

***EARNINGS HEURISTICS***  
**WORKING FOR THE "RIGHT REASONS"**

RJF  
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MANAGEMENT<sub>INC</sub>

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## **EARNINGS HEURISTICS**

### **WORKING FOR THE "RIGHT REASONS"**

You are probably aware that our *Earnings Heuristics (EH)* strategy has generated exceptional performance to date. Since first implementing *EH* in January 1992, client portfolios invested in the strategy have enjoyed a return of approximately 27% annualized, almost 20% more per year than the return generated by the S&P 500. Importantly, *Earnings Heuristics* has also provided consistent excess returns on a year-by-year basis:

<b>Year</b>	<b><i>Earnings Heuristics</i></b>	<b>S&amp;P 500</b>	<b>Difference</b>
1992	26.0%	7.7%	18.4%
1993	37.7%	10.0%	27.7%
1994 through Sept 30	10.5%	1.3%	9.2%
2 3/4 Yrs Annualized	26.7%	6.9%	19.9%

We are frequently asked the question:

What do you believe the **future** alpha (abnormal return) will be for *Earnings Heuristics*?

This is a critical question to ask and our answer can be divided into three parts.

We do **not** believe *EH* will generate future returns that, on average, exceed the S&P 500 return by 20% -- this is simply unrealistic.

However, we strongly believe that *Earnings Heuristics* **will continue to outperform the typical equity index.**

Our confidence that *EH* will continue its superior performance is based on the fact that *Earnings Heuristics* has **worked for the "right reasons"** in the past. Our past performance has not been due to luck -- rather, our strategy has "worked" because we have consistently exploited the behavioral biases which underlie the strategy. **Because human behavior changes very slowly, we believe *EH* will continue to "work" in the future.**

## Behavioral and Economic "Linkages"

A critical element of our *Earnings Heuristics* strategy is determining whether recent earnings **changes** are due to permanent or temporary factors. Under normal circumstances, security analysts make these determinations well. However, in certain situations analysts are vulnerable to heuristic biases. We exploit the fact that "simple models" can beat the forecasts of experts (analysts) when the experts are vulnerable to heuristic biases.

The two most important heuristic biases exploited by our *EH* strategy are:

**Anchoring Heuristic:** When surprised by reported earnings, analysts naturally anchor to their old earnings estimate until they are convinced the earnings change is due to permanent rather than temporary factors.

**Framing Heuristic:** Portfolio managers, because of their traditional investment training, frame problems in certain ways, one of which is the need to "know the story" as to why earnings have changed. Consequently, portfolio managers tend to wait for the analysts to develop the story for them -- this is **normally** prudent behavior. However, we do not need to know the whole story in implementing *EH*, as we have developed procedures for quickly determining whether the earnings change is due to permanent or temporary factors. The tendency of portfolio managers to wait for the analysts to "develop the story" allows us to establish our positions **before** the higher earnings expectations are reflected in the stock price.

There are other heuristic biases which underlie *Earnings Heuristics*. Two examples: analysts have an **asymmetrical reward structure** with the penalties for estimates being high exceeding the rewards for being low; **risk shirking** on the part of portfolio managers creates additional incentives for portfolio managers to rely on analysts' recommendations.

By exploiting the behavioral biases which underlie *Earnings Heuristics*, we are able to form portfolios of stocks for which:

- a) analysts will subsequently revise their estimates of earnings upward, and*
- b) the upward estimates will not be large enough, resulting in subsequent positive earnings surprises.*

The economic "linkage" between exploiting these behavioral biases and *Earnings Heuristics'* performance is quite simple: We assume that, on average,

*Future stock price changes will follow the direction of future revisions of earnings estimates and future earnings surprises.*

## Monitoring Points

If the behavioral and economic "linkages" which underlie *Earnings Heuristics* subsequently prove to be correct, we should observe three important outcomes for our *EH* portfolios. We refer to these outcomes as monitoring points.

**Monitoring Point #1:** Because of the anchoring heuristic, analysts should gradually raise their earnings estimates for the universe of *EH* stocks. To the extent we can determine whether the earnings change which caused the surprise is due to permanent versus temporary factors, our "permanent" category should enjoy larger estimate revisions than the stocks we classify as "temporary."

**Monitoring Point #2:** Similarly, the stocks we classify as "permanent" should subsequently report positive earnings surprises, and the subsequent earnings surprises should be larger for the "permanent" stocks than for those stocks classified as "temporary."

**Monitoring Point #3:** On average, stocks for which earnings estimates are being revised upward and stocks which report subsequent earnings surprises should perform better than the typical stock, and our "permanent" stocks should perform better than those we classify as "temporary."

Empirical evidence regarding each of these monitoring points is provided below.

## Methodology

We now have six quarters (93Q2 through 94Q3) of good data with respect to these monitoring points. For each of these quarters we classified all stocks which reported a large earnings surprise as either "permanent" or "temporary," based on our analysis of the earnings change which caused the initial earnings surprise. To do this we used a proprietary measure of standardized earnings surprise and only considered those stocks which reported an earnings surprise equal to or greater than 1.0 standardized units. These stocks were then classified as "permanent" or "temporary" using our proprietary procedures for determining whether the stock's quarterly earnings change was due to temporary or permanent economic factors. It is important to note that all classifications were performed *ex ante* on the date of the earnings announcement -- in other words, these are the actual classification procedures we used to manage our *Earnings Heuristics* portfolios.

We then recorded the **subsequent** revision in the earnings estimates, the **subsequent** earnings surprise and the **subsequent** excess return (stock return minus S&P 500 return) for each stock, measured from the date each stock reported earnings in the quarter to the date each stock released its next quarterly earnings report. Thus, the time period over which estimate revisions, earnings surprises and excess returns are recorded differ for each stock, depending upon each stocks' report date in the calendar quarter and its report date for the next quarter.

The **subsequent** estimate revision is the revision in the consensus estimate of each stock's forthcoming fiscal year EPS, commonly denoted FY1. This FY1 revision is from the date of the initial classification (initial earnings report date) to the next quarterly earnings report date.

For example, suppose in calendar quarter 93Q2 ACME Inc. reported earnings on April 25, 1993. On April 25 the estimate of FY1 earnings for ACME was \$1.00 and we classified ACME as "permanent." Suppose ACME next reported quarterly earnings on July 20, 1993 and on July 20 the consensus estimate for its FY1 earnings was \$1.26. The **subsequent** estimate revision would be recorded as 26% for ACME for calendar quarter 93Q2.

In a similar fashion, we record the **subsequent** earnings surprise for ACME. Suppose that on July 20, 1993 ACME reported quarterly earnings that represented a positive standardized surprise of +0.50. Thus, the **subsequent** standardized surprise for ACME, classified as "permanent" in calendar quarter 93Q2, would be recorded as +0.50.

We measure the **subsequent** quarterly excess return for ACME as the price change for ACME over the period April 25, 1993 to July 20, 1993, minus the S&P 500 price change over the same time period. Suppose that ACME's stock price was \$10 on April 25 and \$11 on July 20. Thus, over the time period April 25 to July 20 the return for ACME was 10%. If the S&P 500 return over these same dates was 6%, then the excess return for ACME would be recorded as 4%.<sup>1</sup>

Finally, the "permanent" stocks can be thought of as the universe from which we purchase stocks for client portfolios. (The combination of "permanent" plus "temporary" stocks can be thought of as the generic earnings surprise universe.) We also report results for the actual stocks held in our client portfolios, denoted **EH** Long, separately from the "permanent" group. Since the actual stocks held in our portfolios (approximately 50 at any point in time) come from the "permanent" group (approximately 150 stocks each quarter), we would expect the **EH** Long results to be similar to the "permanent" group, and they are. To the extent judgmental factors are involved in the selection of stocks for client portfolios from the "permanent" group, these judgmental factors are adding additional value if the results for our actual portfolio holdings exceed the results for the "permanent" group.

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<sup>1</sup>Dividends are not included in the excess return calculations because it is difficult to estimate **daily** S&P 500 returns with dividends. Excluding dividends results in a slight bias as the annualized dividend yield on **EH** stocks is approximately 1% less than the S&P 500 yield. Thus, the quarterly excess return for **EH** stocks of 4.57% reported in Chart 3 is overstated by approximately 0.25%.

## Estimate Revisions Averaged Over All Quarters (Monitoring Point #1)

Chart 1 graphs the subsequent FY1 estimate revisions for the three groups of stocks (*EH* Long, "permanent," and "temporary") averaged over all six quarters, 93Q2 through 94Q3. First note that the average estimate revisions are positive for all three groups. (As a benchmark, the average estimate revision is very close to zero for the market as a whole.) The fact that estimate revisions are positive for both the "permanent" and "temporary" groups is consistent with previous research on generic earnings surprise strategies.

However, we believe that if we could classify stocks **perfectly** with respect to permanent or temporary changes in earnings, then we would not observe positive estimate revisions with respect to the "temporary" group. Thus, one might interpret the relative difference between the estimate revisions for the "permanent" and the "temporary" groups as a measure of how successful we are in classifying earnings changes which caused the initial earnings surprises. Note that there is a significant difference between the average estimate revision for the "permanent" group (5.57%) versus the "temporary" group (1.75%). Finally, note that the average estimate revision of 5.64% for *EH* Long, the actual stocks held in client portfolio, is slightly higher than for the "permanent" stocks as a whole.

### Chart 1: Average FY1 Estimate Revisions (Averages for Quarters 93Q2 through 94Q3)

## **Earnings Surprises Averaged Over All Quarters (Monitoring Point #2)**

Chart 2 graphs the average subsequent standardized quarterly earnings surprise for each of the three groups. Notice that the average earnings surprise is positive for all three groups. (As a benchmark, typically the median earnings surprise for all stocks is zero and the mean is negative.) It is important to note that these positive earnings surprises occurred even though analysts had raised their estimates, as shown in Chart 1 above.

This finding is consistent with the generic earnings surprise literature and is occasionally referred to as the "cockroach theory" of earnings surprise. Just like a cockroach, if you find one, you are likely to find more -- if a company reports one earnings surprise it is likely to report more. The anchoring heuristic is the primary reason for this -- when initially surprised by reported earnings, analysts remain anchored to their original estimate, do not subsequently raise their estimates enough, and are surprised again.

Note that the "permanent" group reports a larger subsequent earnings surprise (0.67) than the "temporary" group (0.40) which, again, indicates that we can successfully distinguish between permanent and temporary earnings changes. Finally, note that the average earnings surprise is larger for our actual portfolios (0.80) than for the "permanent" group (0.67).

### **Chart 2: Average Standardized Earnings Surprise (Averages for Quarters 93Q2 through 94Q3)**

### **Excess Returns Averaged Over All Quarters (Monitoring Point #3)**

Recall that we assume stock prices, on average, will follow the direction of estimate revisions and earnings surprises. Chart 3 reports average quarterly excess returns. Since all three groups experienced positive estimate revisions and positive earnings surprises, we would expect the excess returns for all three groups to be positive, and they are. (By construction the excess return is zero for the S&P 500.)

Note that the excess returns for the three groups are consistent with the magnitudes of the estimate revisions and earnings surprises for each group. That is, the excess return for the "permanent" stocks (3.98%) is substantially higher than the excess return for the "temporary" stocks (1.32%). And the excess return for *EH* Long (4.57%) is higher than for the "permanent" stocks as a group.

#### **Chart 3: Average Quarterly Excess Return (Averages for Quarters 93Q2 through 94Q3)**

## Quarter-by-Quarter Results

Charts 1, 2 and 3 are based on **average** quarterly results over the six quarters, 93Q2 through 94Q3. Sometimes by averaging results over multiple time periods important information is obscured. Also, the consistency of outcomes is frequently an important issue.<sup>2</sup>

With respect to estimate revisions, the results on a quarter-by-quarter basis are quite consistent. During each of the six quarters analysts raised their estimates for all three groups, estimate revisions for the "permanent" group are always much larger than for the "temporary" group, and about half the time estimate revisions for the stocks held in our client portfolios (**EH** Long) are larger than for the "permanent" group. These quarter-by-quarter estimate revision results are graphed in Chart 4.

### Chart 4: Median FY1 Estimate Revisions (Quarter-by-Quarter, 93Q2 through 94Q3)

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<sup>2</sup>Technically, the "averages" previously reported in Charts 1, 2 and 3 are the arithmetic means of the quarterly median results. We also computed medians of the quarterly medians as well as "grand medians" and "grand arithmetic means" (the medians and arithmetic means of the pooled quarterly observations) and the results were similar to those reported in Charts 1, 2 and 3.

The results for **subsequent** earnings surprises are also quite consistent on a quarter-by-quarter basis. During each of the six quarters all three groups experienced positive earnings surprises, earnings surprises for the "permanent" group are much larger than for the "temporary" group and, again, about half the time earnings surprises are larger for the stocks held in our client portfolios (**EH** Long) than for the "permanent" group. These quarter-by-quarter earnings surprise results are graphed in Chart 5.

### **Chart 5: Median Quarterly Earnings Surprise (Quarter-by-Quarter, 93Q2 through 94Q3)**

The fact that **in every quarter** the estimate revisions and earnings surprises for **EH** Long and our "permanent" group were both positive and larger than for our "temporary" group is exceptionally strong evidence that:

**By exploiting the biases of analysts, we are able to form portfolios of stocks which will subsequently experience upward revisions of earnings estimates and subsequent positive earnings surprises.**

It is unusual to find such consistent results in the field of investments.

The results with respect to excess returns are not as consistent quarter-by-quarter, even though the average excess returns over all quarters are what we expect. Recall from Chart 3 that, **on average**, excess returns were positive for all three groups, the excess return for the "permanent" group was considerably higher than for the "temporary" group, and the excess return for our client portfolios (*EH* Long) was slightly higher than for the "permanent" group. However, as shown below in Chart 6, averaging over all quarters obscures variation in quarter-by-quarter excess returns.

### **Chart 6: Median Quarterly Excess Return (Quarter-by-Quarter, 93Q2 through 94Q3)**

Note that in five out of six quarters the excess returns for *EH* Long and the "permanent" group are both positive and larger than for the "temporary" group. The second quarter of 1994 (94Q2) represents the exception, when the excess returns for both *EH* Long and the "permanent" group were slightly negative while the excess return for the "temporary" group was slightly positive. One might also argue that in the third quarter of 1994 the excess returns for all three groups are so small they are indistinguishable from zero.

The fact that on a quarter-by-quarter basis the results with respect to estimate revisions and earnings surprises are quite consistent, while the excess return results are less consistent is not surprising. The economic "linkage" (economic assumption) underlying *Earnings Heuristics* is that **on average** future stock price changes will follow the direction of future estimate revisions and future earnings surprises. As we discussed in more detail in a previous *RJF* Research Report,<sup>3</sup> there are a number of reasons why *EH* (and any other strategy with a positive alpha) might not "work" over relatively short time periods. The principle reason is that all investment strategies pick up unintended factor exposures which cause the alpha to vary over short time periods, but which average to zero over longer time periods.<sup>4</sup>

Thus, we expect the quarter-by-quarter variation in excess returns to be greater than, say, the annual variation in excess returns. To date, the evidence is consistent with this conjecture as we have yet to experience a negative excess return for *Earnings Heuristics* on an annual basis. However, a more definitive statement on this issue will require more annual observations.

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<sup>3</sup>See "When *Earnings Heuristics* May Not 'Work'," *RJF* Research Report No. 4, Third Quarter 1994.

<sup>4</sup>The second and third quarters of 1994 illustrate how factor exposures can affect the relative performance of a strategy. *EH* portfolios typically have a size exposure that is smaller than the S&P 500 and closer to the S&P Midcap index. During the second and third quarter of 1994 the S&P Midcap index underperformed the S&P 500. If excess return had been computed by subtracting the S&P Midcap return, rather than the S&P 500 return, the excess returns in Chart 6 would be a more consistent series.

## Conclusions

We believe the evidence strongly supports our argument that *Earnings Heuristics*, by exploiting the behavioral biases of analysts, is able to form portfolios of stocks which will enjoy future positive estimate revisions and future positive earnings surprises. Importantly, these positive estimate revisions and earnings surprises will be larger than one might observe for generic earnings surprise strategies (or estimate revision strategies) because of our ability to distinguish, on average, between permanent and temporary earnings changes.

Common sense would suggest, and the evidence overwhelmingly supports the assumption that, on average, stock prices follow the direction of future estimate revisions and earnings surprises. The impressive relative performance generated by our *EH* portfolios in the past was not due to an accident -- *Earnings Heuristics* **worked for the "right reasons."**

Most importantly, because *EH* is based on behavioral biases and human behavior changes very slowly, it is likely that *Earnings Heuristics* **will continue to work in the future and for the "right reasons."**

This research report provides empirical documentation for our statement that *Earnings Heuristics* has, in fact, **worked for the "right reasons."**

We consider these results strong evidence that by exploiting the biases of analysts,  
**we are able to form portfolios of stocks for which analysts will  
subsequently raise their earnings estimates.**

We consider these results as strong evidence that by exploiting the biases of analysts,  
**we are able to form portfolios of stocks which will  
subsequently report positive earnings surprises.**

Thus, not only has *Earnings Heuristics* "worked" in the past,  
**it has worked for the "right reasons."**





