Economics 2129B - Al Slivinski
February, 2013

Answers for Midterm 1

Section I

1. Transaction cost
2. Market capitalization
3. Positive time preference *or* Time value of money
4. Economies of scale *or* Increasing returns to scale
5. The team problem

Section II: Note: There are many good answers to these questions. Below are given some of the best (mostly taken from actual student answers) as well as some guidance as to why certain answers are not good ones.

5. a) The question asks about transactions costs incurred *as a result of the contract*, so costs that would be incurred *even without the contract* (e.g., taxes paid on transactions between Xylo and Zorp) are not good answers. Good answers include: legal fees incurred by either side in drawing up the contract, the value of managerial time spent negotiating the contract, and any further time costs incurred down the road to deal with any situations that arise and the contract did not cover.

b) The answer here most tightly related to our class discussions is that one would expect Zorp would want Xylo to make specific investments so as to better provide the IT and updating services Zorp wants. This would involve Xylo personnel acquiring and keeping track of information on the specific characteristics of the Zorp computer system, as well as perhaps keeping certain types of parts and/or software in stock for ready use. Because these are costly for Xylo, they would be likely to underinvest in them without a long-term contract that insured those costs are worth undertaking. Note that avoiding having to search for a new firm every time something came up is not a good answer, as the question asked specifically why they signed a contract rather than Zorp just calling Xylo whenever service is needed, which wouldn't involve finding a new firm. Similarly, one could assert here that the contract avoids the transactions costs of re-negotiating with Xylo every time service is needed, but one needs to go further and claim that those cost over time are greater than the one-time transactions costs incurred from negotiating a contract - which may well be true if, for example, Xylo's services are needed by Zorp very regularly (like, every day).

In the same vein, a good answer is to say that a contract reduces the possibility of 'hold-up', but one needs to give a specific example of a hold-up problem that might arise in this situation. One example often cited was that Zorp gets a computer software problem that shuts down its energy drink production. Without a contract, Xylo might be tempted-if it knew this was the case-to set a very high fee for fixing it quickly. (The contract won't help if it doesn't specify a fee that cannot be argued to 'not apply in this case' by Xylo, but it can reduce the likelihood of this.)

c) It is *not* a good answer to say that Zorp will lose economies of scale in what it does (produce energy drinks) if it chooses VI over a contract. It is not a very good answer to say that Zorp will lose the advantages of economies of scale in what Xylo does, either, as it is very hard to see where any economies of scale arise in software updating and IT. Economies of scale arise because firms use quite different technologies when they are producing large quantities (e.g., producing bread using an assembly line, vats of dough and large industrial ovens rather than a bread-making machine). This is evident from the fact that almost any company of any size has someone dealing with its computer system(s), software updating and IT, and Zorp is not small, with 400 employees. Indeed, the hardest question on the midterm to answer is this one, since even I had a hard time coming up with any good argument for Zorp to *not* just hire some IT people, buy them some basic equipment, and let them acquire all the needed specialized knowledge about the Zorp system. It is difficult to imagine Zorp's systems wouldn't keep at least one IT person busy enough. So, the best answers I got were:

- Zorp would have to manage the IT group if it chose V.I. If that group were small, then adding the management structure needed might be more expensive than just paying contract terms to Xylo.

- Hiring people incurs costs other than salary. Modern governments impose all sorts of reporting and other requirements on a firm that hires an employee that it doesn't impose if the firm just uses them on a contract basis. These costs (which are HR transactions costs) might make the contract cheaper than V.I.

- It may be that Zorp is a pretty old-technology kind of company. It may not have any computer technology being used in its actual production process, which leaves just the managerial and accounting functions to deal with, and - maybe, but doubtfully - updating and servicing those may not be enough to keep even a single IT person busy. Unlikely, but maybe.

6. The key to a good answer here is to remember what was defined in class as

'the firm's value as an asset', which was:

$$V = \sum_{t=0}^{\infty} \frac{\pi_t}{(1+r)^t}$$

where π_t was the profit generated by the firm in period t (periods being usually taken to be quarters in this context), and r is the relevant (quarterly) rate of interest for the firm.

The questions says the CEO has claimed she will work to maximize this, so your task is to say, if one believes this (if one doesn't believe the CEO, then there is nothing one can say), whether or not a 'wise' investor should own any shares in this company.

Now, a not-good place to start is to assert that the quote means the CEO will engage in 'short-termism', since in fact this is decidedly not what is being said: maximizing V is clearly taking the long view.

A good place to start is to say it depends on what one means by a 'wise' investor; in particular, what is the time horizon of the investor himself? Schumpeter's article pointed out data that suggests a lot of investors have a very short horizon, holding stocks for only 4 months or less. For investors with that horizon, an argument can be made that the statement is true, since a CEO with this objective will not have a problem with spending resources now (thereby reducing π_0) if it will increase future π_t sufficiently.

On the other hand, whatever an investor's time horizon might be, the inescapable fact is that to *own* shares in this firm an investor must *buy* them if he doesn't own any, and must decide *not to sell* any if he does. We discussed at length what determines the price at which one can buy or sell any stock at one point in time, and the key fact is that the value of V is not objectively measurable, and the price of the stock at any moment is determined by a balancing of all potential investors *beliefs* about that value. Thus, in the end what matters for an investor with a longer time horizon is how their own belief regarding the value of V compares to others beliefs. An investor who thinks the current stock price p_m understates the firm's V will want to buy (or not sell) shares, and one who believes p_m overstates V will want to sell (or not buy) shares.

7. In answer to the first question, Joe is being compensated with a yearly *salary* and a *performance bonus*, based on whether or not he scores more than 40 goals in the season. This second aspect of his compensation is *not* revenue-sharing (it doesn't depend on how much revenue the Clucks earn) and therefore is *not* a commission, it is *not* profit-sharing, and it is *not* tipping, since the Clucks

customers have no say in determining the amount Joe gets. Finally, because Joe is not compensated for each goal he scores, it is not a piece rate contract. The performance bonus does require some monitoring, but since the league keeps track of goals scored by players, the Clucks incur almost no monitoring costs.

As to the second question, whether this gives incentives to Joe that are good from the team's perspective, one has to first deal with - what are the Clucks' objectives. Well, NHL teams are not charitable organizations; their objective is to make money. If one assumes (reasonably, the example of the Maple Leafs not withstanding) that winning games implies the team will make more profit, then the contract may have some bad aspects from the Clucks perspective. As many pointed out, the bonus gives Joe an extra incentive to score goals, but if this implies that his willingness to play defense or assist his team-mates in scoring goals is diminished, this bonus could reduce the team's ability to win. This is just another version of a problem we raised in class: giving secretaries an incentive to complete letters quickly (say by paying them a piece rate) may be a bad idea because they are expected to perform other tasks that are harder to monitor and so they may not put in much effort into those. However, it is also reasonable to say that people may want to watch the Clucks just because they score a lot of goals, and in that case the bonus is good from a team perspective. On the other hand, if Joe has no hope of scoring 40 goals in a season, the incentives to do so are not good for the team or Joe even if this is true, and it is also true that once he has 41 goals scored, the bonus provides him with no incentive to score more.

Note finally that while it is no doubt true that Joe has an incentive to score goals from a 'career concerns' perspective, this has nothing to do with the above contract.

8. The VP should be fired. The highest possible NPV of this idea, even if the VP has his numbers right, is:

$$-\$75k + \sum_{t=1}^{3} \frac{\$25k}{(1+r)^t}$$

so that, for *any positive interest rate* r, the values $\frac{\$25k}{(1+r)^t}$ are all less than \$25k necessarily, so this idea has to have a negative NPV. In addition, the project only claims sales *revenue* of \$25k for three years, not *net revenue*; if in fact there are added costs incurred to generate those revenues, the NPV is even lower.