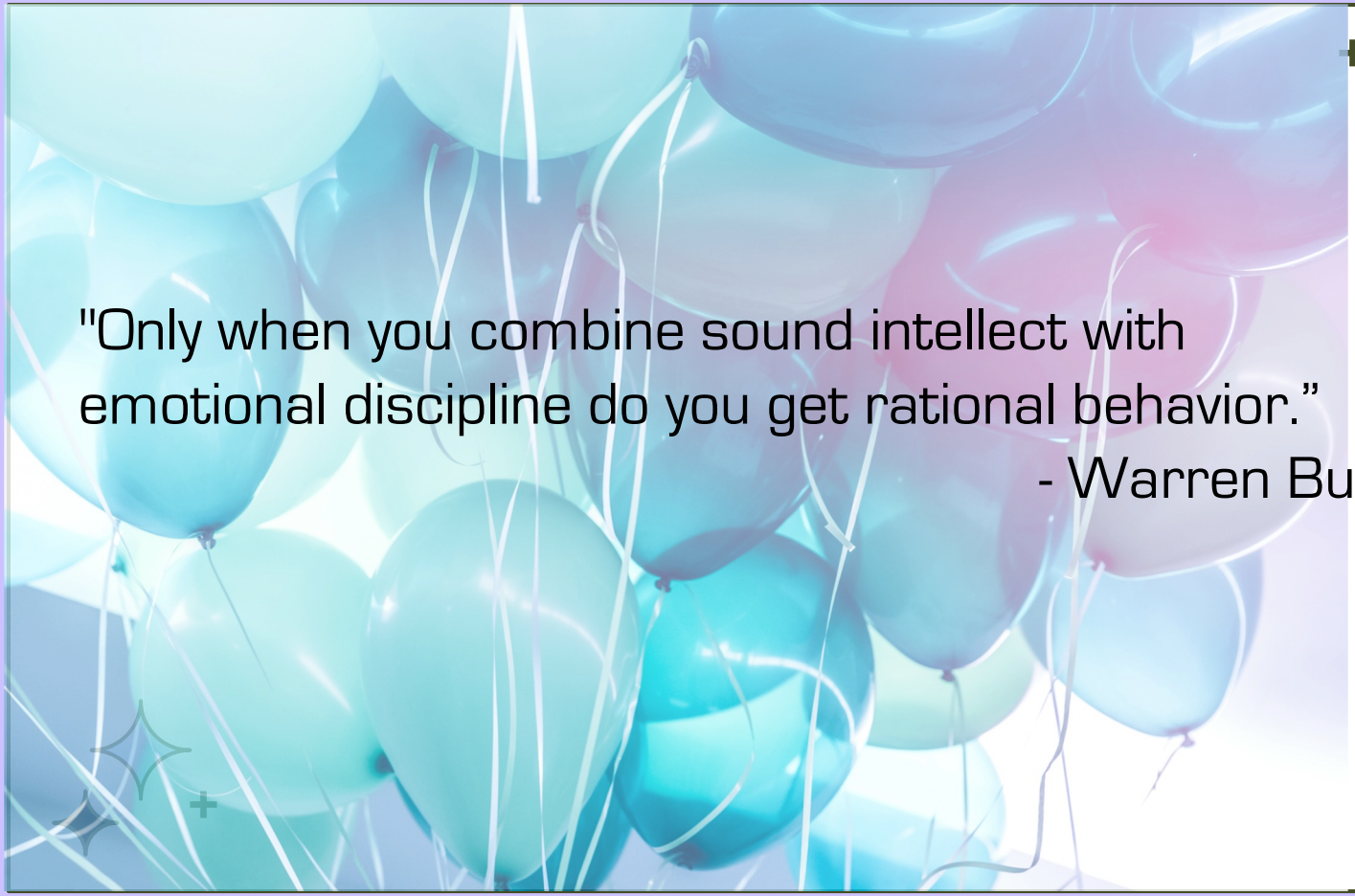
Financial decision-making &

EMOTION



"Only when you combine sound intellect with emotional discipline do you get rational behavior."

- Warren Buffet

https://www.forbes.com/sites/karlkaufman/2018/08/30/happy-birthday-warren-buffett-here-are-30-of-his-best-quotes/?sh=58010bc741e9

What is EMOTION ?

What is emotion?

- Psychologists generally agree that such states as: sadness, anger, hatred, guilt, disgust, pride, fear, regret, contempt, interest, happiness, content, surprise, joy, love, and elation, are emotions.

- Lack of a unified theory of emotion

What is emotion?

Jon Elster argues that six observable features allow us to define an emotion:

- **Cognitive antecedents**
- **Intentional objects**
- **Physiological arousal**
- **Physiological expressions**
- **Valence**
- **Action tendencies**

From an evolutionary perspective, not only do emotions serve as communicating mechanisms, they also serve as infectious mechanisms, that is, emotions can create analogous emotions in the observer.

Elster, J., 1998, "Emotions and economic theory," Journal of Economic Literature 36(1), 47–74.

The force of emotion & Individual investors

The force of emotion

In Prospect theory, the inverse-S shape of the weighting function may arise from emotion.

In prospect theory, the PWF explains the purchase of lottery tickets and insurance.

Buying lotteries may be driven by **hope&dream** (or greed?)

Buying insurances might be because of **the fear of catastrophe and ruin.**

Disposition effect, House-money effect, Break-even effect, Loss-aversion, Ambiguity aversion

Fear of regret, Fear of loss, Fear of the unknown

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Fear and Greed in Financial Markets: A Clinical Study of Day-Traders

Lo, Andrew, W., Dmitry V. Repin, and Brett N. Steenbarger. 2005. "Fear and Greed in Financial Markets: A Clinical Study of Day-Traders." American Economic Review, 95 (2): 352-359. DOI: 10.1257/000282805774670095

What is the role of emotional mechanisms in financial decision-making?

- 80 volunteers from a five-week on-line training program for day-traders

- Subjects were asked to fill out surveys that recorded their psychological profiles before and after their training program, and during the course of the program.
  - The program involved live trading through their own personal accounts.
  - Got data on:
    - daily emotional state: UWIST Mood Adjective Checklist
    - daily trading performance: daily total profit/loss on paper-trades & actual trades, the number of daily actual trades

What is the role of emotional mechanisms in financial decision-making?

- There was a clear link between emotional reactivity and trading performance as measured by normalized profits-and-losses (normalized by the standard deviation of daily profits-and-losses).

- The survey data indicate that subjects whose emotional reactions to monetary gains and losses were more intense on both the positive and negative side exhibited worse trading performance.

- A negative correlation between successful trading behavior and emotional reactivity.

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What is the role of emotional mechanisms in financial decision-making?

- Given that trading is likely to involve higher brain functions such as logical reasoning, numerical computation, and long-term planning, the results are consistent with the current neuroscientific evidence that automatic emotional responses such as **fear and greed** (e.g., responses mediated by the amygdala) often trump more controlled or "higher-level" responses (e.g., responses mediated by the prefrontal cortex)

Camerer, Colin; Loewenstein, George and Prelec, Drazen. "Neuroeconomics: How Neuroscience Can Inform Economics." Journal of Economic Literature, 2005, 43(1), pp. 9–64.

What is the role of emotional mechanisms in financial decision-making?

- Poorer trading performance might result from the fact that emotional reactions "short-circuit" more complex decision-making faculties (e.g., those involved in the active management of a portfolio of securities)

Camerer, Colin; Loewenstein, George and Prelec, Drazen. "Neuroeconomics: How Neuroscience Can Inform Economics." Journal of Economic Literature, 2005, 43(1), pp. 9–64.

Good Day Sunshine:
Stock Returns and the Weather

Hirshleifer, D., and T. Shumway, 2003, "Good day sunshine: Stock returns and the weather," Journal of Finance 58(3), 1009–1032.

Does mood move markets?

- Sunlight is associated with upbeat mood.
- People tend to evaluate future prospects more optimistically when they are in a good mood than when they are in a bad mood.
- This paper examines individually the city-by-city relationship between daily cloudiness and daily nominal return on the nation's stock index using univariate regression at 26 stock exchanges internationally from 1982 to 1997.
- Sunshine is found to be strongly significantly correlated with daily stock return.

Good Day Sunshine

- A highly robust effect in psychology literature is that individuals in good moods have more positive evaluations of many sorts, such as life satisfaction, past events, people, and consumer products.

- People who are in bad moods (good moods) tend to find negative (positive) material more available or salient.

Good Day Sunshine

- Several studies have found that individuals who are in good moods engage in more use of simplifying heuristics to aid decisions.

- However, there is debate as to whether this use of heuristics reflects cognitive deficiencies associated with good moods, or more efficient use of means of simplifying complex data.

Losing Sleep at the Market: The Daylight Saving Anomaly

Kamstra, M. J., L. A. Kramer, and M. D. Levi, 2002, "Losing sleep at the market: The daylight saving anomaly," American Economic Review 90(4), 1005–1011.

The Daylight Saving Anomaly

Sleep imbalances have been shown to cause errors in judgment, anxiety, impatience, less efficient processing of information, and loss of attention.

Q: Might sleep have consequences in financial markets?

A: Daylight-saving weekends are typically followed by large negative returns on financial-market indices.

The Daylight Saving Anomaly

Negative consequences are suffered whenever there is desynchronosticity in circadian rhythm.

If sleep desynchronosis causes market participants to:

have difficulty of solving problem and

suffer greater anxiety about a given situation,

may prefer safer investments and shun risk in trades during the trading day following such a disturbance in their sleep patterns.

This could push down stock prices following daylight-saving shifts when the desynchronosis is systematic.

The Daylight Saving Anomaly

The paper explored the effect in U.S., Canadian, U.K., and German stock market.

Daylight saving implies the loss or gain of an hour twice a year, at 2:00 a.m. Sunday.

The paper used:

- the NYSE, AMEX, and NASDAQ series over the time period January 1, 1967, to December 31, 1997.
- S&P 500 returns from January 1, 1928, to December 31, 1997
- Toronto Stock Exchange (TSE) 300 index, over the period January 1, 1969, to December 17, 1998
- U.K. total market return index over the period January 1, 1969, to December 18, 1998
  + the DAX 100, extending from January 1, 1973, to December 18, 1998.

TABLE 1—MEAN OF DAILY RAW RETURNS DATA

Index	Weighting	Other days	Weekend	Spring	Fall	Joint t test
NYSE[a]	Equal-weighted	0.0010231	−0.0007010	−0.0018132	−0.0062768	−3.3212
		(6,187)	(1,558)	(30)	(30)	(0.0004)
NYSE[a]	Value-weighted	0.0007423	−0.0003271	−0.0013355	−0.0052693	−2.6736
		(6,187)	(1,558)	(30)	(30)	(0.0038)
AMEX[a]	Equal-weighted	0.0014718	−0.0008528	−0.0021036	−0.0066178	−3.4116
		(6,187)	(1,558)	(30)	(30)	(0.0003)
AMEX[a]	Value-weighted	0.0009327	−0.0014191	−0.0018282	−0.0066984	−2.5463
		(6,187)	(1,558)	(30)	(30)	(0.0054)
NASDAQ[a]	Equal-weighted	0.0014928	−0.0009951	−0.0015897	−0.0074183	−3.9970
		(5,022)	(1,259)	(24)	(24)	(0.0000)
NASDAQ[a]	Value-weighted	0.0010091	−0.0012841	−0.0014848	−0.0080746	−2.8208
		(5,022)	(1,259)	(24)	(24)	(0.0024)
S&P 500[b]	Index	0.0005906	−0.0004079	−0.0014334	−0.0054827	−2.5820
1967–1997		(6,187)	(1,558)	(30)	(30)	(0.0049)
S&P 500[b]	Index	0.0007735	−0.0020642	−0.0044665	−0.0070133	−2.4223
1928–1966		(8,823)	(1,960)	(35)	(35)	(0.0077)
TSE 300[c]	Index	0.0005298	−0.0008212	−0.0024809	−0.0037031	−2.1455
		(5,995)	(1,498)	(29)	(29)	(0.0160)
U.K. total market[d]	Index	0.0007169	−0.0009675	−0.0042295	−0.0043035	−2.3754
		(6,156)	(1,386)	(27)	(28)	(0.0088)
DAX 100[e]	Index	0.0004190	−0.0002614	−0.0014780	−0.0001821	−0.3337
		(5,299)	(1,274)	(19)	(19)	(0.3693)

Notes: "Spring" refers to the spring daylight saving weekend mean return, "Fall" to the fall daylight saving weekend mean return, "Weekend" to all other weekends' mean return, and "Other days" to all days other than weekends' mean return. The "Joint t-test" refers to a test that the mean of the two daylight-saving return weekends, spring and fall, are jointly no different from the average regular (non-daylight saving) weekend return. When the first business day of the week is a Tuesday, the Tuesday return is used in place of the Monday. Figures in brackets under the returns for "Other days," "Weekend," "Spring," and "Fall" denote the number of observations used to compute the mean. Figures in brackets under "Joint t-test" denote the p-value for the joint t-test (i.e., the cumulative probability of the statistic using the appropriate t-distribution).

The Daylight Saving Anomaly

The magnitude of the daylight saving effect, roughly 200 to 500 percent of the regular weekend effect, is both statistically and economically significant in several international financial markets.

In the United States alone, the daylight saving effect implies a one-day loss of $31 billion on the NYSE, AMEX, and NASDAQ exchanges.


Regret

Regret & Dissappointment

Regret:

- Consider the case when:

we chose a certain course of action because we expected it to be the best, but it turned out that another course of action would have been better.

Following these "bad decisions", we are likely to experience **regret**.

- Regret is assumed to originate from comparisons between:

the factual decision outcome(what is) and
a counterfactual outcome that might have been

had one chosen differently

+ Marcel Zeelenberg ,Wilco W. van Dijk ,Antony S.R. Manstead &Joop vanr de Pligt **(2010) "On bad decisions and disconfirmed expectancies: The psychology of regret and disappointment"** Cognition and Emotion Volume 14, 2000 - Issue 4

Regret & Dissappointment

Dissappointment:

- Consider the case when:

the chosen option result in an outcome that is worse than expected.

This often give rise to the experience of disappointment.

- Disappointment is assumed to originate from a comparison between:

the factual decision outcome(what is) and

a counterfactual outcome that might have been

had another (expected) state of the world occurred.

+ Marcel Zeelenberg ,Wilco W. van Dijk ,Antony S.R. Manstead &Joop vanr de Pligt **(2010) "On bad decisions and disconfirmed expectancies: The psychology of regret and disappointment"** Cognition and Emotion Volume 14, 2000 - Issue 4

Regret & Dissappointment

- Both are negative emotions that are related to risky decision making and uncertain outcomes, and both originate in a comparison process in which the outcome obtained is compared to an outcome that **might have been**.

- Regret is more associated with a feeling that one would like to correct the mistake or to have a second chance, whereas disappointment is more associated with wanting to get away from the experience or situation involved.

- "Regret aversion" and "disappointment aversion" are the tendency to make choices in such a way as to minimize the future experiences of these negative emotions

+ Marcel Zeelenberg ,Wilco W. van Dijk ,Antony S.R. Manstead &Joop vanr de Pligt **(2010) "On bad decisions and disconfirmed expectancies: The psychology of regret and disappointment"** Cognition and Emotion Volume 14, 2000 - Issue 4

Regret: the last missing puzzle to understand Disposition effect?

- Shefrin and Statman (1985) linked the disposition effect to prospect theory and mental accounting and also suggested that avoiding regret and seeking pride may play supporting roles.

- The emotions individuals experience in response to an outcome vary depending on whether the individual is responsible or not for the outcome.

    - If an individual experiences a loss or gain for which they are not responsible they will experience disappointment or elation respectively,
    - If individuals who are responsible for the loss or gain, they will also experience regret or rejoicing respectively.

See: SHEFRIN, H. and STATMAN, M. (1985), The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence. The Journal of Finance, 40: 777- 790. https://doi.org/10.1111/j.1540-6261.1985.tb05002.x

Regret: the last missing puzzle to understand Disposition effect?

- Summers and Duxbury (2012) manipulate the emotions involved by changing whether the individual has a choice over holding a stock or not.

- Summers and Duxbury (2012) perform experiments where individuals either merely experience a gain or loss (therefore having no responsibility) or where they are responsible for the gain or loss experienced because they chose whether to hold a particular stock and how many shares to hold.

  - No-initial choice condition
  - Initial-choice condition

Summers, B.A., & Duxbury, D. (2012). Decision-dependent emotions and behavioral anomalies. *Organizational Behavior and Human Decision Processes, 118*, 226-238.

Regret: the last missing puzzle to understand Disposition effect?

- **No-initial-choice condition:**

Contrary to what generally occurs in reality, there is no choice.

Subjects merely have to sit back and observe how their stocks are performing.

When a stock they own fares poorly, they should experience disappointment, and
When their stock performs well they should experience elation.

Summers, B.A., & Duxbury, D. (2012). Decision-dependent emotions and behavioral anomalies. *Organizational Behavior and Human Decision Processes, 118*, 226-238.

Regret: the last missing puzzle to understand Disposition effect?

- **Initial-Choice condition:**

In an earlier stage, subjects could freely decide how much of the stock to hold.

If subjects actually selected these stocks themselves,
arguably they will experience emotions with higher valence—

in the face of a loss, they should experience regret (which is stronger than disappointment), and

in the face of a gain, they should experience rejoicing (which is stronger than elation).

Summers, B.A., & Duxbury, D. (2012). Decision-dependent emotions and behavioral anomalies. *Organizational Behavior and Human Decision Processes, 118*, 226-238.

Regret: the last missing puzzle to understand Disposition effect?

- **No-initial-choice condition:**

  No disposition effect observed

- **Initial-Choice condition:**

  Disposition effect observed

Summers, B.A., & Duxbury, D. (2012). Decision-dependent emotions and behavioral anomalies. *Organizational Behavior and Human Decision Processes, 118*, 226-238.

Regret: the last missing puzzle to understand Disposition effect?

- **Does Prospect theory need "regret aversion" to fully explain disposition effect?**

If prospect theory without emotion explains the disposition effect,
the mere experience of a gain or loss without personal responsibility for
the choice of investments (first treatment) should induce the disposition effect.

But it didn't.

May be the responsibility for an outcome is a prerequisite for the disposition effect.

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Summers, B.A., & Duxbury, D. (2012). Decision-dependent emotions and behavioral anomalies. *Organizational Behavior and Human Decision Processes, 118*, 226-238.

Regret: the last missing puzzle to understand Disposition effect?

- **Does Prospect theory need "regret aversion" to fully explain disposition effect?**

For an individual who has experienced a loss, holding the stock provides a way to potentially avoid the negative emotions (regret) being crystallized by selling.

Holding the stock may even reverse the valence of their emotional experience (if, for example, the stock rallies and regains value).

Summers, B.A., & Duxbury, D. (2012). Decision-dependent emotions and behavioral anomalies. *Organizational Behavior and Human Decision Processes, 118*, 226-238.

THANKS!

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