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of a Stockbroker's Decision Processes

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OF A STOCKBROKER'S DECISION PROCESSES¹

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Abstract

This study illustrates an analysis-of-variance technique for describing the use of information by persons making complex judgments. Ss were two stockbrokers who rated the growth potential of stocks on the basis of 11 factors taken from Standard & Poor reports. The technique proved capable of providing a precise quantitative description of configural and nonconfigural information utilization. Each broker exhibited a substantial amount of configural processing. The technique appears to have promise for providing experts with insight into their own processes and for teaching and evaluating "student" judges.

ANALYZING THE EXPERT JUDGE: A DESCRIPTIVE STUDY
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The task of the expert judge, be he military officer, detective, businessman, physician, clinical psychologist, financial analyst, etc., requires him to combine items of information from a number of different sources into a decision or judgment. The key to the expert's success resides in his ability to interpret and integrate information appropriately. This means he must weight items of information differentially, according to their relevance, and must be able to qualify his interpretations of a given fact when other considerations make such qualification necessary.

There is no need to dwell upon the tremendous importance of being able to understand and describe how the expert uses information. However, such understanding does not come easily. All too often expert judgment is regarded as a mysterious, intuitive phenomenon--incapable of being described precisely. For example, Lusted (1960) relates a story about a radiologist famed for his diagnostic ability. Once, when he was questioned as to why he thought a particular shadow on an X-ray was a metastatic lesion, the physician replied, "Because it looks like it!" At the other extreme, we're all familiar with the expert who instructs others in the art of emulating his judgments by

reeling off the dozens of factors that he takes into consideration, each accompanied by an elaborate rationale. Information of this sort is quite difficult for the student of expertise to use and, in addition, may not accurately represent what the expert is really doing.

Only in the past 20 years has there been any extensive study of the judgment process, and this study has been primarily within the context of clinical psychology. The earliest research efforts focused on the accuracy of judgments and the degree to which experts agreed with one another in their evaluations. The results of these studies have indicated a distressing lack of accuracy and interjudge agreement both in medicine (Garland, 1959, 1960) and in clinical psychology (Goldberg, in press).

As a result of these findings, the emphasis has shifted from research on the validity and reliability of judgments to attempts to understand the judgment process itself. This recent research aims to "simulate" or "model" the hidden cognitive processes of the judge. Hopefully, by understanding these processes we will learn why some judges are more accurate than others, and this knowledge will, in turn, help us to train persons to make better judgments.

Some of the first models for quantitatively describing the judgment process were developed by Hoffman (1960) and by Hammond and his associates (see Hammond, Hursch, & Todd, 1964, for example). While their techniques have been quite successful in describing how individual items of information are weighted and combined by a judge, they have

not been successful in describing complex patterned or configural use of information; i.e., the process whereby an item of information is interpreted differently from one time to the next, depending on the nature of other available information. Since experts generally claim that they use information configurally, it is important that techniques used to describe judgment be sensitive to such processes.

One technique that analyzes the judgment process in all its complexity has been described by Kleinmuntz (1968), who had clinical psychologists and neurologists "think aloud" into a tape recorder as they made diagnostic judgments. Kleinmuntz utilized these rich introspective reports to construct a computer program simulating the diagnosticians' thought processes. The resulting programs were complex sequential (e.g., hierarchical or "tree") representations of the diagnosticians' verbal reports. At the present time it is not clear whether the failure of investigators other than Kleinmuntz to find experimental evidence for configularity stems from lack of configularity in the processes themselves or from deficiencies in the models and procedures employed to evaluate those processes (Goldberg, in press).

Hoffman, Slovic, and Rorer (1968) introduced a technique based upon the analysis of variance (ANOVA) for quantitatively describing both configural and nonconfigural use of information in judgment. They employed this technique to study the processes whereby radiologists diagnose the malignancy of gastric ulcers on the basis of roentgenological signs. Although the radiologists were found to process

information configurally in many instances, the overall influence of such nonlinear processing was slight. Most of the variability in the diagnoses could be predicted from a linear combination of signs.

Because the ANOVA technique proved quite capable of describing the use of information by individual radiologists and because it was sensitive to configural processing it appeared to merit further use. The purpose of the present paper was to test the adequacy of the ANOVA technique for describing the way that a stockbroker employs information as he evaluates the attractiveness of a company's stock. The stockmarket was selected as the domain in which to study expertise for several reasons. First, the task of predicting the future market price of a security is an important one. Hundreds of thousands of decisions, involving many millions of dollars, are made daily in the market. Second, this task is interesting because it is extremely difficult and complex. There are hundreds of factors which may be relevant, some of them economic, some of them financial, and some of them psychological in nature. In addition, introspective reports by financial analysts indicate that they believe that the relevant factors should be interpreted in a complex configural manner. For example, many analysts claim that one cannot interpret recent price changes of a stock without taking into account the volume of sales that accompanied those changes.

Method

Subjects. The Ss were two young brokers. Each had about three years' experience with a prominent brokerage firm. While these brokers may, on occasion, merely fill a client's order, they frequently are called upon for advice, and in some instances have complete responsibility for managing a client's portfolio. These men are quite concerned about their ability to judge stocks and spend several hours each day studying the market, attempting to glean information from a variety of sources such as newspapers, the ticker tape, company reports, financial analysts' reports, etc.

Procedure. The application of ANOVA to the study of judgment is simple and direct; one first selects a set of presumably relevant factors (i.e., items of information or dimensions along which a stimulus can be described) and then constructs stimuli such that all possible combinations of these factors are represented. When the judgments that are made about each of these stimuli are analyzed in terms of an ANOVA model, a significant main effect for Factor 1 indicates that the judge's responses varied systematically with Factor 1 independent of the levels of the other factors. This implies that Factor 1 was important to the judge. A significant interaction between Factors 1 and 2 implies that the judge was interpreting particular patterns of these factors in a configural manner; that is, the interpretation of Factor 1 upon judgment differed as a function of the value taken by Factor 2.

The present task was constructed with the assistance of Broker A. When asked to list the minimum number of factors upon which he could

comfortably base a recommendation about a stock, Broker A selected 11 variables commonly provided in Standard & Poor's reference reports. These variables were:

- a. Yield (YLD). The cash dividend income for the past year as a percentage of the market price.
- b. Near Term Prospects (NTP). A one- or two-paragraph forecast concerning sales, profits, dividends, earnings, etc., for the coming year. Included is pertinent information concerning new products, political or economic factors bearing on the company's future, etc.
- c. Earnings Quarterly Trend (EQT). A comparison of quarterly earnings over the past 4-5 years.
- d. Past Year's Performance (PYP). A synopsis of relevant statistics for the past year. Includes revenues, earnings and dividends, and political and economic factors that influenced them.
- e. Profit Margin Trend (PMT). A yearly comparison indicating the trend in percentage of profit from company operations per sales dollar. Presumably this relates to the efficiency with which the company is managed and has implications for future earnings.
- f. Earnings/share Yearly Trend (EYT).
- g. Price/Earnings Ratio (PER). The ratio of market price to net earnings per share over the past 12 months.
- h. Shares Outstanding (SO). The number of shares of common stock issued by the company.
- i. Resistance Trend (RES). Trend of a line connecting several recent high points on the chart of daily price action.

j. Support Trend (SUPP). Trend of a line connecting several recent low points on the daily price chart.

k. Sales Volume Trend (VOL). Trend of the number of shares traded per day over a recent period of time.

Next, Broker A was asked whether, in the interests of simplification, he could still make a reasonable evaluation of a company's stock if information about the 11 factors was presented in dichotomous form (for example, yield being described as either high or low, trends as either up or down, etc.). The broker said that he could. Further questioning indicated that there would be no combination of these factors so unreasonable as to make the company seem unreal and, therefore, impossible to judge.

The next step involved the construction of hypothetical companies. Ideally it would have been desirable to combine the 11 dichotomous factors in all possible ways, but in this case that would have resulted in 2^{11} or 2048 companies, clearly an unmanageable number to judge. However, if one is willing to assume that the higher order interactions are negligible, it is possible, by means of a fractional replication design (Cochran & Cox, 1957), to evaluate the main effects and lower order interactions with a considerably reduced number of stimuli.

Previous work on judgment (Goldberg, in press) suggested that the assumption that higher order interactions would be negligible was not too unreasonable. Therefore, hypothetical companies were constructed by combining the levels of the 11 factors according to

a 1/16 fractional replication of a 2^{11} factorial ANOVA design. This produced a set of 128 companies. This reduction of stimuli results in the confounding of main effects and two-way interactions with certain of the higher order interactions. Other higher order interactions serve to estimate the error term in the ANOVA. Thus, if configural use of three or more factors does occur, the error term will be inflated.

Fig. 1 illustrates the way in which information about a company was displayed to the brokers. The spatial format of the variables was designed to approximate the layout of a Standard & Poor report as closely as possible. The stimuli were bound in a notebook which

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Insert Figure 1 about here
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the brokers took home. The brokers worked on the judgments in their leisure time over a three-week period. Broker A reported spending 10-1/2 hours making his judgments. Broker B spent about 9 hours at the task. Although they knew the companies were hypothetical, both brokers reported that the task was extremely interesting to them and that they were able to conjure up images of real companies as they read the stimulus information.

The brokers were asked to make a recommendation about each company based on their judgment of the likelihood that the market price of that company's stock would increase substantially in the next 6-12 months. The recommendation was made on a nine-category rating scale

where Category 1 was labeled "strong recommendation not to buy," Category 4 was a "slight recommendation not to buy," Category 5 was a "neutral" evaluation, and Categories 6 and 9 were labeled slight and strong "recommendations to buy" respectively.

Results

The mean rating given the 128 companies by Broker A was 5.62 with a standard deviation of 1.94. Broker B was less favorably inclined towards the companies' stocks (mean = 3.96) and more variable in his ratings (standard deviation = 2.96).

Despite the fact that Broker B was recruited as a subject by Broker A on the grounds that his approach to selecting stocks was relatively similar to that of Broker A, there was rather poor agreement between the two with regard to their ratings. The correlation between the two brokers' judgments, across the 128 companies, was only .32.

In order to isolate the factors influencing the recommendations, a separate ANOVA was performed on each broker's responses. Sums of squares and mean squares were computed for each of the 11 main effects (individual factors), each of the two-way interactions, and each of the few three-way interactions that were confounded only with four-way or higher order interactions. In addition, two indices of the importance of a factor or interaction were computed for each effect. One was simply the standard calculation of the magnitude of an effect, based upon the degree to which the mean judgment shifted as the levels of a factor were varied. In this regard, the magnitude of a two-way

interaction effect indicates the degree of change in the mean judgments as a function of variation in the levels of a pair of factors after the main effects have been partialled out. The second index, called ω^2 , is a function of the squared magnitudes of effect and provides an estimate of the proportion of the total variance in the broker's judgments that could be attributed to a particular main effect or interaction (Hays, 1963).

Tables 1 and 2 present the results of the ANOVAs for the two brokers. The ratings of Broker A changed significantly with variation in the levels of each of six factors (main effects), the most influential of these being Near Term Prospects, Price-Earnings Ratio, and Earnings Quarterly Trend. In addition, six interactions were significant, one of these (Resistance Trend x Support Trend) being the fourth strongest effect. Broker B exhibited seven significant main effects, the strongest of which were due to the Earnings Yearly Trend, Price Earnings Ratio, and Profit Margin Trend. In addition, five two-way interactions were significant.

Insert Tables 1 and 2 about here

Since the 11 factors studied here were specifically selected by Broker A as the most important ones from among a much larger set, the fact that his judgments were not influenced significantly by a number of these factors is especially noteworthy. During the process

of selecting these factors the broker was able to give an elaborate rationale for including each one. Perhaps it was too difficult for him to use all of the factors simultaneously.

Summing the ω^2 index over the statistically significant factors indicated that about 72% of the variance in Broker A's responses was predictable from knowledge of six main effects and an additional 7% could be attributed to configural use of cues (significant interactions). Comparable figures for Broker B were 80% (main effects) and 5% (interactions). These percentages could be interpreted as evidence for the negligibility of configural cue utilization as were the comparable percentages found in the study of radiologists by Hoffman, Slovic, and Rorer (1968). However, the use of variance percentages as descriptive indicators may be more meaningful statistically than psychologically, and the magnitude of effect index, based upon the influence of a factor upon the mean judgments, might well be a more appropriate gauge for assessing the relative importance of configural effects. This index indicates that configurality was substantial, accounting for 27% of the total effects on Broker A and 19% of the effects on Broker B. Even this is a conservative estimate of the degree of configurality. Extrapolating from the excellent discussions of linear and configural models presented by Green (1968) and Hayes (1968), one could argue that whenever the interaction between two factors was significant the variance accounted for by the main effects for these factors should be counted as configural variance.

Following this rule would boost the percentage of configural variance to 36% for Broker A and 85% for Broker B. Additional evidence for the argument that meaningful configural information processing was taking place here is the fact that two interactions (RES x VOL and SUPP x VOL) were common to both brokers. Detailed analysis of these interactions showed each of them to be almost identical in form for the two brokers.

An index of the overall importance of a given factor was calculated by summing the magnitude of effect index for the main effect of that factor with the magnitude of effect indices of all significant interactions containing that factor. The summed effect of a given factor was divided by the sum of the effects of all factors. This index of importance was thus a percentage score where the sum of all percentages totaled 100.

Fig. 2 illustrates the relative importance of the 11 factors for each broker based on the index just described. Despite the fact that the brokers viewed themselves as quite similar in orientation, there was a considerable difference in their use of information. These differences undoubtedly indicate why they disagreed so often in their rating of a particular stock. Broker A considers himself to be a "technical analyst" (i.e., one who weights information from price and volume charts especially heavily), and in this regard it is noteworthy that the ANOVA model showed him to be using the three chart variables, Resistance, Support, and Volume Trends, to a greater extent than did

Broker B, who views himself, and appropriately so, as more of a "fundamentalist" (i.e., one who relies on traditional balance sheet and income indicators).

Insert Figure 2 about here

Validity of subjective weights. How closely would the brokers' subjective impressions of the relative importance of the 11 factors conform to the importance indices calculated from the ANOVA model? To provide an answer to this question, each broker was asked, after completing his ratings, to distribute 100 points over the 11 factors proportionally to his feelings about their importance in determining his judgments. These subjective weightings were compared with the magnitude of effect indices pictured in Figure 2 and with the ω^2 index, the latter also being combined over both main effects and interactions, and normed to sum to 100 over the 11 factors. The results of this comparison are depicted in Figures 3 and 4. They show that the subjective weightings of Broker A were extremely close to the magnitude of effect index while Broker B had less accurate insight into his use of the various factors. The ω^2 index was very discrepant from the subjective weights of both brokers. This index tended to exaggerate the differences between the most important factors and the lesser ones. To the extent that one feels that expert judges should have some insight about their own weighting system, this result implies that the magnitude

of effect index is a better measure of a factor's relative importance than the ω^2 index.

Insert Figures 3 and 4 about here

Analysis of interactions. The finding of a significant main effect or interaction is only a first step in understanding how a judge interprets information. It should be viewed as a signal that something interesting is going on. Graphical representation of an effect followed by interrogation of the judge concerning the rationale behind his behavior can be used to further one's understanding of the effect. To illustrate, three of the significant interactions found in the judgments of Broker A are pictured in Figure 5. Broker A was shown these figures and was asked to provide an explanation for each one. A paraphrased version of his explanation for each effect is as follows.

Insert Figure 5 about here

(a) The YLD x PMT effect. Why is high yield a more favorable indicator than low yield when PMT is down while the reverse is true when PMT is up?

"Because when PMT is down, earnings probably are down, and

accordingly the price of the stock should decline. A low dividend yield would make the stock even less attractive while a high yield would tend to compensate for the poor earnings prognosis. When PMT is up, earnings are probably up and the outlook for price appreciation is good. A quality company whose earnings portend good growth doesn't usually offer a large dividend, so low yield in conjunction with a rising PMT suggests that the stock has a very promising future. A high yield in this case suggests that the company is probably not putting enough of its capital into growth or perhaps that the outlook for future price appreciation is not really so promising, hence the need for a larger dividend to make the stock attractive to the investor."

(b) The EYT x SUPP effect. Why should a rising trend in yearly earnings be a better sign than a declining earnings trend when the support trend (price) is down while the reverse is true when the support trend is up?

"When both support and earnings trends are down, the stock has nothing going for it. But if the support trend is down despite the fact that the earnings are going up, the market may be generally bad and this may be a good time to buy the stock. In contrast, when the support and earnings trends are both rising, the stock may have already made its move and thus may be overpriced, while a rising support trend in conjunction with declining earnings may indicate that the smart money knows the earnings will be up next year and the stock may be a very good buy."

(c) The VOL x SUPP effect. Why is rising volume viewed as a favorable indicator when it occurs in conjunction with a rising support level and viewed as a relatively unfavorable sign when it occurs with a stock whose price is declining?

"A stock that is declining on relatively low volume is considered to be strong. People have enough confidence in it to hang on to it, rather than sell. If price declines on high volume the story is different. Everyone is selling and the prospects are thought to be very poor. Similarly, if volume is down on a stock that has been appreciating in price, confidence in that stock's future must be low, in contrast with a stock that is rising because many people are buying it (high volume)."

Discussion

The results of the present study indicate that the ANOVA technique has considerable promise as a device for describing and furthering the understanding of complex judgment processes. It is likely that this technique can provide even the expert with new insight into his inferential processes. Furthermore it might also be a valuable teaching device that would enable "trainees" to see exactly how their own processes differ from that of their expert model (see Todd & Hammond, 1965, for a related idea). Imagine the difficulty of asking the expert to describe his judgment process in detail, obtaining a series of descriptive paragraphs such as those given above to describe interactions, and then trying to fit all these together in a way that would enable

you to emulate his judgments. The task is extremely difficult if not impossible--yet this is a common way in which expertise is communicated. However, such introspective comments become considerably more helpful when they are accompanied by the precise quantitative descriptions provided by the ANOVA technique.

The present results are important in another way. They provide experimental evidence to support the commonly believed notion that judges use information configurally. The results of previous studies, most of which used less direct methods and percentage of variance indices to infer the importance of configural processes, have led a number of workers to assert that humans are predominantly linear information processors (see discussions of this issue by Hoffman, 1968; and Goldberg, in press). It is now clear that substantial configural processing of information does occur and can readily be detected by the ANOVA technique.

References

- Cochran, W. G., & Cox, G. M. Experimental designs. (2nd ed.) New York: Wiley, 1957.
- Garland, L. H. Studies on the accuracy of diagnostic procedures. American Journal of Roentgenology, Radium Therapy, and Nuclear Medicine, 1959, 82, 25-38.
- Garland, L. H. The problem of observer error. Bulletin of the New York Academy of Medicine, 1960, 36, 569-584.
- Goldberg, L. R. Simple models or simple processes?: Some research on clinical judgments. American Psychologist, in press.
- Green, B. F. Descriptions and explanations: A comment on papers by Hoffman and Edwards. In B. Kleinmuntz (Ed.), Formal representation of human judgment. New York: Wiley, 1968. Pp. 91-98.
- Hammond, K. R., Hursch, C. J., & Todd, F. J. Analyzing the components of clinical inference. Psychological Review, 1964, 71, 438-456.
- Hayes, J. R. Strategies in judgmental research. In B. Kleinmuntz (Ed.), Formal representation of human judgment. New York: Wiley, 1968. Pp. 251-259.
- Hays, W. L. Statistics for psychologists. New York: Holt, Rinehart, & Winston, 1963.
- Hoffman, P. J. The paramorphic representation of clinical judgment. Psychological Bulletin, 1960, 57, 116-131.

- Hoffman, P. J. Cue-consistency and configurality in human judgment.
In B. Kleinmuntz (Ed.), Formal representation of human judgment.
New York: Wiley, 1968. Pp. 53-90.
- Hoffman, P. J., Slovic, P., & Rorer, L. G. An analysis of variance
model for the assessment of configural cue utilization in clinical
judgment. Psychological Bulletin, 1968, in press.
- Kleinmuntz, B. The processing of clinical information by man and
machine. In B. Kleinmuntz (Ed.), Formal representation of human
judgment. New York: Wiley, 1968. Pp. 149-186.
- Lusted, L. B. Logical analysis and roentgen diagnosis. Radiology,
1960, 74, 178-193.
- Todd, F. J., & Hammond, K. R. Differential feedback in two multiple-
cue probability learning tasks. Behavioral Science, 1965, 10,
429-435.

Footnotes

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Table 1

The Relative Importance of the 11 Factors and Their Significant Interactions for Broker A

Factor	Description of Levels		Mean Judgment		Magnitude of Effect ^a	Mean Square	% of Variance (w^2)
	Level 1	Level 2	Level 1	Level 2			
Main Effects							
Yield (YLD)			5.56	5.67	.11	.4	.001
Near Term Prospects (NTP)	Low	High	4.53	6.70	2.17	151.0**	.334
Earnings Quarterly Trend (EQT)	Poor	Good	4.87	6.36	1.49	70.5**	.156
Past Year's Performance (PYP)	Down	Up	5.40	5.83	.43	5.7*	.013
Profit Margin Trend (PMT)	Poor	Good	5.44	5.80	.36	4.1*	.009
Earnings Yearly Trend (EYT)	Down	Up	5.56	5.67	.11	.4	.001
Price/Earnings Ratio (PER)	Down	Up	4.80	6.44	1.64	86.1**	.190
Number of Shares Outstanding (SO)	Poor	Good	5.70	5.53	.17	1.0	.002
Resistance Trend (RES)	Few	Many	5.50	5.73	.23	1.8	.004
Support Trend (SUPP)	Down	Up	5.39	5.84	.45	6.6**	.015
Sales Volume Trend (VOL)	Down	Up	5.69	5.55	.14	.6	.001
Interactions							
EYT x SUPP					.36	4.1*	.009
YLD x PMT					.39	4.9*	.011
RES x SUPP					.48	7.5**	.017
RES x VOL					.36	4.1*	.009
SUPP x VOL					.39	4.9*	.011
RES x SUPP x VOL					.42	5.7*	.013
error						1.0	
Sum of effects over the statistically significant factors			(main effects) 6.54 (73%) (interactions) 2.40 (27%)		8.94		.717 .070 .787

^aBased upon the degree to which the mean judgment changes as the factor changes.

*p < .05

**p < .01

Table 2

The Relative Importance of the 11 Factors and Their Significant Interactions for Broker B

Factor	Mean Judgment		Magnitude of Effect ^a	Mean Square	% of Variance (ω^2)
	Level 1	Level 2			
Main Effects					
Yield (YLD)	3.91	4.02	.11	.4	.000
Near Term Prospects (NTP)	3.41	4.52	1.11	40.0**	.082
Earnings Quarterly Trend (EQT)	3.75	4.17	.42	5.7**	.011
Past Year's Performance (PYP)	3.89	4.03	.14	.6	.000
Profit Margin Trend (PMT)	3.26	4.66	1.40	61.9**	.129
Earnings Yearly Trend (EYT)	2.91	5.02	2.11	142.4**	.299
Price/Earnings Ratio (PER)	3.12	4.80	1.68	89.4**	.187
Number of Shares Outstanding(SO)	4.03	3.89	.14	.6	.000
Resistance Trend (RES)	3.50	4.42	.92	27.2**	.056
Support Trend (SUPP)	3.61	4.31	.70	15.8**	.032
Sales Volume Trend (VOL)	3.83	4.09	.26	2.3	.003
Interactions					
YLD x PER			.30	2.8*	.005
EYT x PER			.55	9.6**	.019
PYP x PMT			.33	3.4*	.006
RES x VOL			.39	4.9**	.009
SUPP x VOL			.42	5.7**	.011
error				0.6	
Sum of effects over the statistically significant factors			(main effects) 8.34 (81%) (interactions) 1.99 (19%) <u>10.33</u>		.799 .050 <u>.849</u>

^aBased upon the degree to which the mean judgment changes as the factor changes.

* < .05

** < .01

COMPANY NUMBER _____		
<u>Resistance Level</u> ----- down		<u>Yield</u> high -----
<u>Support Level</u> ----- up		<u>Prospects</u> <u>Near Term</u> good -----
<u>Volume Trend</u> ----- up		
<u>Past Year's Performance</u> ----- good		
<u>Common Share Earnings Quarterly Trend</u> ----- up		
INCOME STATISTICS		
<u>Profit Margin Trend</u> ----- down	<u>Earnings/Share Yearly Trend</u> ----- up	<u>PE Ratio Comparison</u> ----- good
CAPITALIZATION		
<u>Common Stock Outstanding</u> ----- few shares		

Figure 1. Example of a typical stimulus company

Figure 2. The relative importance of each factor for Brokers A and B.

Figure 3. Comparison between the strength of effect index, subjective weight, and ω^2 for Broker A.

Figure 4. Comparison between the strength of effect index, subjective weight, and ω^2 for Broker B.

Figure 5. Graphical representation of selected interaction effects for Broker A.