

I realized that Workshop 1 was a bit too ambitious. To subsidize your learning, I decided to provide you with a guideline on a plausible approach to the problem we discussed in the class. No approach is the best approach, but there are approaches that are better than others. The approach described below is an approach that can be improved upon. However, it does have an advantage that it links directly to what we discussed in the lectures. You will notice that the approach is non-technical, but the footnotes link the ideas presented to few equations we discussed in the lectures. In your own research paper, you will not have to have such footnotes. This is more to show you how what you say can be linked to the formal economic models and how this can improve your argument.

I plan to have less ambitious and more focused workshops in the future. This implies in part that I expect to post your reports and do not plan to need to provide guidelines beside those in the class.

Here it is. Enjoy!

How to provide incentives to physicians to reduce the waiting time for hip surgeries?

The Ministry's goal is to reduce the waiting time for hip surgeries. This could be accomplished if, for example, each physician performs more hip surgeries per week¹. The problem is how to provide right incentives to physicians to do so².

One possible solution is to ask physicians to do their best to ensure that they increase the number of surgeries they perform. In this context, effort can be interpreted as some combination of the number of hours that the physician works per week, effort to secure that she has other health professionals to assist her in the surgery (e.g. anesthetists), effort to improve scheduling of patients, etc³. Because performing additional surgeries requires additional effort, the compensation has to increase to make the proposal attractive to the physician⁴. Simply asking physicians to do more at the same compensation may induce physicians to seek employment elsewhere⁵.

The problem with this solution is that the number of surgeries performed depends not only on physician effort, but also on a number of other factors that the physician cannot

¹ This is one possible definition of q in this example.

² This clearly defines the problem: the number of surgeries q is less than what is perceived as the optimal number of surgeries, q^* . Otherwise, there wouldn't be need to provide incentives.

³ This defines effort e in this example. Note that it helps to think of e as a combination of factors.

⁴ This is an informal statement of the fact that the compensation S should be increasing in the effort level because the cost of effort $c(e)$ is increasing: $S=R+c(e)$, with $c'(e)>0$ and therefore, $S'(e)>0$.

⁵ This is an informal statement of the participation constraint: $S \geq R$, where R is defined as employment elsewhere.

control⁶. These factors may include the number of patients who need hip surgery, availability of operating room time, availability of other health professionals, etc⁷. As a result, it may be difficult to establish whether a physician who did not increase his number of hip surgeries did so because of his low effort, or because of factors that she cannot control⁸.

It is unlikely that the physician effort can be monitored at a reasonable cost. It is also unlikely that proving that the physician did not meet his contractual obligations will be easy. In any case, the Ministry knows less than the physician about whether the physician did his best and it may be costly to prove this one way or the other⁹. In addition, the Ministry wants more surgeries, but more surgeries can be performed only by exerting additional effort, which is costly to the physician. This does not imply that the physician does not want to reduce the wait time, only that doing so has costs to her. As a result, she may be willing to do her best even without any compensation, but up to a point. After this point, the physician may need additional incentives to do so¹⁰.

As an alternative to this proposal, the Ministry can offer additional compensation for each surgery performed¹¹. The value of this compensation per surgery will presumably reflect what the Ministry evaluates is the social value of each additional surgery¹². This payment structure has the advantage that it is not based on physician best efforts, which is hard to observe or verify. Instead, it is based on the number of surgeries performed¹³. The additional advantage of this structure is that it leaves to the physician to balance the costs and benefits of performing additional surgeries. The cost of performing these surgeries is personal, while the benefit reflects the social value. Therefore, the structure will ensure that the physician does her best, where the best is defined as that level of effort that takes both the benefits and costs into the account¹⁴.

⁶ An informal description of the production function $q=e+u$, where u represents all factor over which the physician has no control.

⁷ Examples of what u may represent.

⁸ This is the first mention of the potential incentive problem here. It still needs to be proved that the incentive problem may exist, as is done in the next paragraph.

⁹ The first requirement that the incentive problem may exist: e cannot be observed or verified.

¹⁰ The second requirement for the incentive problem: conflict of interest. The Ministry wants more surgeries at the same cost, while the physician is willing to do more only if her compensation also rises.

¹¹ This is an example of a piece rate contract. Note that here the payment is $w=pq$, with $a=0$ and $b=1$.

¹² This is one plausible interpretation of p .

¹³ This clarifies one advantage of using the piece rate structure: the contract is based on something that can be observed and verified, q .

¹⁴ That is, the level of effort chosen by the physician will satisfy $MB(e)=MC(e)$, where $MB=pE[q]$ and $MC=c'(e)$.