

Are Financial Fundamentals Used to Value Investments or Do Investors Follow the Market? Pre and Post 2008 Findings Are Compared

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This paper examines whether investors use financial fundamental, or whether they observe other people whom they perceive are making profitable decisions and then do the same as they are doing. The paper divides the study between large publicly held investments, and small closely held ones. The results were that investors mostly use financial fundamentals, but that significantly large portions of investors mimic the results of other investors to make decisions. Further, investors rely more on financial fundamentals for small private investments than for large public investments, and that there was a structural break in 2008.

I used to be fascinated by the game of “craps.” It was vibrant; it was exciting; it was fun; and it totally bewildered me. I did not understand the game, but I sometimes made money when I played it by watching somebody who was winning, and then doing the same as they were doing. (Craps is a popular gambling game played with dice at most gambling casinos. Despite its popularity, its rules are complex, and large sums of money can be won or lost in short periods of time.) Is this the same way some investors make investments? Are some investors ignoring sound financial analysis and, instead, just copying what apparent “winners” are doing? Are they just riding the wave, or running with the herd? This paper examines if people are deciding upon selling prices of investments and other assets by imitating the buying/selling patters of those they perceive to be “winners” (those who buy for low prices and sell for high prices).

Do financial analysts (as well as others who buy and sell assets) use present value concepts to value investments and other assets? Do they determine the price of an investment or other asset based upon a careful analysis? This is important because if asset (or investment) values are not determined using financial fundamentals (such as present value techniques, and financial ratios), then much of what is being taught in accounting and finance classes may not be valid. Financial fundamentals only determine values/selling prices because investors/buyers use them to determine values/selling prices. That is, regardless of the validity of financial fundamentals, such techniques do not indicate a selling price if supply-and-demand indicates another selling price. Consider things which have *perceived* demand by some people (but perhaps not by other people): a pair of designer denim jeans as compared to a similar pair made by “Levi Straus” or “Wrangler;” or a new pair of jeans that looks worn (or a worn pair of jeans) with holes in them compared to a new pair that has never been worn before. (Some people pay more for designer clothing than for similar clothing that some people believe provides the same utility.) Selling prices indicated by financial value techniques may be different from selling prices indicated by supply-and-demand, and yet others may have different opinions of what determines selling prices.

Eugene Fama, in his 1965 seminal paper, “The Behavior of Stock-Market Prices,” presented three perspectives of stock prices: those of the chartists, those of the fundamentalists, and those of the random walk advocates. The chartists contend that they can estimate future stock prices based upon past price movement; the fundamentalists contend that they can estimate future stock prices based upon future cash flows; and the random-walk advocates contend that the best estimate of stock prices at time $t+1$ is what it was at time t with a distribution around $t+1$. (That is, $t+1 = t +$ or $-$ some amount a .) Fama disputes the chartists’ claims by stating their predictions are as accurate as those of “astrologists” because their estimates are based upon the future being the same as the past. He disputes the fundamentalists’ claims because their estimates are based upon knowing future cash flows and discount rates, which no one knows for certain. This led to his random walk theory. This paper contends that the selling pattern of stocks is similar to the selling prices of all assets.

This paper does not consider chartists for the same reasons that Fama did not consider them; chartists lack valid theory. Like Fama, this paper will attempt to invalidate fundamentalists’ beliefs for publicly traded investments, but validate it for small closely held investments. This paper neither accepts nor rejects the random-walk theory, but instead tests whether peoples’ behaviors are consistent with a random walk. More specifically, it observes if peoples’ estimated values at $t+1$ are the price at time t influenced by the movement of the market in general. That is, if the market as a whole increases, then the estimated price at $t+1$ increases, and if the market as a whole decreases then the estimated price at $t+1$ will decrease. This paper begins by noting a May 3rd 2012 Wall Street Journal article (The Wall Street Journal, 2012) which stated that, “stocks are moving in lock step” to the detriment of “investors who are trying to pick winners and losers among individual stocks.”

This section examines the views of the fundamentalists, that values and selling prices are dependent upon present value techniques. To begin, the interest rates used to discount future cash flows are made up of five components: (1) real rate (the base interest rate exclusive of other components), (2) inflation premium, (3) risk premium, (4) liquidity premium, and (5) maturity premium. This rate is usually simplified to the first three components: the real rate, the inflation premium, and the risk premium (CFA Level 1, 2012; Portfolio Management, 2012; Simple and Compound Interest Rates, 2012; Art of Saving, 2012). Further, the real rate, the sum of the nominal rate (1) and the inflation premium (2), is frequently considered to be the US Treasury bill rate (Simple and Compound Interest Rates, 2012; Fama, 1976). This paper will build upon these ideas. Like Fama, this paper challenges fundamentalists’ views for publicly traded investments and other assets, but unlike Fama, it will attempt to validate fundamentals’ views for small privately owned investments.

This paper was bifurcated into two types of investments: publicly held and privately held, where by the ownership of the publicly held investments is widely distributed, and the ownership of the privately held investments is an individual, or a small closely aligned group of individuals. Examples of publicly held investments could be securities of a major exchange (New York, American, etc.) or other major purchases or sales which would not be considered privately held, and examples of privately held investments might be rental real estate or a business owned by an individual investor or a few closely aligned investors. This paper examined if the investors in these two types of investments use the same investing criteria.

Let us first consider the publicly held securities. If the answers to all of the preceding questions are “yes,” then none of the securities for a given exchange should move in unison unless there are common shocks to all of the securities or other assets simultaneously. That is, in the calculation of the present values, all the inputs (PMT, i , and n) would have to change simultaneously and in a manner such that the present value calculations all changed in a proportionately equal amount. Further, that the components of i , ((1), (2) and (3)) would also have to change in a manner such that the present value calculations changed in a proportionately equal amount. That is, there are five inputs that all would have to change in a similar manner (PMT, n , and the three components of i) such that the present values of all securities and other assets changed in a proportionately similar manner. If it is posited that PMT and n would not change for all securities and other assets in this manner, and if it is further posited that the three components of i

also would not change for all securities in this manner, then the prices of all of the securities for a given exchange (or other assets) should not move in unison. This was tested.

QUESTIONS

This paper claims that for publicly held securities, as defined in this paper that stocks prices are moving in unison. It is claimed that there is a herd mentality. That is, if average stock prices are increasing, investors buy, and if average stock prices are decreasing, investors sell – regardless of the financial fundamentals. This is the first question. Are investors, or their advisors, using financial fundamentals, or are they Running with the Herd for publicly held investments? Respondents were asked the following question.

1. Based upon your current experiences for publicly held investments, such as those that might be listed on a major stock exchange, please indicate on a scale of 1 to 5 whether you would use "Present Value" techniques (PV) or "Running with the Herd" techniques (RH).
 - i. 1 = PV only
 - ii. 2 = PV mostly
 - iii. 3 = PV and RH equally
 - iv. 4 = RH mostly
 - v. 5 = RH only

For those who invest in small, closely held private investments (e.g. rental real estate or a business) there does not exist a market (such as the New York Stock Exchange, or the like) to establish market/selling prices. Accordingly, these investors cannot “Run with the Heard” because there is no herd (i.e. an exchange). Each investment is essentially unique. Past similar experiences are used to estimate future cash flows. Present values can be calculated based upon acceptable discount rates chosen from various alternatives, and these are compared to the selling prices to determine whether to buy or sell a particular investment or other asset. The alternative discount rates would be various rates of return available to investors. For these types of purchases (sales) this paper tests if financial fundamentals are still valid. This brings us to our second question. For closely held private investments and other assets, do investors use financial fundamentals for deciding upon whether to buy or sell, or do they “Run with the Herd”? Respondents were asked the following question.

2. Based upon your current experiences for closely held investments, such as rental real estate or a business, please indicate on a scale of 1 to 5 whether you would use "Present Value" techniques (PV) or "Running with the Herd" techniques (RH).
 - i. 1 = PV only
 - ii. 2 = PV mostly
 - iii. 3 = PV and RH equally
 - iv. 4 = RH mostly
 - v. 5 = RH only

This paper also claims that the risk-free-inflation-free rate of return is not observable, but that the sum of (1) the risk-free-inflation-free rate of return and (2) the inflation premium is observable and that it is equal to US debt security rates (i.e. US Government Bond rates). This brings us to a third question. Do investors or their advisors consider US debt rates a reasonable estimate of the sum of (1) and (2)?

3. Based upon your current experiences, are US government bond rates a reasonable substitute for the risk-free inflation adjusted rate of return? That is, do you consider such bonds to be risk-free and compensate for (include) inflation?
 - i. 1 = poor substitute

- ii. 2 = mostly a poor substitute
- iii. 3 = fair substitute
- iv. 4 = mostly a good substitute
- v. 5 = good substitute

This paper also claims that (3), the risk premium, is subjectively determined rather than estimated from models, such as CAPM (Capital Asset Pricing Model). This brings us to a fourth question. Do investors, or their advisors, subjectively estimate risk premiums rather than using those calculated by models?

4. How do you measure risk?
 - i. 1 = only subjectively
 - ii. 2 = mostly subjectively
 - iii. 3 = an equal balance of subjectivity and economic models
 - iv. 4 = mostly based upon economic models
 - v. 5 = only based upon economic models

Another possibility for establishing the risk premium would be the use of comparables. As this might be considered subjective by some, and the result of economic model by others, this brings us to the fifth question. Do investors, or their advisors, use comparables for estimating the risk premium?

5. Do you use comparables to estimate risk?
 - i. 1 = never use comparables
 - ii. 2 = rarely use comparables
 - iii. 3 = use comparables about ½ the time
 - iv. 4 = frequently use comparables
 - v. 5 = always use comparables

The preceding presupposes that investors' methods have been static and unchanging, but is this necessarily true? This creates a sixth, seventh and eighth question. Have investors' methods changed (6), and if the methods have changed, when did they change (7), and how did they change (8)?

6. During the last 8 years, have you significantly changed how you evaluate investments over time?
 - i. Yes
 - ii. No
7. If you have significantly changed how you estimate investments, please state the approximate year of the change. Please use a four-digit number, e.g. 1776.
 - i. Year
8. If you have answered "yes" that you have changed how you evaluate investments, please indicate whether your methods have become more PV or more RH.
 - i. 1 = a lot more PV
 - ii. 2 = a little more PV
 - iii. 3 = no change
 - iv. 4 = a little more RH
 - v. 5 = a lot more RH

Further since there is a tradeoff between risk and return, have investors changed their opinion about risk, which brings us to the ninth question, have investors changed their opinion about risk in the last 8 years? (Eight years was chosen to try to encapsulate the recent past.)

9. Over the last 8 years, has your opinion of risk changed about investments? If so, please indicate how your opinion has changed?
- i. 1 = considerably less risk
 - ii. 2 = a little less risk
 - iii. 3 = risk has not changed
 - iv. 4 = a little more risk
 - v. 5 = considerably more risk

Finally, since investments exist in order for investors to earn returns, and since investors' opinions may be greatly influenced by whether the values of their portfolios have changed significantly, this brings us to a tenth question. Over the last 8 years, have investors experienced a significant change in their portfolio values?

10. Over the last 8 years, have you experienced a significant change in your portfolio value?
- i. 1 = significant loss
 - ii. 2 = some loss
 - iii. 3 = no gain or loss
 - iv. 4 = some gain
 - v. 5 = significant gain

In the process of examining the preceding, perception is asserted to be reality. That is, if there is sufficient demand for a product regardless of whether there is a real need for that product, prices will increase. One only needs to observe the price of trendy items such as "Cabbage Patch Dolls," "Mood Rings," "Pet Rocks" and the like, to observe this phenomenon. (That is, that there is a perceived demand which causes price to increase even though a substitute could be produced and sold for much less.) Accordingly, the study examines peoples' behaviors rather than what some people might consider theoretically justifiable reasons. That is, even though financial fundamentals might be theoretically justifiable, it is investors, or their advisors, (peoples' behaviors) which determine the validity of using financial fundamentals (or Running with the Herd) to estimate market/selling prices. Therefore, investors were surveyed to determine what methods they use, as well as their opinions.

QUESTIONS

The preceding 10 questions were formalized into Likert scales ranging from 1 to 5.

RESULTS AND FINDINGS

Surveys were e-mailed to 4,791 accounting faculty and 4,192 CPA-PFSs (*CPA-PFS are those Certified Public Accountants with a Personal Financial Specialist.*) for a total of 8,983 surveys. Of these, 813 were not delivered for a net of 8,170 surveys sent out. Of these, there were 220 responses, or a 3% response rate. The responses were analyzed with SPSS 18 and Excel 2010.

For the first and second questions, which compared publicly held and closely held investments, on a scale of 1 to 5, where 1 equaled "Financial Fundamentals" and 5 equaled "Running with the Herd," the results, according to SPSS, were as follows:

- for publicly held investments:
 - the mean was 2.63 (53% from PV to RH)
 - the standard deviation was 0.89; and
- for closely held investments
 - the mean was 1.99(40% from PV to RH)

- the standard deviation was 1.04.
- Levene's test for equality of variances indicated that the variances were not significantly different ($F=0.027$, $\text{sig.} = 0.869$).
- The t-test for equality of means indicated that the means were significantly different ($df = 178$, $t = -4.48$, $\text{sig.} = 0.00$).

This indicates that on a scale of only using "Financial Fundamentals" to only using "Running with the Herd," investors rely more on "Financial Fundamentals" for closely held investments than do those who invest in publicly held investments, but both rely, to some extent on "Running with the Herd."

The third question examined whether investors considered government bond rates to be a good substitute for the sum of the risk-free rate plus the inflation premium. The SPSS mean was 3.0 (a fair substitute) with a standard deviation of 1.27. Further, the results indicated that being a fair substitute was significantly different from being a good substitute ($df = 219$, $t = -23.31$, $\text{sig.} = 0.00$).

For the fourth question of whether investors estimated risk subjectively or used economic models, the SPSS mean was 2.83 (57% from only subjective to only models) with a standard deviation of 1.00. This indicates that most investors rely slightly more on economic models than on subjectivity.

For the fifth question of whether investors made use of comparables to estimate risk, the mean was 3.17 with a standard deviation of 1.10. This indicates that investors probably use comparables about 63% ($3.17/5$) of the time to estimate risk.

For the sixth question of whether investors have changed how they evaluate investment in the last 8 years, 29.68% of the respondents said "yes."

In response to the seventh question of when these investors changed how they evaluated investments, the responses were as follows:

- Range: 1987 to 2012
- Mean: 2006
- Median: 2008
- Mode: 2008
- 58% (37/64) of the respondents indicated there was a structural break during the time period 2007/2008/2009.

For the eighth question, the investors who stated they had changed how they evaluated investments were asked if they had changed more towards "Financial Fundamentals" or more towards "Running with the Herd" during the last 8 years. The results were as follows:

- Mean: 2.52 (50%)
- Standard Deviation: 1.05.

For the ninth question of whether these same respondents considered investments more or less risky, the results were:

- Mean: 3.59 (72% from less risky to more risky)
- Standard Deviation: 1.13.

This indicates that investors have begun to use "Financial Fundamentals" more, and that they consider investments to be a more risky.

For the tenth question of whether investors had a significant gain or loss in their portfolio values, the results were:

- Mean: 3.27 (65% from loss to gain)
- Standard Deviation: 1.20.

This indicates a gain in portfolio values.

Two regression models were run: one with the publicly held investments as the dependent variable, and the other with the closely held investments as the dependent variable. For both, the independent variables were Q3, Q4, Q6, and Q10, where:

Q3 = US government bond rates are a reasonable substitute for the risk-free-inflation-adjusted rate of return.

Q4 = risk is measured on a sliding scale from only subjective to only economic models.

Q6 = investors changed how they evaluated investments: yes, or no.

Q10 = investors have experienced a significant change in portfolio value over the last 8 years.

These variables were chosen because they relate directly to the present value calculation. As can be seen from Table 1, variables Q3, Q6 and Q10 are positively related to Publicly Held Investments using “Financial Fundamentals” or “Follow the Herd.” The variables have a high degree of significance, and the equation has an R Square of 0.625. This indicates that for publicly held investments, investors were more likely to “Follow the Herd” if investors believed US bonds were a good substitute for the risk-free-inflation-adjusted rate of return, *and* if investors had changed how they evaluate investments, *and* if investors’ portfolios had increased in value.

TABLE 1
TESTS OF BETWEEN-SUBJECTS EFFECTS

Dependent Variable: Publicly Held Investments

Source	Type IV Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	136.828a	102	1.341	1.652	0.006
Intercept	867.584	1	867.584	1068.671	0.000
Q3	12.575b	4	3.144	3.872	0.006
Q4	1.638b	4	0.409	0.504	0.733
Q6	5.676b	1	5.676	6.992	0.009
Q10	5.941b	4	1.485	1.829	0.129
Q3 * Q4	17.043b	14	1.217	1.500	0.125
Q3 * Q6	8.135b	4	2.034	2.505	0.047
Q3 * Q10	18.140b	16	1.134	1.397	0.159
Q4 * Q6	3.049b	3	1.016	1.252	0.295
Q4 * Q10	7.393b	13	0.569	0.701	0.759
Q6 * Q10	1.448b	4	0.362	0.446	0.775
Q3 * Q4 * Q6	0.683b	4	0.171	0.210	0.932
Q3 * Q4 * Q10	14.999b	11	1.364	1.680	0.089
Q3 * Q6 * Q10	4.326b	4	1.081	1.332	0.263
Q4 * Q6 * Q10	0	0	.	.	.
Q3 * Q4 * Q6 * Q10	0	0	.	.	.
Error	81.995	101	0.812		
Total	1464	204			
Corrected Total	218.824	203			

a. R Squared = .625 (Adjusted R Squared = .247)

b. The Type IV testable hypothesis is not unique. For Closely Held Investments, the findings are different. See

Table 2. Now the R Square is only 0.491, and there is only one significant variable, Q10, associated with investors being more likely to “Follow the Herd.” This indicates that investors investing in Closely Held Investments were more likely to use Financial Fundamentals than were investors who invested in Publicly Held Investments.

Finally, making use of Factor Analysis, four Latent Variables were determined. See Table 3. Although there are 10 variables, one was not used, the structural break year, because its use would distort the results without adding any information. Of the remaining 9 variables, Component 1 (Latent Variable 1) combined (a) Publicly Held Investment, (b) Closely Held Investments, and (c) If Break More PV of RH (essentially the Dependent Variable(s)). This is reasonable because all three measured on a sliding scale the amount of PV or RH. Component 2 (Latent Variable 2) combined Risk Subjectivity and Use of Comparables to Determine Risk, both associated with risk (Risk). Component 3 (Latent Variable 3) combined the existence of a structural break with how risk changed if there was a structural break (Structural Break). Finally, Component 4 (Latent Variable 4) combined US government bonds as a substitute of the risk-free-inflation-adjusted rate of return with change in wealth (Wealth). We might summarize these four condensed variables as: (1) Dependent Variables, (2) Risk, (3) Structural Break, and (4) Wealth. This emphasizes the importance of these four elements.

TABLE 2
TESTS OF BETWEEN-SUBJECTS EFFECTS

Dependent Variable: Closely Held Investments

Source	Type IV Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	72.005a	103	0.699	0.945	0.612
Intercept	491.933	1	491.933	665.152	0.000
Q3	1.525b	4	0.381	0.516	0.724
Q4	1.892b	4	0.473	0.640	0.636
Q6	0.082b	1	0.082	0.111	0.740
Q10	5.811b	4	1.453	1.964	0.106
Q3 * Q4	12.267b	14	0.876	1.185	0.299
Q3 * Q6	1.084b	4	0.271	0.366	0.832
Q3 * Q10	13.951b	16	0.872	1.179	0.298
Q4 * Q6	3.013b	3	1.004	1.358	0.260
Q4 * Q10	10.546b	13	0.811	1.097	0.370
Q6 * Q10	5.548b	4	1.387	1.875	0.121
Q3 * Q4 * Q6	1.750b	4	0.437	0.592	0.670
Q3 * Q4 * Q10	6.426b	12	0.535	0.724	0.725
Q3 * Q6 * Q10	3.481b	4	0.87	1.177	0.326
Q4 * Q6 * Q10	0	0	.	.	.
Q3 * Q4 * Q6 * Q10	0	0	.	.	.
Error	74.698	101	0.740		
Total	866	205			
Corrected Total	146.702	204			

a. R Squared = .491 (Adjusted R Squared = -.028)

b. The Type IV testable hypothesis is not unique.

TABLE 3

Rotated Component Matrix(a)

	Component			
	1	2	3	4
Publicly Held Investments	<u>0.732</u>	-0.28	-0.13	0.002
Closely Held Investments	<u>0.708</u>	-0.06	0.006	-0.21
Risk - Government Bonds	-0.09	0.081	0.372	<u>-0.685</u>
Risk, Subjective or Model	-0.08	<u>0.814</u>	0.151	-0.120
Risk, Use of Comparables	-0.12	<u>0.817</u>	-0.13	0.148
Structural Break, yes or no	0.244	0.191	<u>0.746</u>	0.067
If Break, More PV or RH	<u>0.765</u>	0.039	0.067	0.235
If Break, How Risk Changed	0.332	0.220	<u>-0.720</u>	0.052
Financial Gain or Loss	-0.08	0.036	0.355	<u>0.761</u>

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

SUMMARY AND CONCLUSION

In 1981, a finance professor of the University of California at Irvine's MBA program told me that the difference between investing and gambling was the amount of risk. That is, the more risk associated with an activity, the more the activity resembled gambling, and the less risk associated with an activity the more it resembled investing. As with games of chance, investing includes both skill and luck. The skill would be making use of probability, statistics, and financial fundamentals; and the luck would be choosing the investments that increase in value, despite the financial fundamentals. If the price of an investment includes all currently available information, then its present value should equal its discounted future cash flows. It is those investments which are mispriced (not equal to their present value) that create the greatest opportunity for making a profit. It is the anomalies and the investments that defy logic which create the opportunities for profit. Although the following list may seem whimsical, they provided significant returns to their investors: Cabbage Patch Dolls, Mood Rings, Pet Rocks, and those items, which can be cheaply replicated, but provide the same or similar utility. That is, those items whose prices are driven by trends or brands rather than utility.

Both Publicly Held Investing and Closely Held Investing include an element of luck, which perhaps explains why the findings show a tendency for investors to Follow the Leader, Run with the Herd. The findings also showed that closely held investments were less inclined to Follow the Leader, and instead, relied more heavily on Financial Fundamentals. According to the literature, US government bonds are supposed to be a reasonable substitute for the risk-free-inflation-adjusted rate of return, yet the findings indicate that investors only consider them to be a fair substitute. This may indicate an additional degree of risk in present value calculations. Risk, itself, was considered to be an equal balance of subjectivity and the use of models, and comparables were used about ½ of the time. The diminished use of using scientific methods to determine risk may lend more credence to investors Running with the Herd. About 30% of the respondents indicated that there was a structural break in how investments are evaluated and that the structural break centered around 2008. Although more respondents indicated there was not a structural break compared to those who indicated there was one, I posit that 30% is a large enough group of investors to significantly influence the markets behavior, i.e. Running with the Herd. Of these 30%, they used a little more fundamental financial analysis and considered the market a little more risky. This may be in response to personal, negative experiences they have had with the market, despite that investors in

the market, in general, believe they have fared slightly better financially. However, despite the increase in risk, the investors did not change the amount of “Financial Fundamentals” they used to evaluate investments.

The regression of the publicly held investments indicated a positive association of “Running with the Herd” with: (a) US government bonds being a substitute for the risk-free-inflation-adjusted rate of return, (b) the existence of a structural break, and (c) an increase in portfolio value; *while* closely held investments were only associated with an increase in wealth. This supports the proposition that closely held investments rely more on financial fundamentals than do publicly held investments, and that both of them, to some extent, Run with the Herd.

Latent variables 2, 3, and 4 emphasize the belief by some that there was a structural break centered at 2008; *and*, that investors consider investments to be more risky after 2008 than before 2008, *and*, that their opinions are influenced by their change in wealth.

In summary, the findings support the Wall Street Journal’s article that investors may be “Running with the Herd,” or Following the Leader. This is not to say that financial fundamentals are not being used, but there is an increasing tendency following the 2008 structural break for investors to be more cautious because of additional risk. For accounting education, this means that educators need to emphasize the risk return tradeoff, and explain that those topics taught in finance and accounting classes need to be “considered with a grain of salt.” That is, these classes are teaching tools, tools that sometimes give contradictory results and that students need to be taught that the topics are tools to be used – or not used – based upon the users’ individual beliefs and experiences. This emphasizes that accounting and finance is an art – not a science.

An additional consideration of this study is the emphasis that the use of information is a dynamic process, even though it sometimes is like a wheel in which once used beliefs are rediscovered and reused as if they never existed.

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