

Lecture 2: Investment behavior and emotional response

1. The previous lecture discussed the basis of the distinction between what we called ‘cognitive’ and ‘emotional’ decision-making. Our specific examples were all cases of perceptual framing, which popular usage doesn’t typically treat as ‘emotional’ response. In fact, there is no scientific basis for distinguishing a special subset of the unconscious, fast processes mainly performed by pre-frontal systems and arbitrarily reserving the label ‘emotion’ for them. We therefore borrow popular rather than scientific usage when we follow Zweig in organizing our discussion around common labels for everyday types of emotional states. I see no harm in this as long as we recognize that that’s what we’re doing.
2. As Zweig says in his chapter on fear, people’s dread of a particular form of disaster tends to be based not on its objective frequency but on “how vivid, controllable or potentially catastrophic a risk seems to be” (p. 158). Thus people are typically more frightened of the prospects of plane crashes than of car crashes, of shark attacks than of dog attacks, and of being murdered than of falling down the stairs. These comparative fear magnitudes are not merely out of line with objective dangers; they are misplaced by orders of magnitude.
3. People with damage to the amygdala, the part of the old brain that broadcasts warning signals to the rest of the system when danger appears to loom, have difficulty learning the relative riskiness of different environments or contingencies. To that extent, we might suppose that their evolutionary fitness is lowered.

4. People tend to experience less fear merely to the extent that others are engaged in the same risky behavior as they are. This makes sense when the risky behavior in question is walking down a dark unknown street. It frequently has terrible consequences when the behavior in question is choosing stocks.
5. Surprise greatly heightens neural arousal. This point helps to remind us how of how tightly emotional responses are integrated with cognitive ones. As we'll study in detail in the last few weeks of the course, the basic reason that surprises are so stimulating is that they're the basis for learning: when experience follows its standard course, this teaches us nothing. The world-conquering success of the human species is primarily due to our extreme adaptiveness, which is in turn reflected in the extent to which our brains' attention is drawn to novel stimuli. 'Attentiveness' and 'arousal' are essentially the same thing at the neural level. This is reflected in the popular association between strongly cognitive (frontal) processing and 'cold' or 'dull' states. In the investment domain, the vividness of surprises tends to cause large short-term over-reactions to differences between forecasts of asset values and small, statistically predictable fluctuations. This in turn incentivizes firms to concentrate too much energy on smoothing earnings and matching those of competitors, rather than on maximizing long-run corporate profits. The wise investor looks for firms managed by bosses who resist such incentives.
6. Our brains couldn't be surprised if they didn't generate expectations. They generate these automatically, not (mainly) in response to conscious forecasts based on global, controlled statistical inference. When older brain systems are *negatively* surprised, this is as potentially powerful a source of learning as is failure of expectations in the positive direction. This form of arousal is experienced as what we popularly call the

emotion of regret. Furthermore, people learn to predict occurrences of this aversive feeling, which encourages them to avoid choices of a kind that have been associated with past disappointments. This leads many investors to statistically irrational flight from prospects of losses. Worse, it leads to avoidance of situations that the brain tends to *frame* as losses only because an expected upside resembles a possible downside in an irrelevant respect. The clearest example cited by Zweig is that of experimental subjects demanding compensation to swap a fair lottery ticket they hold for another fair ticket, even though this couldn't change their odds of winning. People dread the prospect of *having previously held* a ticket that then wins, because they know their brains will frame this as a circumstance in which they 'almost' won. Similarly, from the perspective of expected value, the lottery ticket 4538876 is *not* more similar to the ticket 4538875 than it is to 9821552. But because the first two numbers are more similar in other respects, a person who holds 4538876 will tend to experience bitter feelings if 4538875 wins which they would not feel if 9821552 wins. On the other hand, having experienced herself as having 'come close', the holder of 4538876 is likely to buy more tickets on the next lottery if 4538875 wins than if 9821552 does. The notion of 'coming close' here entirely fails to track any objective reality relevant to gambling.

7. Note that fear of regret makes excellent evolutionary sense. Zweig reviews evidence that people who have suffered neural damage in areas associated with regret response have greater than normal difficulty distinguishing better from worse gambles. However, regretting 'coming close' in a lottery can only be an instance of an old system encountering a contingency for which evolution didn't prepare it.
8. Our tendency to attend more actively to successes than to failures often cruelly compounds regret aversion. Many

processes in modern life, certainly including financial asset values, exhibit regression to the mean. People who see more pattern in their successes than in their failures will tend to more often be negatively than positively surprised by processes that regress to the mean, and so will often experience regret over gambles they made that were in fact actuarially reasonable.

9. The tendency of people to expect greater long-term emotional effects from *both* positive and negative changes in their life circumstances – getting married, getting rich, being diagnosed with a deadly disease – is what we’d predict once we recognize the extent to which the brain is a learning machine, and the extent to which it therefore integrates attention with opportunities for learning. People adapt to major changes because, as they learn their way around in their new situation, it offers fewer opportunities for learning and so draws less of their attention. A person paralyzed in an accident at first thinks constantly of the new challenges she faces, and is typically depressed. Later, other surprises unrelated to her paralysis begin to crowd out her attention to her misfortune. The same thing happens with positive shocks. What is most striking about the phenomenon, however, is that most people have difficulty learning from experience that dream and nightmare scenarios are more emotionally profound in prospect than in actuality. This speaks to the limited extent to which frontal, cognitive processes can modulate pre-frontal ones. Suppose you were cognitively convinced that winning a large lottery wouldn’t, in the long run, bring you a higher quotient of daily cheerfulness. Does this diminish your excitement when you imaginatively project yourself into the moment after the big jackpot? Probably not.
10. People don’t even tend to have steady perceptions of their levels of happiness *at the present*. Cueing people to

attend to whatever their culture associates with happiness causes most people to report being happier; cueing them to think of conditions their culture associates with dissatisfaction produces the opposite result. Is there, indeed, any such thing as a fact of the matter about 'how happy' a given person is at a given time? In a single circumstance, one part of your brain may be enjoying positive arousal while another part, bidding for control of behavior, is being frustrated.

11. This reminds us of an important distinction between the economist's concept of utility and the everyday concept of happiness. Relative happiness is supposed to be a *state* of a whole person. By contrast, 'earning high utility in consumption' is not supposed to be any kind of state at all; the description is simply a way of saying that someone consumes something for which they were prepared to pay a large opportunity cost relative to other consumption possibilities.
12. Someone might respond to this by saying that in that case, the economist's attention is focused on something other than what really matters to welfare. However, the evidence Zweig reviews in chapter 10 cuts both ways. What most excite people seem to be the things they *seek* to consume. Behaviorally chosen opportunity costs might be an ideal measure of that. Consider poor people who aspire to be wealthier. Perhaps we do them the most good not by actually bringing about their greater wealth but by endorsing and helping them advance their aspirations. Of course, such endorsement will be perceived as useless if it's merely verbal, and so it requires actually trying to help them become better off; so noting this theoretical possibility need not suggest hypocrisy or condescension. Furthermore, it's clear that a main thing that makes people feel miserable and unsatisfied is low social status. It's equally clear that status

differences are closely related to wealth differences. This is surely some reason to take inequality seriously as a dimension of welfare.

13. People discount the value of rewards with time. This is rational, for the simple reason that a delay in receiving a reward raises its uncertainty: perhaps circumstances will change between now and the time of expected receipt, in a way that either blocks the reward or reduces its comparative worth. However, people show high variability, both between one another and among their own choices, in the extent to which they discount *consistently*. Suppose I offer each of you the following pair of choices:

- a. \$15 tomorrow or \$20 in one week
- b. \$15 in one year and one day or \$20 in one year and one week

Many people will choose the \$15 in choice (a) and the \$20 in choice (b). This implies that in one year's time, given the identical choice as in (b), they'd reverse their preference and choose \$15. This in turn implies a continuing pattern of underinvestment in the present and regret in the future. Many theorists think that this pattern partly explains a wide range of common behaviors, including procrastination, addiction and imprudent reputation-damage, in which people seize present indulgences they later wish they hadn't, and then repeatedly fail to exhibit any learning from their regret, at least in the sense that they continuously repeat the pattern. Clearly, preference reversals caused merely by the movement of the temporal reference point would predict less than ideal investment patterns.

14. As we will see later in the course, this pattern of inconsistent intertemporal preference is among the phenomena on which neuroeconomics has already provided

some enlightenment. It has not, however, supplied us with a single straightforward explanation by reference to brain circuits. Neural data, carefully tested against behavioral data, have instead demonstrated that the pattern is much more complicated, and more varied among people, than the simple thought experiment above suggests. That is what we should expect in general from adding neural evidence to our stock of other economic data: not simple discoveries that furnish simple explanations, but a richer knowledge of the full extent of complexity in economic phenomena.