

# Grad School

Your Worst Financial Decision Yet!

Goal: To Be Happy

I don't know. But I can at least tell you  
how to be not unhappy!

Money = Happiness?

# No - But !Money = !Happiness

- Known as a Hygiene Factor in 2 Factor Theory <Intentionally Left Blank>
- Absence leads to unhappiness
- Having enough gets you to 0
- Once you have enough, different factors required to be happy - Motivators
- Others include job security, working conditions

How much would you need to retire?

# How Much Is Enough?

The magic income: \$70,000 a year. As people earn more money, their day-to-day happiness rises. Until you hit \$70,000. After that, it is just more stuff, with no gain in happiness.

- Results of a Gallup Survey of 450,000 Americans

How do I get to  
\$70k and then  
focus on the  
happiness part?

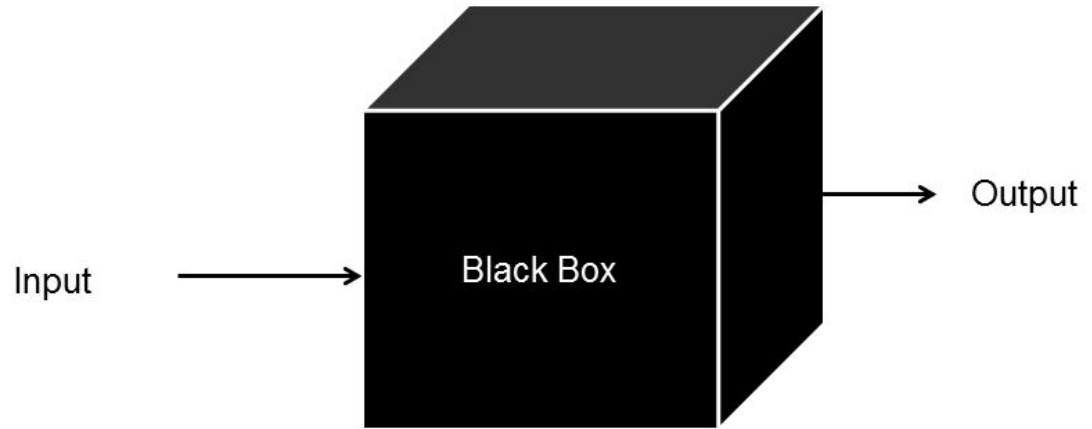




# The Economy

# A Black Box Model

- If you had a machine that could give you anything you wanted there would be no need for money.
- The economy is like an imperfect black box. You have to put stuff in and then it spits out what you want.



*Internal behavior of the code is unknown*

# Inputs Money Outputs

Inputs Is Combination Of:

- Time - Warehouse Labour
- Talent - Sports star, Actor
- Ideas - Disney Character License
- Land - Rent On A House
- Capital - Espresso Machine

Outputs:

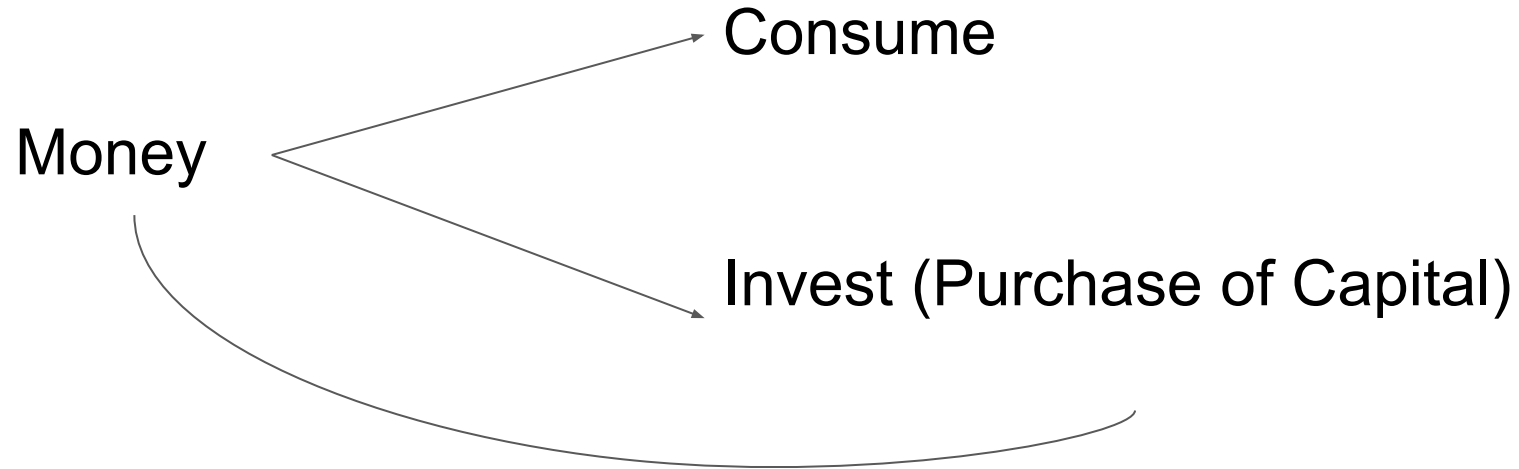
- Oreos
- Starbucks
- Car
- TV
- Movie Tickets

$$\text{Value (\$)} = f(\text{Demand, Supply})$$

- What is the most expensive thing you have access to right now?
- What is the most important thing you have access to right now?
  
- Take away: You want to be trading rare + valuable artifacts with the economy

Investing

# You Have Some Money



# Investing

- Purchase of a good that is intended to generate value
- Many Different Types
  - Stocks (Partial Ownership of Companies)
  - Bonds (Loan to a 3rd party)
  - REITS (Group Ownership of Real Estate)
  - Hotdog Stands
- Passive vs. Active
- Different Rates of Return and Risk Profiles

On average, 4% is safe.  
7% return is possible.  
(Controlled for Inflation)



How much is enough to retire?

$$\text{\$70,000} / .04 = \text{\$1.75M}$$

# Sounds like a lot...

- Compound Interest to the rescue!
- Thought exercise
  - Your money doubles
  - As it's doubling the partial gain also earns interest
  - And that interest earns interest
  - Ad infinitum...
  - Are you infinitely rich?

# Convergence Analysis and Synthesis

- Works out to be only  $e = ($
- Damn you math
- Not bad though
- Let's combine our ideas
- Hygiene Factors + Generation of Value + Investing + Compound Interest = ...



# Gary The Grad Student

- Graduated with PhD at 28
- Pay of loans, gets married etc.
- Starts saving at 30
- Saves 20k / year
- Gets average return of 7% a year
- FI at 58

Year	Deposits	Returns	Total Capital
30	20000	0	20000
31	20000	1400	41400
32	20000	2898	64298
33	20000	4500.86	88798.86
34	20000	6215.9202	115014.78
35	20000	8051.03461	143065.815
36	20000	10014.607	173080.422
37	20000	12115.6295	205196.051
38	20000	14363.7236	239559.775
39	20000	16769.1842	276328.959
40	20000	19343.0271	315671.986
41	20000	22097.039	357769.025
42	20000	25043.8318	402812.857
43	20000	28196.9	451009.757
44	20000	31570.683	502580.44
45	20000	35180.6308	557761.071
46	20000	39043.275	616804.346
47	20000	43176.3042	679980.65
48	20000	47598.6455	747579.296
49	20000	52330.5507	819909.846
50	20000	57393.6892	897303.536
51	20000	62811.2475	980114.783
52	20000	68608.0348	1068722.82
53	20000	74810.5973	1163533.42
54	20000	81447.3391	1264980.75
55	20000	88548.6528	1373529.41
56	20000	96147.0585	1489676.47
57	20000	104277.353	1613953.82
58	20000	112976.767	1746930.59
59	20000	122285.141	1889215.73
60	20000	132245.101	2041460.83

# Eugene The Engineer

- Graduated At 22
- Lives Like A Student and Saves \$35k
- Gets married at 30 and cuts back to saving 20k => Matches Gary
- Gets the average return of 7%
- FI at 45

Year	Deposits	Returns	Total Capital
22	40000	0	40000
23	40000	2800	82800
24	40000	5796	128596
25	40000	9001.72	177597.72
26	40000	12431.8404	230029.56
27	40000	16102.0692	286131.63
28	40000	20029.2141	346160.844
29	40000	24231.2591	410392.103
30	20000	28727.4472	459119.55
31	20000	32138.3685	511257.918
32	20000	35788.0543	567045.973
33	20000	39693.2181	626739.191
34	20000	43871.7434	690610.934
35	20000	48342.7654	758953.7
36	20000	53126.759	832080.459
37	20000	58245.6321	910326.091
38	20000	63722.8263	994048.917
39	20000	69583.4242	1083632.34
40	20000	75854.2639	1179486.61
41	20000	82564.0624	1282050.67
42	20000	89743.5467	1391794.21
43	20000	97425.595	1509219.81
44	20000	105645.387	1634865.2
45	20000	114440.564	1769305.76
46	20000	123851.403	1913157.16

# Other half of 2-factor theory

- Motivators
  - Gets you from 0 to Happy
  - Independent of Hygiene Factors
  - Autonomy, Recognition, Meaningful work, Growth
  - Control of Team, Technique and Tools
  - Close Relationships
  - All available in grad school!
  - So the extra ~15 years is worth it...I think.

Thanks!



# Q & A's - Anything Personal Finance

- RRSP
- TFSA
- Investing
- Entry Level Salaries for CS
- Anything Finance Related!