 2000), but the Japanese analysts also favor high momentum stocks. In fact, the spread between upgrades to strong buy and downgrades to sell or strong sell in Japan is the largest among all G7 countries. This evidence suggests that analysts' favorable ratings for past winners may stem from the "everybody likes a winner" phenomenon, rather than by an attempt by analysts to benefit from the empirical association between past returns and future performance.

Table V also presents the average size rank for upgrades and downgrades. To facilitate comparability across countries, we use the NYSE size decile cutoffs for all countries. Except for Canada, the average size decile rank for upgrades and downgrades is above the average NYSE size decile rank. The average size ranks for upgrades typically larger than for downgrades. Although the median size in Table II is smaller than

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<sup>5</sup> See Jegadeesh and Titman (1993, 2001) and Rouwenhorst (1998) for evidence on the profitability of momentum strategies in the U.S. and Europe, respectively.

the NYSE median, the average size rank in this table is bigger in all of the countries except Canada because our unit of observations here is a recommendation revision. The larger firms are generally followed by more analysts and hence they experience more revisions. Therefore, our recommendation sample is tilted towards larger firms.

## C. Performance

For each recommendation revision, we compute  $AR_i(T)$ , the  $T$ -day cumulative market-adjusted return for stock  $i$ , as follows:

$$AR_i(T) = \prod_{t=0}^T (1 + R_{i,t}) - \prod_{t=0}^T (1 + R_{mkt,t})$$

where,  $t=0$  is the recommendation revision date,  $R_{i,t}$  and  $R_{mkt,t}$  are the return for stock  $i$  and the market index for the country of listing the stock, respectively, on day  $t$ . We measure the event time in trading days and not in calendar days.

Table VI presents the market-adjusted returns for stocks in each category, within each country. Since multiple recommendations revisions are made on many days, the returns for stocks for which the event windows overlap in calendar time windows will be correlated. To allow for this cross-sectional dependence, we follow the approach in Jegadeesh (2000). We first compute the average market-adjusted returns for all recommendations revision in each calendar month. The average abnormal return for each category is the weighted average of the abnormal returns for the monthly cohorts in the sample, where the weights are proportional to the number of observations in the respective cohorts. Specifically,

$$\overline{AR} = \mathbf{w}' \mathbf{A} \mathbf{R},$$

where,

- $\overline{AR}$ : Average abnormal return
- $\mathbf{w}$ : Vector of weights where the  $j^{\text{th}}$  element is the ratio of the number of observations in month  $j$  divided by the total number of observations over the sample period
- $\mathbf{A} \mathbf{R}$  Vector of average abnormal return where the element  $A_j$  is the average abnormal return for the  $j^{\text{th}}$  monthly cohort.

The variance of  $\overline{AR}$  is given by:

$$\text{Var}(\overline{AR}) = \mathbf{w}' V_A \mathbf{w},$$

where  $V_A$  is the variance covariance matrix of  $\mathbf{A} \mathbf{R}$ . Since the return measurement intervals for different monthly cohorts overlap, we allow for the first- through sixth-order serial covariance of monthly cohort return to be non-zero, and set the higher order serial covariances to equal zero. To be specific, let  $\mathbf{u}_{i,j}$  be the  $ij^{\text{th}}$  element of  $V_A$ . The estimator for  $V_A$  is:

$$\begin{aligned}\mathbf{u}_{i,j} &= (A_i - \overline{AR})^2 \quad \forall i = j, \\ &= (A_i - \overline{AR})(A_j - \overline{AR}) \quad \forall 1 \leq |i - j| \leq 6, \text{ and} \\ &= 0 \quad \text{otherwise.}\end{aligned}$$

For the U.S., the average abnormal return on day 0 is 1.76% for upgrades and is -3.21% for downgrades. In comparison, the day 0 abnormal return on for upgrades to strong buy is 1.91%, which is not significantly different from that for all upgrades. Similarly, the abnormal return for downgrades that result in sell or strong sell is -2.45%, which is also not significantly different from that for all downgrades.

Figure 2 presents the cumulative returns over the next six months for each country. The prices continue to drift up for upgrades and drift down for downgrades over the next two to six months in all of the countries. In the U.S., the cumulative return for all upgrades is 4.72% over the first six months, and for all downgrades is -6.28%. In unreported results we also examined the price impact of upgrades and downgrades by analysts from the 15 brokerage houses in the U.S. with the largest number of analysts. We found that the price impact on day 0 was significantly larger for the large brokerage house analysts. However, the price changes after day 0 were similar for recommendation revisions by analysts from both large and small brokerage houses.

The abnormal returns for the other countries are generally smaller than the abnormal returns for the U.S. For example, on the revision date, the average response for upgrades ranges from a marginal .03% in Italy, to .47% in Japan. Similarly, the returns on downgrade dates range from -.05 in Italy to -.46 in France. Although the abnormal returns are significantly different from zero in all countries except Italy, the magnitude of returns is much smaller than in the U.S.

The longer term returns for upgrades are significantly positive only in Japan. For instance, the abnormal return over a six-month period after upgrades is 4.04% in Japan, but it is close to zero or marginally negative in all of the other countries. Therefore, the weaker stock price reaction on the upgrade dates in countries outside the U.S. cannot be attributed to slower market reaction on the event dates. Rather, the upgrades have either small or no value in the other countries. Furthermore, upgrades that result in either strong buys or removal from sell or strong sell are also of limited value in these countries.

For the downgrades, however, the longer term price change is significant in most countries. The six-month abnormal returns after downgrades range from - 6.24% in Germany to -1.09% in Japan. Although the six-month abnormal returns are not significant in Japan and Britain, they are significantly negative over the first two months. Here again, we do not find a significant difference between all downgrades, and downgrades that result in removal from strong buy or addition to sell or strong sell. Overall, the results indicate that in the countries outside the U.S., downgrades convey more information than upgrades.

The difference between the abnormal returns following upgrades and downgrades provides a measure of the overall value of recommendation revisions in various countries. The six-month abnormal return difference is 11.35% in the U.S., which is the largest among the G7 countries. The six-month abnormal returns in the other countries range from 2.11 in Italy to 5.58% in Japan.

Most of this difference in abnormal returns between the U.S. and the other countries is due to the abnormal returns on day 0. The average abnormal return for upgrades is larger than that for the downgrades by 4.95% in the U.S. For the other countries, the corresponding return differences range from .07% in Italy to .89% in Japan.

#### **D. Trading Volume**

One measure of the attention that the recommendations get from investors is the increase in trading volume around recommendation revisions. We compute a measure of standardized volume during an event window covering 20 days before and 20 days after recommendation revisions. We define standardized volume ( $SV_t^i$ ) for stock  $i$  on day  $t$  as:

$$SV_t^i = \frac{Volume_t^i}{\left( \sum_{t=-20}^{-2} Volume_t^i + \sum_{t=2}^{20} Volume_t^i \right) \times \frac{1}{38}},$$

Where  $Volume_t^i$  is the number of shares traded on day  $t$ , suitably adjusted for any splits within this window.<sup>6</sup>

Figure 3 plots the standardized volumes for upgrades and downgrades within each country.<sup>7</sup> The standardized volume is significantly different from one on days -1, 0 and 1 in all countries except Italy. The U.S. stocks experience the largest increase in trading volume around recommendation revisions. The standardized volume on day 0 is 1.67 for upgrades and 2.31 for downgrades in the U.S. The standardized volume reverts to 1 by day 3 or day 4 in all of the countries except the U.S. and Japan. In the U.S., the standardized volume reverts to one on day 7 for upgrades and on day 8 for downgrades. In Japan, the standardized volume is similar to that in the other non-U.S. countries on day 0, but the standardized volume remains significantly greater than one up to day 6 for the upgrades, and up to day 4 for downgrades. Interestingly, we find that analysts add the most value in the U.S. and Japan, and the investors in these countries trade more intensely following recommendation revisions than in the other countries.

#### **IV. Calendar-Time Strategy**

So far we have considered the value of analyst recommendation in an event study framework. The event-time analysis provides a perspective on the magnitude of mispricing that analysts are able to detect when they revise their recommendations.

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<sup>6</sup> If the number of days within an event window for which volume data are available is less than 38, we divide by that number, instead of 38

<sup>7</sup> In our sample there are a total of 768 observations (0.32% of the sample) where the standardized volume is greater than 30. We exclude these outliers.

However, as Barber et al. (2001) point out, the event time analysis does not measure the profits to an implementable investment strategy. In this section, we examine the profitability of calendar time strategies.

The prior literature considers many different kinds of trading strategies based on recommendation levels as well as recommendation revisions. For example, Barber et al. (2001) and Jegadeesh et al. (2003) examine the performance of trading strategies based on consensus recommendations with U.S. data. Specifically, these papers sort stocks based on consensus recommendation levels and buy the most favorably recommended category of stocks and sell the least favorably recommended stocks.<sup>8</sup> In unreported tests, we examined the profitability of trading strategies similar to that in these papers. We found that none of these strategies was profitable in any of the countries in our sample, including the U.S. In most countries, these strategies performed poorly in 2000 and 2001, and this poor performance wipes out the profits during the earlier part of the sample period. Barber et al. (2002) previously find that such strategies are extremely unprofitable in these two years in the U.S., and we find similar results in the other countries as well.

One of the possible reasons why the consensus recommendations perform poorly is because some of the recommendations that enter into the consensus can be fairly stale. Analysts often leave their recommendations unchanged for long periods of time and the forecasts generally become less informative over time. The poor performance of consensus forecasts could perhaps be due to the staleness of some of the inputs. Also, the recommendations are generally more favorable for growth stocks than for value

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<sup>8</sup> The trading strategies in Barber et al. (2001a) and Jegadeesh et al. (2003) differ in the frequency of rebalancing. Barber et al. rebalance daily while Jegadeesh et al. rebalance quarterly. Jegadeesh et al. also consider a trading strategy based on changes in consensus recommendation.

stocks. The growth stocks performed much worse than the value stocks towards the end of our sample period, which in turn could account for much of the poor performance of the recommendations.

To avoid these potential problems, we examine the performance of trading strategies based on recommendation revisions. On each date we identify all stocks that had upgrades or downgrades over the past  $T$  months. We examine the performance of trading strategies with  $T$  equal to 1, 3 and 6 months. Each stock stays in the portfolios for  $T$  months and hence  $T$  represents the holding period. Although forecasts become stale as we increase  $T$ , shorter  $T$  will involve more transactions. Therefore, because of transaction costs, the holding period is an important consideration for practical investments.

We also examine the effect of delays between the time a revision is made and the time the stock enters a portfolio. In practice, investments based on revisions could be delayed either because investors do not receive the signals in a timely manner, or because there is a delay between the time the signal is received and action is taken. Our strategies allow for delays of 0, 1 and 5 days.

On each day, the upgrades over the prior  $T$  months, with a  $d$  day delay comprise the ``Buy'' portfolio, and the downgrades over this sample period comprise the ``Sell'' portfolio.<sup>9</sup> We examine the performance of an equal-weighted strategy as well as a value-weighted strategy. The value-weighted strategy has its appeal because the portfolio weights are proportional to the market-index weights. Also, a value-weighted strategy is a buy-and-hold strategy, and hence it can be implemented in practice. However, because the sizes of the largest few firms are orders of magnitude larger than that of the small

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<sup>9</sup> If a stock has both an upgrade and a downgrade within a  $T$ -month period, then we include the stock in both Buy and Sell portfolios for the appropriate periods.

firms, the performance of large firms will dominate in the value-weighted strategy, and the performance of small firms will not be evident in this strategy. Therefore, we also examine the performance of an equal-weighted portfolio. Since the sample comprises more small firms (relative to the NYSE median) than large firms, the equal-weighted portfolio returns tilt towards the small firm performance. The equal-weighted portfolio, however, is hard to implement in practice since it requires daily rebalancing.<sup>10</sup>

For each of these strategies, we first compute the daily equal-weighted returns for buy portfolio  $DR_{ew,t}^b$  and sell portfolio  $DR_{ew,t}^s$  as follows:

$$DR_{ew,t}^b = \frac{1}{N_{b,t}} \sum_{i \in I_{b,t}} R_{i,t}, \text{ and}$$

$$DR_{ew,t}^s = \frac{1}{N_{s,t}} \sum_{i \in I_{s,t}} R_{i,t},$$

where  $I_{b,t}$  and  $I_{s,t}$  are the sets of stocks in the Buy and Sell portfolios on day  $t$ , and  $N_{b,t}$  and  $N_{s,t}$  are the number of stocks in these portfolios.

Similarly, we compute the daily value weighted returns buy portfolio  $DR_{vw,t}^b$  and sell portfolio  $DR_{vw,t}^s$  as follows:

$$DR_{vw,t}^b = \frac{\sum_{i \in I_{b,t}} S_{i,t-1} \times P_{i,t-1} \times R_{i,t}}{\sum_{i \in I_{b,t}} S_{i,t-1} \times P_{i,t-1}}, \text{ and}$$

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<sup>10</sup> The equal-weighted returns are on average biased upwards because of the bid-ask bounce (see Blume and Stambaugh, 1983, Canina, Michaely, Thaler and Womack, 1998 and Lyon, Barber and Tsai, 1999). This bias is fairly small for the stocks with prices above \$5, and our sample generally excludes the lower priced stock because they do not have little analyst coverage. Also, we examine the difference between the returns for the upgrades minus downgrade portfolio. Since the firm sizes are similar for upgrades and downgrades, we expect that any such bias would be negligible.

$$DR_{vw,t}^s = \frac{\sum_{i \in I_{s,t}} S_{i,t-1} \times P_{i,t-1} \times R_{i,t}}{\sum_{i \in I_{s,t}} S_{i,t-1} \times P_{i,t-1}},$$

where,  $S_{i,t}$  and  $P_{i,t}$  are the number of shares outstanding, and the price for stock  $i$  on date  $t$ , respectively. We compound the daily returns for the Buy and Sell portfolio within each calendar month, and the Buy minus Sell returns is the trading strategy profit.

Panel A of Table VII presents the monthly equal-weighted returns for the Buy minus Sell portfolios for various holding periods and delays. One of the striking patterns that we find here is that the portfolio returns decline rapidly with an increase in delay. For example, for the one-month holding period, when we increase the delay from one day to five days, the portfolio return declines from 5.94% to 1.37% in the U.S. We also find a similar pattern in the other countries. This pattern reflects the relatively large returns we observe on days 0 and 1 in Table VI.

In all countries, the trading strategy is less profitable as we increase the holding period. For example, in the U.S., the profit declines from 5.94% for the one-month holding period to 1.28% for the six-month holding period. The profits are significantly positive for all holding periods and all levels of delays in the U.S., Germany and Japan. The strategies are reliably profitable in France and Canada in most cases. The profits in Britain are generally insignificant beyond a one-month holding period. The profits are not reliably different from zero in all cases except one in Italy, but the lack of significance here is largely due to the short sample period.

Table VII also presents the portfolio returns separately for large firms and small firms. To facilitate comparability, for all countries we classify firms as large and small

based on the median size of NYSE-listed stocks on the last trading day of the calendar year before the portfolio formation date. The profits are generally bigger for small firms than large firms. Analyst recommendations, therefore, add more value for small firms than large firms.

Panel B of Table VII presents the value-weighted profits. The pattern of the value-weighted profits is generally similar to the pattern of equal-weighted profits, both across holding periods and across delays. However, for the full sample and for large firms, the value-weighted profits are much smaller than the equal-weighted profits in all of the countries. For example, the value-weighted profit is 2.06% for the one month holding period with no delay in the U.S., compared with the equal-weighted profit of 5.94%. In all of the countries except France and Italy, the value-weighted profits are significantly different from zero for the one-month holding period with no delay. However, outside the U.S., the profits are not significantly different from zero for longer holding periods and for longer delays, except in a few cases.

The profits are generally larger for the small firms than the large firms. In fact, for the small firms the value-weighted profits are close to the equal-weighted profits in most countries. For example, the value-weighted profit for small firms is 7.60% for the one month holding period with no delay in the U.S., compared with the equal-weighted profit of 8.19%. Therefore, within the small firm segment of the market, the value that analyst add is not related to firm size.

One possible explanation for the profitability of the trading strategy is that the Buy portfolio may be riskier than Sell portfolio. In unreported tests we examined the betas of the Buy minus Sell portfolios with respect to the market indices in the respective

countries. In virtually all cases, the betas were close to zero. Among the few instances where the betas were significantly different from zero, in some cases the betas were positive and in the other cases they were negative. Since we estimate a large number of betas, it is quite likely that a few of them turn out to be significant purely by chance. In any event, the results after adjusting for market risk were virtually identical to the results in Table VII. Therefore, the trading strategy profits are not due to the exposure of these portfolios to market risk.

Overall, the trading profits are by far the largest for the U.S. Japan ranks second. In fact, the trading profits for small firms are about the same in the U.S. and Japan. The magnitudes of the profits for the equal-weighted strategy are about the equal across the other countries for a one-month holding period. The value-weighted strategy is not profitable in these countries except in a few cases.

## V. Conclusion

This paper examines analyst recommendations in the G7 countries and evaluates the value of these recommendations. We find that stock prices react significantly to recommendation revisions on the day of recommendation and on the following day in all of these countries except, Italy.<sup>11</sup> We find the largest price reactions in the U.S., followed by Japan. These are the two largest markets in the world, and our evidence indicates that the value of analyst recommendations is the largest in these countries. Stock prices continue to drift up for upgrades and down for downgrades over the next two to six months.

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<sup>11</sup> Our sample in Italy covers only about five years, from October 1993 to December 1998. The weak evidence in Italy is partly due to the shorter sample period.

We also examine the performance of calendar-time trading strategies that buy stocks with recommendation upgrades and sell stocks with recommendation downgrades. We consider several strategies with different holding periods, and with different levels of delays between the time when revisions are made and the time when the stocks enter the portfolios. The equal-weighted strategies with no delays and with holding periods of one month are profitable in all countries before transaction costs. The value-weighted strategies, however, are profitable only for a one-month holding period strategy that is initiated without a delay. All of the strategies are more profitable for small firms than for large firms. Among all of the countries, we find that the trading strategies are the most profitable in the U.S., across all horizons.

Our evidence indicates that the market is not semistrong form efficient in the countries in our sample, in spite of the fact that these countries have the most developed stock markets in the world. Although the profits from these trading strategies are probably smaller than the transaction cost bounds, it is possible that investors may be able to profitably use recommendation revisions in combination with other signals in their trading strategies. For instance, Jegadeesh et al. (2003) show that in the U.S., recommendation revisions in combination with several momentum and value signals earn significant profits, and such strategies may work in the other countries as well.

Our comparative analysis of the value of analyst recommendation in developed countries also provides a basis for assessing the likely benefits of the recent regulatory settlements with brokerage firms for investors. This settlement includes provisions to sever links between the investment banking and the stock research departments, and to promote independent research. The settlement will likely promote more ethical practices,

and will likely make the analysts less reluctant to issue sell recommendations than they have been in the past. In fact, we examined the recommendations in the first three months of 2003 and found that analysts in the U.S. issued about 15% sell or strong sell recommendations during this period, compared with only 3.5 % such recommendations during the 1993 to 2002 sample period that we examine in the paper. The recommendations also exhibit more cross-sectional variation in 2003 than in the earlier years.

Neither the frequency of sell recommendations nor the cross-sectional variability, however, need translate into more value for investors. During our sample period, the U.S. had the lowest frequency of sell recommendation among all of the countries we examine. Also, the issue of analysts' conflict of interest has not been a major public concern outside the U.S. However, analyst recommendations in the U.S. provide the most value for investors. It seems likely that the U.S. investors were able to see through potential conflicts of interests when they used analyst recommendations, even prior to the settlement. Furthermore, the evidence that analysts in all of the most developed countries add only a modest amount of value through their recommendations suggests that these markets are fairly efficient, and it is unlikely that analysts can routinely uncover larger mispricings. Therefore, we do not see any reason to expect that the recommendations of the U.S. analysts will perform any better in the future, even with the current efforts to remove their conflicting incentives, than what they have in the past.

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**Table I**  
**Sample Descriptive Statistics**

This table presents sample descriptive statistics. The sample includes all firms in the G7 countries that have at least two active recommendations from the same analyst in the IBES international recommendations database, and also have stock return data on recommendation revision dates in the Standard and Poor's Xpressfeed database. The sample excludes all stocks priced lower than \$1 on the recommendation revision date. The columns present the average number of stocks followed by analysts per year, the average number of analysts per year, the average number of brokerage firms per year, and the mean and median number of analysts per stock, and per brokerage firm. The sample period is from October 1993 to December 1998 for Italy, and from October 1993 to July 2002 for the other countries.

<b>Country</b>	<b>Stocks</b>	<b>Analysts</b>	<b>Brokerage firms</b>	<b>Analysts per stock</b>		<b>Analysts per brokerage firm</b>	
				Mean	Median	Mean	Median
<b>US</b>	3,056	2,020	170	3	2	12	6
<b>Britain</b>	584	491	43	3	2	12	7
<b>Canada</b>	289	288	46	4	3	6	3
<b>France</b>	232	376	41	5	3	9	8
<b>Germany</b>	190	317	41	4	3	8	6
<b>Italy</b>	92	116	24	3	2	5	4
<b>Japan</b>	385	184	14	2	1	12	10
<b>Average (Excluding US)</b>	315	318	36	3	2	9	7
<b>Average (All countries)</b>	735	582	57	3	2	10	7

**Table II**  
**Overview of the Market Size for the G7 Countries and the Sample Coverage**

This table presents an overview of the total market size and median market value of equity for the G7 countries. Panel A presents the total market capitalization of each G7 country. Panel B presents the market capitalization of the firms in our sample as of the first day of each calendar year. Panel C presents the fraction of the market covered by our sample. Panel D presents the median market capitalizations of the stocks in the sample. The row titled “NYSE” in Panel D presents the median market capitalization of New York Stock Exchange listed stocks for comparison. The sample period is from October 1993 to December 1998 for Italy, and from October 1993 to July 2002 for the other countries.

<b>Panel A: Total Market Capitalization of G7 countries (unit: \$U.S. billions)</b>										
Country	Average	1993	1994	1995	1996	1997	1998	1999	2000	2001
US	10,498	5,129	5,056	6,910	8,466	10,451	12,747	16,590	15,117	14,015
Britain	1,940	1,139	1,165	1,384	1,702	2,042	2,274	2,926	2,689	2,137
Canada	415	211	214	265	355	447	447	603	641	548
France	865	452	461	519	600	667	973	1,501	1,443	1,170
Germany	874	437	509	585	675	816	1,082	1,431	1,267	1,068
Italy	413	134	184	214	263	343	563	727	766	525
Japan	3,063	2,912	3,619	3,595	3,060	2,053	2,430	4,440	3,177	2,279

<b>Panel B: Sample Market Capitalization of G7 Countries (unit: \$U.S. billions)</b>										
Country	Average	1993	1994	1995	1996	1997	1998	1999	2000	2001
US	8,755	1,134	3,949	5,490	6,798	9,079	11,517	14,569	13,946	12,313
Britain	1,321	735	765	916	1,160	1,393	1,503	2,022	1,798	1,593
Canada	241	67	117	146	221	293	292	356	350	324
France	416	141	192	233	302	362	505	726	703	582
Germany	642	300	402	391	475	625	789	1,111	874	815
Italy	158	59	103	100	158	209	324	-	-	-
Japan	1,702	236	1,733	2,269	1,712	1,299	1,070	3,143	2,115	1,738

**Table II — Continued**

<b>Panel C: Sample Coverage (Panel B/Panel C, %)</b>										
Country	Average	1993	1994	1995	1996	1997	1998	1999	2000	2001
US	83.40	22.11	78.10	79.45	80.30	86.87	90.35	87.82	92.25	87.86
Britain	68.08	64.52	65.64	66.20	68.20	68.19	66.09	69.11	66.87	74.57
Canada	58.02	31.47	54.41	55.33	62.30	65.58	65.25	59.03	54.49	59.15
France	48.11	31.15	41.53	44.99	50.28	54.34	51.90	48.39	48.75	49.71
Germany	73.48	68.68	79.00	66.94	70.40	76.65	72.88	77.63	68.95	76.32
Italy	55.90	43.60	55.67	46.67	59.98	60.81	57.51	-	-	-
Japan	55.56	8.12	47.90	63.12	55.94	63.30	44.03	70.78	66.57	76.27

<b>Panel D: Median Market Capitalization of the Sample (Unit: \$U.S. mil)</b>										
Country	Average	1993	1994	1995	1996	1997	1998	1999	2000	2001
US	465	790	297	340	384	426	364	465	501	622
Britain	409	599	483	483	472	374	301	429	295	244
Canada	234	521	294	229	236	186	136	140	170	195
France	428	1,077	604	400	350	281	307	328	235	267
Germany	540	1,293	458	560	602	545	372	500	392	138
Italy	536	838	350	359	354	512	802	-	-	-
Japan	1,838	1,982	2,411	2,096	1,486	879	1,856	2,412	2,355	1,067
NYSE	836	679	615	715	794	945	813	825	986	1,149

**Table III**  
**Distribution of Recommendation Levels in the G7 Countries**

This table presents the average recommendation levels in the G7 countries. The sample includes all firms that have at least two active recommendations from the same analyst in the IBES international recommendations database, and also have stock return data on recommendation revision dates in the Standard and Poor's Xpressfeed database. We reverse-score the recommendations from 5 (strong buy) to 1 (strong sell). The row titled "Average" reports the averages recommendation levels across all recommendations in the sample for the respective countries. The other rows report the percentages of the respective recommendation categories among all recommendations in that country. The sample period is from October 1993 to December 1998 for Italy, and from October 1993 to July 2002 for the other countries.

		1993-											
		Country	2002	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
US	Average		3.83	3.82	3.76	3.72	3.81	3.86	3.87	3.92	3.93	3.83	3.75
	Strong Buy		26.7	28.8	24.8	24.8	27.9	28.1	26.8	28.5	28.9	24.6	25.2
	Buy		35.3	32.8	34.0	31.8	32.4	35.4	37.1	38.7	38.1	37.2	30.7
	Hold		34.4	33.3	36.0	38.1	35.0	33.3	33.8	30.3	30.7	35.4	39.1
	Sell/Strong Sell		3.6	5.1	5.2	5.3	4.7	3.3	2.3	2.5	2.3	2.7	5.1
Britain	Average		3.48	3.31	3.40	3.29	3.48	3.46	3.43	3.59	3.70	3.43	3.47
	Strong Buy		23.9	22.7	28.5	22.8	29.4	26.9	22.5	24.5	26.1	18.9	17.3
	Buy		22.8	13.8	13.0	14.5	13.5	18.0	21.8	26.4	31.9	27.3	32.2
	Hold		39.0	47.5	41.3	44.0	42.7	40.2	40.1	37.8	33.0	38.0	35.9
	Sell/Strong Sell		14.3	16.0	17.1	18.7	14.4	15.0	15.7	11.3	9.1	15.8	14.6
Canada	Average		3.65	3.63	3.70	3.57	3.60	3.65	3.63	3.70	3.72	3.62	3.63
	Strong Buy		25.7	38.3	36.0	29.7	30.5	29.8	23.0	23.5	20.6	20.4	18.2
	Buy		29.7	7.0	17.2	20.4	21.2	23.9	32.7	36.4	40.7	34.0	38.3
	Hold		32.5	40.0	33.0	33.2	32.7	32.9	32.7	30.3	31.3	35.4	34.0
	Sell/Strong Sell		12.0	14.8	13.8	16.7	15.7	13.4	11.6	9.9	7.4	10.2	9.5
France	Average		3.50	3.54	3.51	3.34	3.48	3.53	3.52	3.57	3.64	3.36	3.44
	Strong Buy		21.5	20.5	26.7	22.7	22.2	22.4	23.9	23.4	21.3	15.7	11.9
	Buy		30.6	31.6	22.7	22.1	29.9	28.8	28.2	32.7	39.7	29.4	43.3
	Hold		29.5	35.8	35.1	31.6	28.8	32.7	28.3	26.3	24.5	34.3	24.3
	Sell/Strong Sell		18.4	12.1	15.6	23.5	19.2	16.2	19.6	17.6	14.5	20.6	20.5

**Table III—Continued**

Country		1993-2002										
		2002	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Germany	Average	3.24	3.28	3.29	3.05	3.07	3.16	3.29	3.32	3.46	3.17	3.32
	Strong Buy	18.4	30.2	25.3	17.6	15.5	21.0	21.3	17.4	18.2	14.1	15.3
	Buy	18.3	4.7	11.8	12.0	15.7	14.8	14.5	19.7	25.8	21.6	27.7
	Hold	42.5	43.5	44.5	44.8	40.6	39.0	46.1	46.6	43.7	39.9	37.4
	Sell/Strong Sell	20.8	21.6	18.5	25.6	28.2	25.3	18.1	16.3	12.4	24.4	19.6
Italy	Average	3.34	3.16	3.42	3.19	3.22	3.35	3.52	-	-	-	-
	Strong Buy	21.1	14.9	24.5	19.3	16.9	21.4	23.5	-	-	-	-
	Buy	16.1	6.9	15.1	14.3	16.3	15.7	20.3	-	-	-	-
	Hold	46.7	64.4	46.0	44.1	47.8	47.2	45.2	-	-	-	-
	Sell/Strong Sell	16.2	13.8	14.4	22.2	19.0	15.7	11.0	-	-	-	-
Japan	Average	3.39	3.16	3.16	3.33	3.30	3.47	3.23	3.52	3.68	3.30	3.47
	Strong Buy	23.3	29.4	26.7	33.7	34.0	33.0	19.1	21.1	26.3	12.1	16.0
	Buy	18.1	0.0	6.5	4.9	3.3	7.0	13.8	21.9	24.6	24.7	33.0
	Hold	41.4	47.1	43.4	39.2	39.2	43.4	47.5	48.2	42.0	47.3	34.8
	Sell/Strong Sell	17.2	23.5	23.4	22.2	23.5	16.6	19.6	8.9	7.1	16.0	16.2
(Ex the US)	Average	3.48	3.34	3.43	3.34	3.44	3.49	3.50	3.59	3.66	3.38	3.47
	Strong Buy	23.0	24.5	28.3	25.0	26.3	26.6	22.7	22.8	22.8	16.9	16.0
	Buy	24.6	13.2	14.7	15.8	18.9	20.2	25.5	29.8	34.2	27.2	34.1
	Hold	36.7	45.9	40.1	38.4	36.3	37.2	36.6	35.0	32.8	38.6	34.0
	Sell/Strong Sell	15.7	16.4	16.8	20.8	18.6	16.1	15.1	12.4	10.1	17.3	15.9
(All countries)	Average	3.69	3.43	3.63	3.60	3.66	3.70	3.72	3.79	3.83	3.65	3.64
	Strong Buy	25.3	25.3	26.2	24.8	27.2	27.4	25.1	26.2	26.6	21.5	21.7
	Buy	31.0	17.0	26.3	26.7	26.9	28.8	32.3	35.2	36.6	33.2	32.0
	Hold	35.3	43.5	37.6	38.2	35.5	35.0	35.0	32.1	31.5	36.7	37.1
	Sell/Strong Sell	8.4	14.2	9.8	10.3	10.4	8.8	7.6	6.4	5.2	8.6	9.2

**Table IV**  
**Distribution of Analyst Recommendation Revisions in G7 Countries**

This table presents the distribution of recommendation revisions in the sample. We characterize a revision as an upgrade or a downgrade by comparing the new recommendation with the previous recommendation by the revising analysts for the same stock. We further classify upgrades and downgrades into revisions to and from strong buy and from and to sell or strong sell. “All revisions” column includes both upgrades and downgrades. The first column in each revision category presents the number of revisions, and the second column presents the percentages across all revisions in that country. The sample period is from October 1993 to December 1998 for Italy, and from October 1993 to July 2002 for the other countries.

Country	Revisions	All		Upgrades				Downgrades					
		All		to Str. Buy		from Sell/Str. Sell		All		to Sell/Str. Sell		from Str. Buy	
		No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.
US	113,817	50,260	44.16	29,196	25.65	3,582	3.15	63,557	55.84	4,602	4.04	35,120	30.86
Britain	23,906	11,821	49.45	5,571	23.30	3,418	14.30	12,085	50.55	3,416	14.29	5,797	24.25
Canada	20,718	9,883	47.70	4,686	22.62	2,170	10.47	10,835	52.30	2,324	11.22	5,411	26.12
France	13,458	6,517	48.42	2,766	20.55	2,242	16.66	6,941	51.58	2,488	18.49	2,968	22.05
Germany	11,044	5,263	47.65	2,145	19.42	2,058	18.63	5,781	52.35	2,198	19.90	2,407	21.79
Italy	2,720	1,355	49.82	591	21.73	476	17.50	1,365	50.18	415	15.26	624	22.94
Japan	7,168	3,506	48.91	1,534	21.40	1,289	17.98	3,662	51.09	1,219	17.01	1,766	24.64
Total(ex US)	79,014	38,345	48.53	17,293	21.89	11,653	14.75	40,669	51.47	12,060	15.26	18,973	24.01
Total(all G7)	192,831	88,605	45.95	46,489	24.11	15,235	7.90	104,226	54.05	16,662	8.64	54,093	28.05

**Table V**

**Past Returns and Size Characteristics of Analyst Recommendation Revisions across G7 Countries: 1993 to 2002**

This table presents average past returns ranks and size ranks for the recommendation revisions in the sample. We characterize a revision as an upgrade or a downgrade by comparing the new recommendation with the previous recommendation by the revising analysts for the same stock. We further classify upgrades and downgrades into revisions to and from strong buy and from and to sell or strong sell. that analysts upgrade or downgrade. For each revision, we compute past three- and six-month returns and separately assign return decile ranks based on the returns for the corresponding period for all stocks in the respective countries. We assign rank 1 to stocks in the lowest return decile, rank 2 to the next return decile, and so on. To determine the size ranks, we compute the market value of for revision as of the end of the month before the revision. For all countries, we assign size ranks bashed on NYSE size decile break points. We assign rank 1 to stocks in the smallest size decile, rank 2 to the next size decile, and so on. The column titled “6m” and “3m” report average six- and three-month return ranks, and column titled “Size” reports the average size ranks. The sample period is from October 1993 to December 1998 for Italy, and from October 1993 to July 2002 for the other countries.

<b>Country</b>	Upgrades									Downgrades								
	All			to Str Buy			from Sell/Str Sell			All			to Sell/Str Sell			from Str Buy		
	6m	3m	size	6m	3m	size	6m	3m	size	6m	3m	size	6m	3m	size	6m	3m	size
<b>US</b>	6.12	5.93	6.44	6.25	5.97	6.36	5.50	5.54	6.65	5.57	5.54	5.95	5.25	5.44	6.10	5.71	5.64	5.94
<b>Britain</b>	5.48	5.44	6.20	5.58	5.51	6.01	5.21	5.25	6.60	5.58	5.56	6.12	5.34	5.36	6.52	5.63	5.61	5.87
<b>Canada</b>	5.89	5.79	4.67	6.05	5.86	4.85	5.41	5.46	4.22	5.78	5.81	4.51	5.26	5.42	3.96	5.90	5.89	4.65
<b>France</b>	5.85	5.84	5.78	6.19	6.08	5.92	5.50	5.64	5.62	5.46	5.34	5.55	5.11	5.01	5.39	5.80	5.57	5.65
<b>Germany</b>	6.02	5.97	6.80	6.19	6.07	6.96	5.73	5.78	6.53	5.53	5.36	6.54	5.05	4.90	6.21	5.87	5.65	6.78
<b>Italy</b>	5.96	5.99	6.16	6.28	6.26	6.30	5.37	5.66	6.04	5.69	5.51	6.14	5.22	5.27	6.27	6.00	5.78	6.27
<b>Japan</b>	6.24	6.21	7.39	6.65	6.46	7.53	5.82	5.97	7.40	5.73	5.49	7.18	5.23	5.11	7.17	6.09	5.77	7.13
<b>Total(all G7)</b>	5.98	5.85	6.22	6.16	5.93	6.21	5.48	5.55	6.18	5.59	5.55	5.88	5.22	5.26	5.89	5.75	5.66	5.87
<b>Total(ex US)</b>	5.81	5.76	5.93	6.00	5.88	5.95	5.47	5.55	6.04	5.63	5.56	5.76	5.21	5.19	5.81	5.82	5.71	5.74

**Table VI**  
**Cumulative Returns following Analyst Recommendation Revisions in the G7 Countries**

This table presents the cumulative abnormal returns following recommendation revisions. We characterize a revision as an upgrade or a downgrade by comparing the new recommendation with the previous recommendation by the revising analysts for the same stock. We further classify upgrades and downgrades into revisions to and from strong buy and from and to sell or strong sell. that analysts upgrade or downgrade. The abnormal return is the raw return minus the market return in the respective country over the corresponding period. For the U.S., the market return is the CRSP value-weighted index returns and for the other six countries, the market returns are the Datastream index returns for the countries. Day 0 is the revision date and other days in the columns are the number of trading days from the revision date. The average returns reported in bold face are statistically significant at least at the five percent level (absolute value of  $t$ -statistics greater than 1.96). We use heteroskedasticity and serial correlation consistent standard errors to compute the  $t$ -statistics. The sample period is from October 1993 to December 1998 for Italy, and from October 1993 to July 2002 for the other countries.

Country	Recommendation Revision	Number of Trading Days after the Revision Date						
		0	1	2	22	44	132	
US	Upgrades	All	<b>1.76</b>	<b>2.10</b>	<b>2.20</b>	<b>3.33</b>	<b>3.63</b>	<b>4.72</b>
		to strong buy	<b>1.91</b>	<b>2.29</b>	<b>2.41</b>	<b>3.59</b>	<b>3.83</b>	<b>4.62</b>
		from sell/strong sell	<b>0.66</b>	<b>0.78</b>	<b>0.82</b>	<b>1.20</b>	<b>1.48</b>	<b>0.69</b>
	Downgrades	All	<b>-3.21</b>	<b>-3.41</b>	<b>-3.54</b>	<b>-4.27</b>	<b>-4.82</b>	<b>-6.28</b>
		to sell/strong sell	<b>-2.45</b>	<b>-2.49</b>	<b>-2.75</b>	<b>-3.59</b>	<b>-4.13</b>	<b>-5.80</b>
		from strong buy	<b>-3.18</b>	<b>-3.38</b>	<b>-3.47</b>	<b>-4.32</b>	<b>-4.94</b>	<b>-6.51</b>
	Upgrades minus Downgrades		<b>4.95</b>	<b>5.51</b>	<b>5.74</b>	<b>6.53</b>	<b>8.64</b>	<b>11.35</b>
Britain	Upgrades	All	<b>0.19</b>	<b>0.27</b>	<b>0.38</b>	<b>1.13</b>	<b>1.40</b>	<b>0.66</b>
		to strong buy	<b>0.18</b>	<b>0.28</b>	<b>0.44</b>	<b>1.42</b>	<b>1.70</b>	<b>0.68</b>
		from sell/strong sell	<b>0.21</b>	<b>0.26</b>	<b>0.31</b>	<b>0.70</b>	<b>1.00</b>	<b>-0.18</b>
	Downgrades	All	<b>-0.19</b>	<b>-0.23</b>	<b>-0.27</b>	<b>-0.57</b>	<b>-0.73</b>	<b>-1.43</b>
		to sell/strong sell	<b>-0.30</b>	<b>-0.36</b>	<b>-0.42</b>	<b>-0.82</b>	<b>-1.00</b>	<b>-2.36</b>
		from strong buy	<b>-0.16</b>	<b>-0.18</b>	<b>-0.24</b>	<b>-0.70</b>	<b>-1.05</b>	<b>-1.84</b>
	Upgrades minus Downgrades		<b>0.38</b>	<b>0.50</b>	<b>0.65</b>	<b>0.95</b>	<b>2.17</b>	<b>2.63</b>
Canada	Upgrades	All	<b>0.40</b>	<b>0.55</b>	<b>0.61</b>	<b>0.94</b>	<b>0.98</b>	<b>-1.71</b>
		to strong buy	<b>0.46</b>	<b>0.69</b>	<b>0.70</b>	<b>0.92</b>	<b>1.02</b>	<b>-1.87</b>
		from sell/strong sell	<b>0.17</b>	<b>0.32</b>	<b>0.45</b>	<b>-0.11</b>	<b>-0.86</b>	<b>-3.88</b>
	Downgrades	All	<b>-0.45</b>	<b>-0.66</b>	<b>-0.71</b>	<b>-1.63</b>	<b>-2.58</b>	<b>-5.70</b>
		to sell/strong sell	<b>-0.65</b>	<b>-0.92</b>	<b>-0.88</b>	<b>-2.52</b>	<b>-4.52</b>	<b>-8.95</b>
		from strong buy	<b>-0.36</b>	<b>-0.57</b>	<b>-0.66</b>	<b>-1.40</b>	<b>-2.25</b>	<b>-5.65</b>
	Upgrades – Downgrades		<b>0.87</b>	<b>1.23</b>	<b>1.35</b>	<b>2.28</b>	<b>3.70</b>	<b>4.72</b>

**Table VI—Continued**

Country		Recommendation Revision	Number of Trading Days after the Revision Date					
			0	1	2	22	44	132
France	Upgrades	All	<b>0.36</b>	<b>0.44</b>	<b>0.46</b>	0.28	0.45	-0.70
		to strong buy	<b>0.47</b>	<b>0.59</b>	<b>0.65</b>	0.72	1.04	0.50
		from sell/strong sell	<b>0.18</b>	0.16	0.14	-0.40	-0.52	-1.78
	Downgrades	All downs	<b>-0.46</b>	<b>-0.61</b>	<b>-0.67</b>	<b>-1.64</b>	<b>-2.38</b>	<b>-5.16</b>
		to sell/strong sell	<b>-0.47</b>	<b>-0.61</b>	<b>-0.68</b>	<b>-2.12</b>	<b>-3.06</b>	<b>-7.02</b>
		from strong buy	<b>-0.41</b>	<b>-0.55</b>	<b>-0.60</b>	<b>-1.40</b>	<b>-1.97</b>	<b>-4.38</b>
	Upgrades minus Downgrades		<b>0.79</b>	<b>1.02</b>	<b>1.11</b>	<b>2.14</b>	<b>2.92</b>	<b>4.94</b>
Germany	Upgrades	All	<b>0.14</b>	<b>0.19</b>	<b>0.17</b>	0.12	0.04	<b>-1.93</b>
		to strong buy	<b>0.22</b>	<b>0.43</b>	<b>0.40</b>	0.16	0.29	<b>-2.23</b>
		from sell/strong sell	0.11	0.07	-0.04	-0.22	-0.41	-2.34
	Downgrades	All	<b>-0.25</b>	<b>-0.36</b>	<b>-0.41</b>	<b>-1.53</b>	<b>-2.89</b>	<b>-6.24</b>
		to sell/strong sell	<b>-0.31</b>	<b>-0.40</b>	<b>-0.48</b>	<b>-1.85</b>	<b>-3.35</b>	<b>-7.39</b>
		from strong buy	<b>-0.17</b>	<b>-0.36</b>	<b>-0.40</b>	<b>-1.43</b>	<b>-2.80</b>	<b>-6.04</b>
	Upgrades minus Downgrades		<b>0.36</b>	<b>0.52</b>	<b>0.55</b>	<b>1.66</b>	<b>2.72</b>	<b>3.92</b>
Italy	Upgrades	All	0.03	-0.01	-0.04	-0.04	-0.71	-1.30
		to strong buy	-0.10	0.00	-0.01	0.30	-0.35	-0.14
		from sell/strong sell	0.07	-0.02	-0.11	-0.63	<b>-1.74</b>	<b>-3.04</b>
	Downgrades	All	-0.05	-0.17	-0.14	<b>-0.56</b>	<b>-1.21</b>	<b>-3.41</b>
		to sell/strong sell	-0.11	<b>-0.33</b>	-0.25	<b>-1.13</b>	-1.15	<b>-4.48</b>
		from strong buy	-0.05	-0.08	-0.05	-0.64	<b>-1.63</b>	<b>-4.04</b>
	Upgrades minus Downgrades		0.07	0.14	0.09	<b>0.58</b>	0.55	<b>2.11</b>
Japan	Upgrades	All	<b>0.47</b>	<b>0.74</b>	<b>0.88</b>	<b>1.63</b>	<b>2.13</b>	<b>4.04</b>
		to strong buy	<b>0.40</b>	<b>0.64</b>	<b>0.84</b>	<b>1.14</b>	<b>1.64</b>	<b>3.14</b>
		from sell/strong sell	<b>0.29</b>	<b>0.32</b>	<b>0.36</b>	0.83	1.21	2.74
	Downgrades	All	<b>-0.43</b>	<b>-0.73</b>	<b>-0.82</b>	<b>-1.18</b>	<b>-1.46</b>	-1.09
		to sell/strong sell	<b>-0.61</b>	<b>-0.97</b>	<b>-1.08</b>	<b>-1.77</b>	<b>-2.18</b>	-1.52
		from strong buy	<b>-0.32</b>	<b>-0.61</b>	<b>-0.59</b>	<b>-0.99</b>	<b>-1.55</b>	-1.88
	Upgrades minus Downgrades		<b>0.89</b>	<b>1.47</b>	<b>1.70</b>	<b>2.09</b>	<b>3.75</b>	<b>5.58</b>

**Table VII**  
**Returns for Revisions-Based Trading Strategy in the G7 Countries**

This table presents the average monthly returns for trading strategies based on analysts revisions. On each day, the trading strategies buy all upgrades and sells all downgrades that are made in the previous  $T$  months. The table presents the profits for trading strategies with  $T$  equal to one, three and six months, and the column headings indicate  $T$ . The trading strategies also vary the delay between the time a revision is made and the time the stock enters the portfolios. The rows present the number of days of delay. The table presents the returns for the trading strategies implemented with all of the firms in the sample, and also separately with the large firm and small firm subsamples. For all of the countries, the large firm subsample and the small firm subsample comprise stocks above and below the median market capitalization of equity of the NYSE listed stocks at the end of the calendar year before the revision date, respectively. We compute the daily returns for each trading strategy, and compound the daily returns to obtain the monthly returns. The table reports the average monthly returns for each trading strategy in percentages. Panel A reports the equal-weighted returns, and Panel B reports the value-weighted returns. The average returns reported in bold face are statistically significant at least at the five percent level (absolute value of  $t$ -statistics greater than 1.96). The sample period is from October 1993 to December 1998 for Italy, and from October 1993 to July 2002 for the other countries.

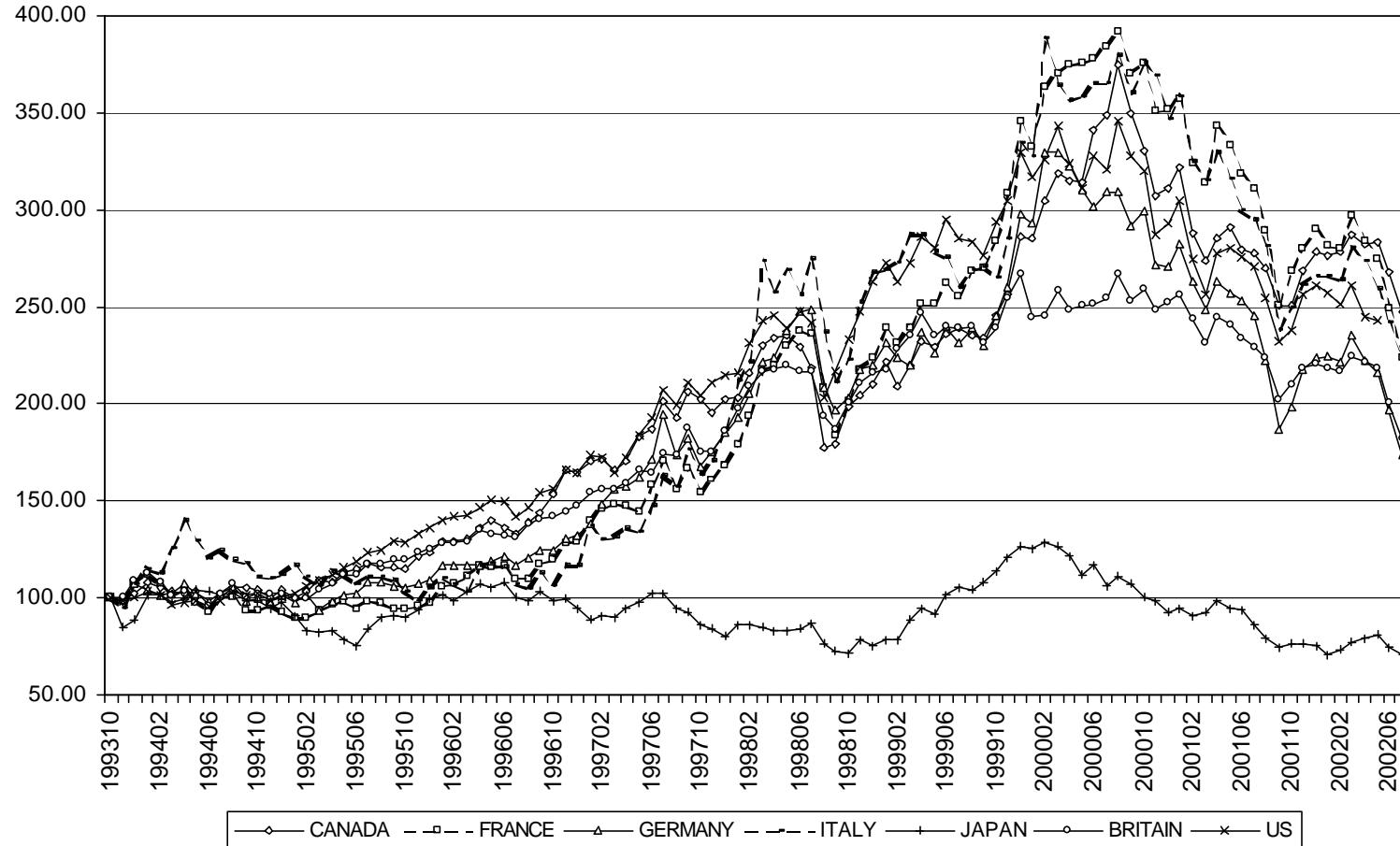
Country	Delay after Revision	Panel A: Equal Weighted Portfolios									
		All firms			Large Firms			Small Firms			
		1 mon	3 mon	6 mon	1 mon	3 mon	6 mon	1 mon	3 mon	6 mon	
US	0	<b>5.94</b>	<b>2.28</b>	<b>1.28</b>	<b>4.11</b>	<b>1.24</b>	<b>0.55</b>	<b>8.19</b>	<b>3.41</b>	<b>2.01</b>	
	1	<b>2.30</b>	<b>0.93</b>	<b>0.52</b>	<b>1.62</b>	<b>0.50</b>	<b>0.22</b>	<b>3.24</b>	<b>1.57</b>	<b>0.94</b>	
	5	<b>1.37</b>	<b>0.72</b>	<b>0.51</b>	<b>0.80</b>	<b>0.25</b>	0.11	<b>2.09</b>	<b>1.29</b>	<b>0.94</b>	
<u>Britain</u>	0	<b>1.57</b>	1.54	-0.04	<b>0.81</b>	<b>0.34</b>	<b>0.14</b>	<b>2.42</b>	2.05	0.11	
	1	<b>1.30</b>	0.40	-0.06	<b>0.62</b>	<b>0.30</b>	<b>0.14</b>	<b>2.08</b>	<b>0.81</b>	0.06	
	5	0.40	0.31	-0.17	<b>0.53</b>	<b>0.22</b>	0.09	0.88	<b>0.70</b>	-0.09	
<u>Canada</u>	0	<b>1.51</b>	<b>0.54</b>	<b>0.32</b>	<b>1.18</b>	0.25	0.14	<b>1.42</b>	<b>0.63</b>	0.36	
	1	<b>0.80</b>	<b>0.34</b>	<b>0.27</b>	0.51	0.09	0.09	0.83	0.38	0.30	
	5	0.41	0.24	0.19	0.04	-0.07	0.02	0.52	0.32	0.20	
<u>France</u>	0	<b>1.65</b>	<b>1.40</b>	<b>0.93</b>	<b>0.88</b>	<b>0.31</b>	<b>0.27</b>	<b>2.61</b>	<b>2.00</b>	<b>1.18</b>	
	1	<b>0.98</b>	0.81	0.61	0.38	0.16	<b>0.21</b>	<b>1.79</b>	<b>1.35</b>	<b>0.81</b>	
	5	<b>0.71</b>	<b>1.04</b>	<b>0.75</b>	0.19	<b>0.26</b>	<b>0.23</b>	<b>1.27</b>	<b>1.35</b>	<b>0.89</b>	
<u>Germany</u>	0	<b>1.43</b>	<b>0.69</b>	<b>0.38</b>	<b>0.77</b>	<b>0.26</b>	0.15	<b>1.90</b>	<b>1.05</b>	<b>0.52</b>	
	1	<b>1.08</b>	<b>0.55</b>	<b>0.30</b>	<b>0.51</b>	0.19	0.08	<b>1.35</b>	<b>0.87</b>	<b>0.43</b>	
	5	<b>1.03</b>	<b>0.49</b>	<b>0.26</b>	<b>0.57</b>	0.09	0.02	<b>1.13</b>	<b>0.88</b>	<b>0.41</b>	
<u>Italy</u>	0	0.42	0.34	0.21	-0.01	0.17	0.11	0.54	0.29	0.22	
	1	0.46	0.26	-0.53	-0.09	0.04	0.06	0.93	0.30	-0.48	
	5	<b>0.74</b>	0.26	0.08	0.29	0.12	0.06	<b>1.64</b>	0.27	0.21	
<u>Japan</u>	0	<b>2.87</b>	<b>1.47</b>	<b>0.83</b>	<b>2.45</b>	<b>1.05</b>	<b>0.54</b>	<b>6.60</b>	<b>3.72</b>	<b>2.58</b>	
	1	<b>1.94</b>	<b>1.27</b>	<b>0.75</b>	<b>1.64</b>	<b>0.86</b>	0.40	<b>5.13</b>	<b>2.98</b>	<b>2.37</b>	
	5	<b>0.85</b>	<b>0.86</b>	<b>0.43</b>	<b>0.82</b>	<b>0.63</b>	0.23	<b>2.10</b>	<b>2.45</b>	<b>1.77</b>	

**Table VII**—Continued

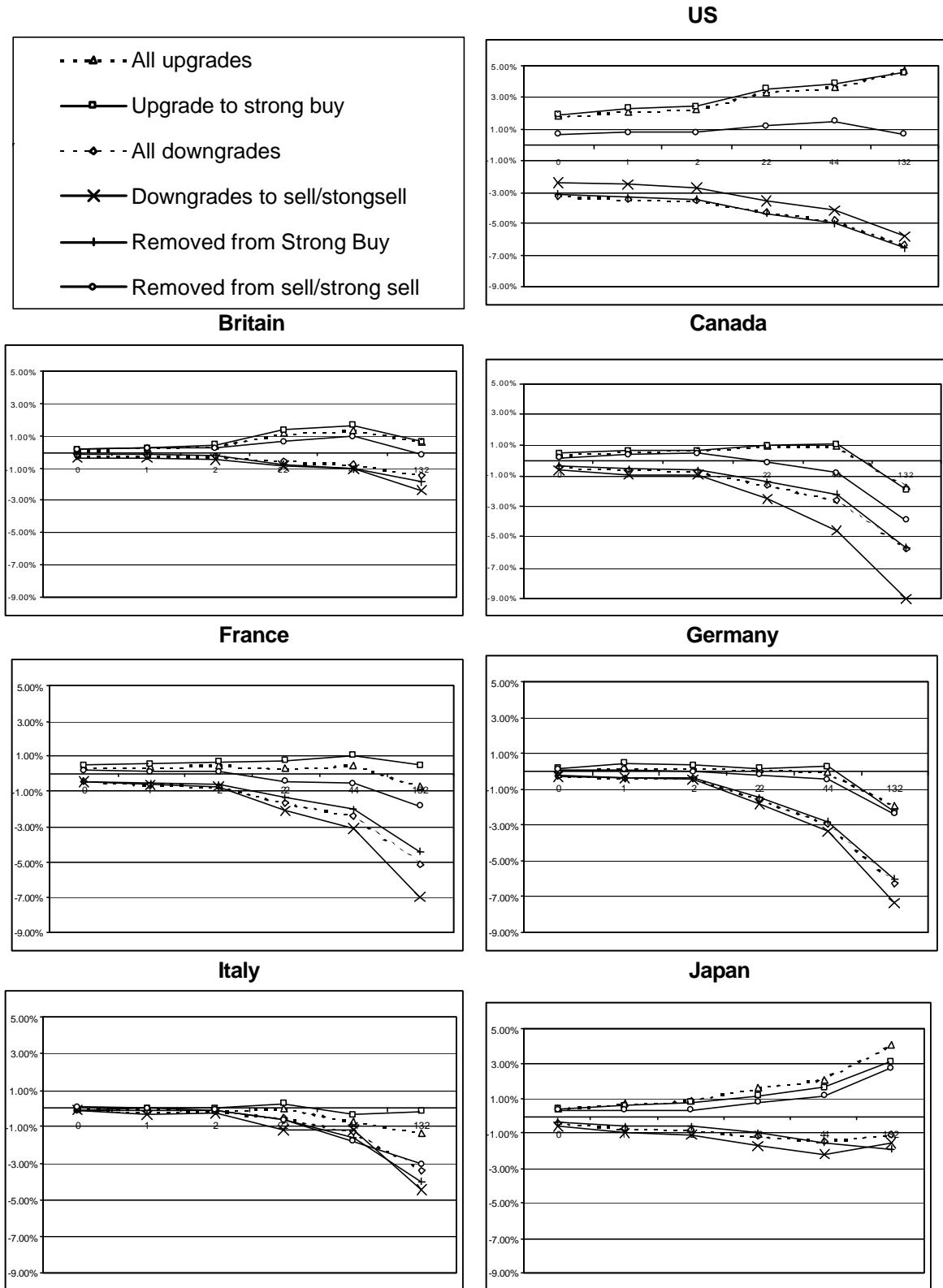
Country	Delay after Revision	Panel B: Value Weighted Portfolios									
		All firms			Large Firms			Small Firms			
		1 mon	3 mon	6 mon	1 mon	3 mon	6 mon	1 mon	3 mon	6 mon	
US	0	<b>2.06</b>	<b>0.58</b>	<b>0.22</b>	<b>1.92</b>	<b>0.50</b>	<b>0.16</b>	<b>7.60</b>	<b>3.02</b>	<b>1.73</b>	
	1	<b>0.65</b>	<b>0.19</b>	0.06	<b>0.60</b>	<b>0.21</b>	<b>0.08</b>	<b>2.90</b>	<b>1.15</b>	<b>0.57</b>	
	5	0.16	0.10	<b>0.08</b>	0.11	0.07	0.06	<b>1.76</b>	<b>0.94</b>	<b>0.62</b>	
<u>Britain</u>	0	<b>0.61</b>	1.66	-0.37	<b>0.56</b>	0.07	-0.09	<b>2.20</b>	2.65	0.46	
	1	<b>0.47</b>	-0.15	-0.24	0.43	0.04	-0.09	<b>1.85</b>	<b>0.69</b>	0.29	
	5	-0.33	-0.29	-0.35	0.29	-0.08	<b>-0.16</b>	0.47	0.38	0.23	
<u>Canada</u>	0	<b>0.91</b>	0.17	0.03	<b>0.90</b>	0.21	0.06	<b>1.15</b>	0.37	0.16	
	1	0.48	0.12	0.06	0.50	0.16	0.05	0.61	0.16	0.16	
	5	0.32	-0.11	-0.05	0.28	-0.09	-0.04	0.44	0.07	0.01	
<u>France</u>	0	0.19	0.52	0.46	0.12	0.04	0.09	<b>2.38</b>	<b>1.64</b>	<b>0.94</b>	
	1	-0.07	-0.06	-0.02	-0.14	0.00	0.11	<b>1.58</b>	<b>0.80</b>	0.34	
	5	-0.11	0.58	0.53	-0.11	0.21	<b>0.16</b>	<b>1.06</b>	<b>1.07</b>	<b>0.78</b>	
<u>Germany</u>	0	<b>0.63</b>	<b>0.23</b>	<b>0.12</b>	<b>0.68</b>	0.20	0.09	0.76	0.66	<b>0.64</b>	
	1	0.28	<b>0.30</b>	<b>0.21</b>	0.34	<b>0.24</b>	0.08	0.43	<b>1.06</b>	<b>1.21</b>	
	5	0.41	0.01	0.16	0.38	0.02	0.08	-0.15	0.53	<b>0.69</b>	
<u>Italy</u>	0	0.06	0.31	-0.08	-0.04	0.27	0.02	0.57	0.57	0.25	
	1	0.07	0.30	-0.75	-0.05	0.31	0.05	1.16	0.53	-0.44	
	5	0.26	0.29	-0.09	0.26	0.31	-0.01	<b>2.28</b>	0.56	0.32	
<u>Japan</u>	0	<b>1.36</b>	0.26	0.14	<b>1.52</b>	0.22	0.09	<b>6.14</b>	<b>2.95</b>	<b>1.93</b>	
	1	0.53	0.27	0.12	0.77	0.23	0.02	<b>4.43</b>	<b>2.38</b>	<b>1.78</b>	
	5	0.23	-0.11	-0.19	0.41	-0.06	-0.14	<b>2.50</b>	<b>2.01</b>	<b>1.19</b>	

**Figure 1**  
**Cumulative Stock Market Returns in the G7 Countries.**

This figure presents the cumulative stock market returns in the G7 countries from January 1993 to July 2002. We use the CRSP value-weighted index for the U.S., and the Datastream market indices for the other countries.



**Figure II. Cumulative Return Response to Recommendation Revisions for G7**



**Figure III. Average Abnormal Trading Volume around Revision Date**

These figures present average abnormal trading volumes for 10 days before and after recommendation revisions date. For each revision, abnormal volume at date  $t$  is the relative magnitude of volume at date  $t$  compared to average volume from date -20 to date + 20, excluding date -1,0,1.

