HINDSIGHT BIAS AND INVESTMENT DECISIONS MAKING EMPIRICAL EVIDENCE FORM AN EMERGING FINANCIAL MARKET

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❖ Objectives and motivations of the study

Investors:

- ➔ not perfectly rational
- ➔ subject to **cognitive and emotional biases**
- ➔ impact of human cognitive and emotional errors = **bad decision** + leads the investor to **excessive risk**

Hindsight effect = tendency of an individual to believe that he would have been able to accurately predict a previous outcome, even if that person was unable to do so in real time: **"I knew it!"**

- ➔ Individuals after receiving final information claim to have known it all along

Irrational predictions = stock market crashes and boom = extraordinary losses to one investor and gain to other

Investors doing investment decisions → learning from past experience and ability to recall = perform various **cognitive tasks** and involve the **memory recall process**

- ➔ Whether this recall and cognitive process is free of omission and errors?
- ➔ How does the acquisition of final knowledge effect investment decisions?

Whether the investors are hindsight biased or not and what is the impact of hindsight bias on investment decisions?

To study **hindsight bias** and **investor decision making** → use of **asset selection effect** and **sign of return effect**

❖ Data used

Data collected by questionnaire:

- ➔ 3 parts: 55 students, 89 financial managers, and 56 stock market investors
- ➔ Total = 200 respondents
- ➔ questionnaire distributed in two phases (one-week interval)
- ➔ 1st phase = questions related to background information + ask to **estimate return of asset** based on graph to choose better performance asset
- ➔ 2nd phase = **memory recall** = ask to recall their initial answer and classify how well they can recall: answer and return estimate are recollected
- ➔ given same return estimation task + updated information: to check how well they learn from previous experience + how they adjust to new updated information

❖ Indicators, Methods, Models used

1 primary objective = to check empirically **recall errors and omission** that lead to hindsight biasness

Hindsight bias measure:

- ➔ **compare true and recalled estimates** of questions in 2 phases of survey
- ➔ difference = **"error"** or hindsight bias whose significance is checked by **proportional z-test**
- ➔ correlation = checked among different error to check the relationship of one error with other
- ➔ regression results = note the overall perceived error (hindsight bias) + its relationship with the confidence in recall and confidence in estimate

Measuring the hindsight bias in two different aspects (Fischoff 1975 methodology):

- ➔ asset selection
- ➔ sign of return effect

Measurement of Hindsight Bias in Asset selection

Biased investor → not able to detect that they have choose the wrong choice in case of winning asset

Over-estimation = compare % of correct answers and respective remembered proportion

Proportional Z-test → to check the statistical significance of difference between true and remembered proportions of **successful answers**

$$z = \frac{p1-p2}{Sp1-p2} \ldots\ldots\ldots\ldots (1)$$

$$Sp1-p2 = \sqrt{\frac{p(1-p)}{n1}} + \sqrt{\frac{p(1-p)}{n2}} \ldots\ldots\ldots (2)$$

$$p = \frac{n1p1 + n2p2}{n1+n2} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

p_1 = true proportion of successful answers
p_2 = the proportion of respondents who believe they answered correctly
n_1 and n_2 = sample sizes

Measurement of Hindsight Bias in Sign of Return Recall

Questionnaire:

- ➔ ask to assign the sign to return they think that winning asset (better performing asset)
- ➔ then to remember that sign responded in 1st phase

Hindsight biased investors = remember the **initial sign** assigned to the return **incorrectly**

Over- estimation → compare the actual proportion of correctly estimated sign of return and respected remembered proportion

Same proportional Z-test → to test the statistical significance of difference between true and remembered proportion **correct sign of return**

Estimate and Memory Error

- ➔ The error in estimate is measured by difference of original estimate in first phase and real outcome (true answers)
- ➔ The error in memory recall is measured by difference of recalled estimates in phase 2 and originally given in phase 1
- ➔ The correlation of two errors (memory and estimate error)
- ➔ Correlation between confidence and memory errors

Relationship between overall perceived error (hindsight bias) and error in estimate and error in recall

$$H = \alpha + \beta_1 CE + \beta_2 CR + \varepsilon$$

"H" = hindsight bias, "CE" = confidence in estimate, "CR" = confidence in recall

❖ Results

Hypothesis = difference of two proportions (true and remembered) is 0 = **no hindsight bias**

Asset selection effect

Hindsight Bias and Asset Selection Effect

	True Proportion	Remembered Proportion	Error= Difference of true and remembered
Bank Finance Managers	0.63	0.67	0.04
	(N=166)	(N=158)	(0.72)
Stock Market Investors	0.44	0.59	0.15***
	(N=258)	(N=107)	(2.62)
Students	0.45	0.55	0.1**
	(N=164)	(N=102)	(2.67)

Note. * *p* Value significant at 5%. ** *p* Value significant at 10%

- ➔ The bank financial managers = **less hindsight biased** than the stock market investors
- ➔ The students = **more hindsight biased** than bank financial managers due to less experience

Sign of return effect

- ➔ The bank financial managers = **more hindsight biased** than the stock market investors
- ➔ Investors and students = **less hindsight biased**

Estimate and Memory Error

- ➔ Correlation = measured on the basis of estimate error and memory recall error
- ➔ Financial managers: 0.7955 / Stock market investors: 0.60 / Students: 0.69
- ➔ Regression results = coefficients of (CE) is positive and (CR) is negative = strong hindsight bias
- ➔ Respondents = **more confident in estimation**
- ➔ **Hindsight biased =** overconfidence in estimate "I knew it all along" and unconfident in recall

Strong evidence of hindsight bias in all respondents groups:

- ➔ unable to learn from previous errors
- ➔ unable to detect their errors in estimate and recall
- ➔ error in prediction = bear the risk above their accepted level = harmful to their wealth
- ➔ recommendation = education: use fundamental and technical analysis + all available information resource to predict the future loss or gain