1. Proper etiquette requires that restaurant diners leave a tip at the end of their meal. The size of the tip generally corresponds to how happy the diner was with the service. Please watch the following video clip and answer the questions below: https://www. youtube.com/watch?v=6ReJJkHPTL4.

(a) In the clip, what would you say is the reference level of tips for the waitress?

Answer:
1st case: The reference level of tips for the waitress is moderate or moderately high in the first case and due to which she agrees to take option which involved risk but the potential value (expected value) of gain is much higher.
2nd Case: The reference level of tip for the waitress is very low in the Second case and due to which she denies to take option which involved risk as the potential value of gain is not satisfactory and the highest tip which is fixed is .

(b) Using what you know about Prospect Theory, argue why the proposed system could work better than the standard method.

Answer: Using the Prospect theory which states that people make decisions based on the potential value of losses and gains rather than the final outcome, and that people evaluate these losses and gains using certain rules and the reference. we can say that the proposed system could work better than the standard method if the reference level of tips are set moderate or moderately high because they will have a high potential gain if they performs good and incentivizing or evaluating every move in this case will keep them motivated to perform best in service on the other half if customer is willing or have capacity to pay decent tip they expect a good or satisfactory service and this model will give them access to power of quantifying the performance of service they are being offered.

(c) Using what you know about Prospect Theory, argue when the proposed system may backfire.

Answer: The proposed system may backfire in two scenarios:

- When the reference tip is set too high which will cause very low marginal loss on each mistake of the waiter or reference tip is too low which won't create much motivation rather it will create fear of losing between the waiters
- Other reason could be followed by degrading performance where waiter will lose hope because of diminishing expected gain and customer will continue to experience degrading service.

(d) The success of this method depends critically on the reference level of the waitress. Explain why the desired effects will not be so strong if the waitress' reference level is too low or too high.

Answer:
High reference Level: When the reference tip is set too high which will cause very low marginal loss on each mistake of the waiter and hence lowering the motivation of outperforming or excelling in service?
Low Reference Level: If reference tip level is too low which won't create much motivation due to low value of expected gain rather it will create fear of losing between the waiters and once they even do a slight mistake the performance will keep on degrading due to diminishing expected gain with each mistake they make

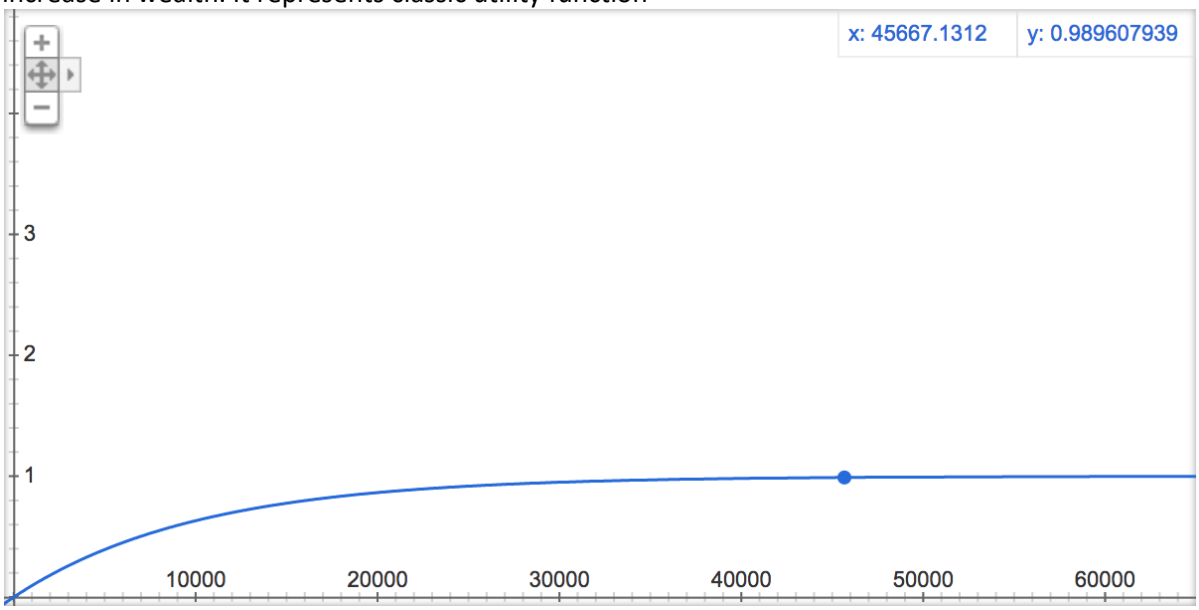
(e) Tipping is ubiquitous, even in restaurants where people will never re-visit. Why do you think that people tip in such situations?

Answer: The thought process behind tipping have two primary reasons, one is to get better, satisfactory and more attention in service when they visit the restaurant next time. But people even tip in restaurants they will never re-visit to support the established unsaid rule or habit of rewarding the waiter for his good service or as token of appreciation for his/her service so that they get motivated for continuing such service and it also ensures the personal feedback of guest to the waiter.

2**. Suppose Erich is an expected utility maximizer whose utility over lifetime wealth w, is: u(w) = 1 – e^(–.0001w).**

(a) Graph Erich's utility function. Does his utility increase with wealth? Does his utility exhibit diminishing sensitivity? Would you say that Erich's utility function resembles the utility functions commonly used in economics to model individuals' preference for wealth? [For this problem, and for others involving difficult calculations, I suggest using the online calculator at: http://www.wolframalpha.com – it even does derivatives.]

Answer:
The Utility vs wealth graph is shown below and it shows that the utility sensitivity diminishes with increase in wealth. It represents classic utility function



(b) If Erich has $0 and takes no gambles, what will his utility be?

Answer: U=1 – exp(-0.0001*0) , hence the utility will be zero

(c) Erich is offered a gamble: 50% chance, win $150; 50% chance, lose $100. Calculatehis expected utility from accepting the gamble. Does Erich accept this gamble?

Answer: Erich Accepts

Expected Utility

U3=P1*U1 + P2*U2 | P1=P2=0.5
U1=1 – exp(-0.0001*150)
U2=1 – exp(-0.0001*-100)
U3 = 0.005
Utility of Expected wealth
Expected wealth = 0.5*150 – 0.5*100 = 25$
U(25) = 0.0024
As expected utility is higher than utility of expected wealth that's why Erich will be willing to accept this gamble

(d) Erich is offered a gamble: 50% chance, win $110; 50% chance, lose $100. Calculate his expected utility from accepting the gamble. Does Erich accept this gamble?

Answer: Erich Accepts

Expected Utility
U3=P1*U1 + P2*U2 | P1=P2=0.5
U1=1 – exp(-0.0001*110)
U2=1 – exp(-0.0001*-100)
U3 = 0.0004
Utility of Expected wealth
Expected wealth = 0.5*110 – 0.5*100 = 1$
U(1) = 0.0001
As expected utility is higher than utility of expected wealth that's why Erich will be willing to accept this gamble

(e) Erich is offered a gamble: 50% chance, win $101; 50% chance, lose $100. Calculate his expected utility from accepting the gamble. Does Erich accept this gamble?

Answer: Erich declines

Expected Utility
U3=P1*U1 + P2*U2 | P1=P2=0.5
U1=1 – exp(-0.0001*101)
U2=1 – exp(-0.0001*-100)
U3 = -0.0000005
Utility of Expected wealth
Expected wealth = 0.5*110 – 0.5*100 = 1$
U(0.5) = 0.00005
As expected utility is lower than utility of expected wealth that's why Erich will be reject to gamble

(f) Risk aversion is a measure of the curvature of the utility function, and is defined as r = −u00 (w)u0(w). The larger is r, the more risk-averse is the individual. Calculate Erich's coefficient of risk aversion. [Recall that the derivative of y = e^ax is y 0 = a · e^ax. If you want to use a calculator, you can just do the derivatives in Wolfram Alpha: simply type derivative of 1 − e−.0001w or second derivative of 1 – e –.0001w]

Answer: 0.0001

(g) Estimates of risk aversion as measured for the average person in laboratory studies

range from r =[0.2, 0.8]? Would you consider Erich more or less risk-averse than the average person?

Answer: Clearly much lower than the coefficient of people in lab

(h) Erich is offered a gamble: 50% chance, win $100 billion ; 50% chance, lose $7,000. Calculate his expected utility from accepting the gamble. Does Erich accept this gamble?

Answer: Erich Declines
Expected Utility
U3=P1*U1 + P2*U2 | P1=P2=0.5
U1=1 – exp(-0.0001*100*10^9)
U2=1 – exp(-0.0001*-7000)
U3 = -0.000001
Utility of Expected wealth
Expected wealth = 0.5*100*10^9 – 0.5*100 = 1$
U(0.5) = 0.00005
As expected utility is lower than utility of expected wealth that's why Erich will be reject to gamble

(i) Use your findings from the above example to argue that risk aversion cannot be a reasonable explanation as to the reason why people reject small-stakes gambles?

Answer:
Risk-aversion cannot explain people's attitudes towards small- or medium-scale bets. If it did, it would imply that people have a strong diminishing marginal utility for money. When this decreasing marginal utility is extrapolated, it implies that a person cares a great deal about losing modest sums of money, and does not care much about losing gobs of money. This is clearly not the right model of people's behavior

3. For a long time now, Zachary has wanted to buy a pair of Converse All Star sneakers. Suppose Zachary's reference-dependent utility over shoes cS and money cM is given by: U = v(80cS − 80rS) + v(cM − rM) where v(x) = (x if x ≥ 0, 2x if x < 0.)

(a) If Zachary's reference point for shoes is rS = 0 and his reference point for money is rM = 0, calculate Zachary's buying price for shoes if he has no shoes and no money.

Answer: Utility if Zachary does nothing

Reference points (cS,cM, rS, rM) = (0,0,0,0)
v(80cS − 80rS) + v(cM − rM) = 0

Utility if Zachary buys one shoe for P
Such that he is indifferent between getting a mug for P and not getting or paying anything.
(cS,cM, rS, rM) = (1,0-P,0,0)
v(80cS − 80rS) + v(cM − rM) = 0
80 -2P = 0
P = 40

(b) Zachary found a $100 bill on the floor, which he does not incorporate into her reference point. Calculate how much he is willing to pay for shoes now.

Answer:
Utility if Zachary does nothing
Reference points (cS,cM, rS, rM) = (0,100,0,0)
v(80cS − 80rS) + v(cM − rM) = 100

Utility if Zachary buys one shoe for P
such that he is indifferent between getting a mug for P and not getting or paying anything.
(cS,cM, rS, rM) = (1,100-P,0,0)
v(80cS − 80rS) + v(cM − rM) = 0
80 + 100 -P = 100
P = 80

(c) Zachary flips open the paper, and finds an ad stating that a pair of Converse. All Star sneakers are on sale at the local shoe store for $60. He gets excited, and thinks that he will finally have new shoes. His reference point shifts to rS = 1 and rM = 40. Once he gets there, however, the shoes are no longer on sale. Calculate how much Zachary is willing to spend on shoes now.

Answer:
Utility if Zachary does nothing
Reference points (cS,cM, rS, rM) = (0,100,1,40)
v(80cS − 80rS) + v(cM − rM) = -100

Utility if Zachary buys one shoe for P
such that he is indifferent between getting a mug for P and not getting or paying anything.
(cS,cM, rS, rM) = (1,100-P,1,40)
v(80cS − 80rS) + v(cM − rM) = -100
P = 110

(d) In one or two sentences, explain the intuition behind why his buying price changed.

Answer:
The Buying price changed in the two scenario because of change in reference point which means that once the consumer makes up its mind for anything than he starts expecting the utility created by the product and hence becomes ready or willing to buy product for higher price to match the utility they are expecting. Now, if she does not buy them, she will feel a big loss. Her willingness to pay increased as compared to when the shoes were not in her reference.

(e) Zachary decides against buying the shoes right away, and decides to look for a better deal. Somebody on Craigslist posted a new pair of shoes for $10. His reference point shifts to rS = 1, and rM = 90. However, once he shows up, the shoes have been sold. He can still buy the last remaining pair for $90. What is the most Zachary is willing to spend on shoes now?

Answer: Utility if Zachary does nothing
Reference points (cS,cM, rS, rM) = (0,100,1,90)
v(80cS − 80rS) + v(cM − rM) = -150

Utility if Zachary buys one shoe for P
such that he is indifferent between getting a shoe for P and not getting or paying anything.
(cS,cM, rS, rM) = (1,100-P,1,90)
v(80cS − 80rS) + v(cM − rM) = -150

P = 85
He is willing to pay maximum of 85$

4. Gabriel is a hyperbolic discounter whose utility over dance classes and time is given by:
$U = u_t + \beta[\delta u_{t+1} + \delta^2 u_{t+2} + \delta^3 u_{t+3} + ...]$,
Suppose that Gabriel is interested in learning a new dance. His local YWCA has the following schedule for new dance classes.

Week 1	"Dougie"	4 utils
Week 2	"Soulja Boy's Crank"	7 utils
Week 3	"Macarena"	12 utils
Week 4	"Gangnam Style	20 utils

Suppose that Gabriel can only attend 1 class. He gets 0 utils for any missed classes.

(a) What dance does Gabriel's "period-0 self" want to attend?

Answer:
Assuming $\delta = 1$, then Gabriel will want to larn Gangnam style as it gives maximum utility

(b) Assuming that Gabriel is time consistent, $\delta = \beta = 1$, what dance will Gabriel attend? Does the dance he attends differ from what his period-0 self-wanted to attend?

Answer:

With $\delta = \beta = 1$, Gabriel will learn Gangnam style. This is exactly what his period-0 choice

(c) Assuming that Gabriel is naive with $\delta = 1$ and $\beta = 1/2$, what dance will Gabriel attend? Does the dance he attends differ from what his period-0 self wanted to attend?

Answer:
Gabriel's being naïve makes her decision one day at a time and does whatever she feels best on that day

Week	Week 1 self	Week 2 self	Week 3 self
Go to Week 1	4 + 0.5*0 = 4		
Go to Week 2	0 + 0.5*7 = 3.5	7 + 0.5*0 = 7	
Go to Week 3	0 + 0.5*12 = 6	0 + 0.5*12 = 6	12 + 0.5*0 = 12
Go to Week 4	0 + 0.5*20 = 10	0 + 0.5*20 = 10	0 + 0.5*20 = 10

In week 1, naive plans to goto week 4.
In week 2, naive plans to goto week 4.
In week 3, naive decides to learn Marcena

(d) Assuming that Gabriel is sophisticated with $\delta = 1$ and $\beta = 1/2$, what dance will Gabriel attend? Does the dance he attends differ from what his period-0 self-wanted to attend?

Answer:

Gabriel's being sophisticate makes her take account of future period and how she will behave

Week	Week 1 self	Week 2 self	Week 3 self
Go to Week 1	4 + 0.5*0 = 4		
Go to Week 2	0 + 0.5*7 = 3.5	7 + 0.5*0 = 7	
Go to Week 3	Not an option	0 + 0.5*12 = 6	12 + 0.5*0 = 12
Go to Week 4	Not an option	Not an option	0 + 0.5*20 = 10

In week 3, sophisticate will learn the Macarena.
In week 2, sophisticate decides between going to week 2, or going to week 3. He goes to week 2.
In week 1, sophisticate decides between going to week 1, or going to week 2. He goes to week 1.