

Project for Business 312 – Summer 2011

(Projects are done in a pairs - 2 students to hand a single project)

1. You are currently paying \$4,000 a month for renting a house in Vancouver (valued at \$1,000,000). Bob, your friend, advises you that Royal Bank now provides mortgages for people who have no money for down payments. Further, the maturity of the mortgage can be as long as the client wishes. According to Bob's calculation it would be worthwhile for you to take on a mortgage (with no down payment) and pay the same \$4,000 that you are currently paying for renting the house. Bob says "At least that way, eventually you will own the house, while with rent the money is wasted and you never own the house". Is Bob's advice sound? What is your gut reaction? Write it down.

Now for a more rigorous approach do the question. Assume that the mortgage rate is 4.5%, while the risk-free return (your opportunity cost for known cash flows) is 2%.

- (a) What is the maturity of the mortgage, i.e., how many years it will take you to pay the mortgage in its entirety.
 - (b) What is the PV of the house payments, i.e., what is the extra cost you pay by taking on the mortgage compared to someone who has \$1,000,000
 - (c) Suppose the value of the house drops to 700,000 after a year. Assume that mortgage rate and risk free rate are the same. Repeat the calculation of (a) and (b). What do you think about Bob's advice now?
2. Some argue that Canadian companies are being taken over by foreign firms because the CEOs of these companies have huge incentive that this will happen. For example, it is common that the CEO receives a big bonus if the firm he/she manages is taken over by another firm. What do you think, are these types of incentives bad for the Canadian economy?

3. You just turned 20 years old and you do not own a car. However, this is about to change. And you are trying to figure out what is the best “car replacement policy to follow” for the rest of your life (assume that you plan to continue driving for the next 61 year – till you are 81). You have decided that you will always buy a Honda Civic but you are unsure about the age of the car that you should buy, and you are also unsure about the number of years till you replace it. The following table summarizes information that you have collected.

Time (t)	0	1	2	3	4	5	6
Car value	26000	21000	18000	16000	14000	12500	11000
Pleasure value	1500	700	300	200	0	-500	NA
Maintenance	500	1000	1000	1500	1500	1500	NA

The table provides information about Honda Civics of ages 0-6, as you have decided that you will never own a car that is older than 6 years.

Car value is a price of a t year old car. Thus, a new car for example costs \$26,000, while a four year old car costs \$14,000. Maintenance is the beginning of year maintenance cost. Thus, it costs a PV of \$500 to maintain a new car, while it costs \$1000 to maintain a 1 year old car. As owning a newer car involves more pleasure, you estimate the pleasure value worth of driving a t year old car. Thus, driving a new car is worth to you \$1500, while driving a 4 year old car is worth nothing. Driving a 5 year old car involves a negative pleasure of \$-500.

Given the above information, and assuming that the opportunity cost of valuing car replacement policy is 6%, what is the optimal replacement policy?

Following are a few hints on how you should approach this problem:

- (1) There are many combinations of buy/replacement options available. You can buy a new car and sell after a year; you can buy a new car and sell after 2 years, etc. You can also buy a 2 year old car and sell it after a year, 2 years, etc. All in all, you should find that there are 21 policies to consider.
- (2) Each policy will involve an initial cost, 60 negative cash flow for time 1-60, and then finally at year 61 you will receive a cash flow from the sale of the car (as you won't need to replace it anymore).
- (3) For time 1-60 you will have a stream of cash flows that can be turned to simple annuities. For example, if you replace a car every year (i.e., for example you buy a new car and replace after a year when the car is 1 year old), you will have to pay the same amount every year. Alternatively, if you replace every two year, there will be two distinct cash flows (for year 1 and 2) that are then repeated. If you replace every three years, the cash flows will repeat every three years. You can calculate the PV of the stream of one series of cash flows, and then use it as the CF of an annuity.

4. In a 1970 New York Times article, the Nobel literate Milton Freidman argued that the social responsibility of a business is to increase its profits. Milton Freidman claimed there is one and only one social responsibility of business—to use it resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud (state otherwise, businesses should maximize profits (or value) as long as they do so legally). Provide your perspective about Milton’s view. You are advised to search the web and read articles about social responsibility in order to provide an informed opinion. However, you are also encouraged to provide your own rationale or lack of rationale for the Corporate Social Responsibility movement.