Youngberg

Econ 304—Bethany College

**Homework 04**

Answer all the following on a ***typed, stapled*** (if applicable)separate sheet of paper. Make sure that you justify your answers, use your own words, and show your work. All questions are equally weighted.

1. Consider a two player game of a penalty kick in soccer. The two players, the kicker and goalie, move at the same time. Each player may kick/jump to the goalie’s left or right. Economist Ignacio Palacios-Huerta examined over a thousand such kicks (1,417 to be exact) and found the likelihood of success based on the four possibilities. Those values (rounded) are given below. Note that though these values don’t add up to zero, it is still functionally a zero sum game. That’s because all the values add up to 100%; the only way for one player to be better off for another player to be worse off.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Goalie** | |
|  |  | *Left* | *Right* |
| **Kicker** | *Left* | 58%, 42% | 95%, 5% |
| *Right* | 93%, 7% | 70%, 30% |

Palacios-Huerta used this data to estimate the likelihood each player will play left or right employing the same technique we did in class. Then he compared his theoretical results to how often the players actually played each strategy. He was almost exactly on.[[1]](#footnote-1) Calculate the mixed strategy equilibrium for each player with p representing the likelihood the kicker will play Left and q representing the goalie will play Left. Then, look at the paper and record the actual observation (see footnote, page 402). Compare your theoretical result with the actual result. (Keep in mind that because the percents above are rounded you will not get the exact same answer as what Palacios-Huerta estimated but you can use his calculated result as a check to see if yours are right).

*First, the Kicker will attempt to make the Goalie indifferent:*

*42p+7(1 – p) = 5p+30(1 – p)*

*42p + 7 – 7p = 5p + 30 – 30p*

*60p = 23*

*p = 0.383, or 38.3%*

*In practice, this was 39.98%; pretty close!*

*Second, the Goalie will attempt to make the Kicker indifferent:*

*58q + 95(1 – q) = 93q + 70(1 – q)*

*58q + 95 – 95q = 93q + 70 – 70q*

*-37q + 95 = 23q + 70*

*-60q = -25*

*Q = 0.417, or 41.7%*

*In practice, this was 42.31%; even closer!*

1. Sketch your answer to number 1 as we did at the end of Lecture 14, putting *q* on the y-axis and *p* on the x-axis. Make sure to label everything clearly.

1

1

p

q

38.3

**Goalie**

41.7

**Kicker**

1. As discussed, law and economics approaches the law to encourage efficiency. Not only can we explain the result of court cases with this framework, but some of the rules regarding how the laws function. Below are two such rules. Select ***one*** of them and justify its existence on the grounds of economic efficiency.
   1. *Statute of limitations*—for many laws, there is a time limit for being charged with a crime. For example, embezzlement has a statute of limitations is two years after the embezzlement should be detected with reasonable effort. After two years, attempts to sue someone for embezzlement will immediately be dropped. If you address this rule, be sure to consider not just the role of incentives but also the value of certainty when operating in the marketplace.

*The statute of limitations makes sense because it creates a deadline which incentivizes the prosecution to make their case sooner rather than later. This not only increases the value of the court system (witness testimony will be more accurate, for example), but also reduces uncertainty when operating in the marketplace. With a statute of limitations, employers don’t have to worry about being sued for a product they haven’t made in decades and employees don’t have to worry about being sued for embezzlement from a job they haven’t held in years.*

*This does, however, create the incentive for criminals to hide their crimes until the statute of limitations is up, which in turn encourages criminal activity. But the law adjust for that, depending on the severity of the crime. The costs of prosecution increase the longer you wait so at some point, the cost of prosecuting embezzlement outweigh the benefit. But murder—one of the most damaging crimes—has no statute of limitations.*

* 1. *Ignorantia juris non excusat*—no justice or jury will find a person innocent because she broke a law she didn’t know about. This applies even though, with so many laws, it is impossible to be informed of every single one of them. This rule does ***not*** apply, however, if the accused had no chance to learn the law before committing the crime.[[2]](#footnote-2) Be sure to justify not only the rule but the exception as well.

*If ignorance is an excuse, then there is no incentive to learn the law. While the law recognizes no one can know* ***all*** *laws, it also understands that there can be specialization in the law just as there is specialization in other things as well. A bank doesn’t have to know environmental law just as a farm doesn’t have to know financial law. It is reasonable (i.e. cheap) for these institutions to know the law that governs their actions.*

*But sometimes it isn’t cheap for anyone to know a particular law. If the accused doesn’t have an opportunity to learn the law, then there is no action to incentivize them to. By excusing such behavior, you can avoid prosecution without disincentivizing legal knowledge; indeed, if you were to prosecute those who had no chance to learn a law, you would discourage people from living in your city/state/country.*

1. In *Harris v. Tyson* (1855), the court ruled against the ignorant seller but in *Wilkin v. 1st Source Bank* (1990), the court ruled in favor of the ignorant seller. What are the efficiency grounds for this seemingly contradictory ruling?

*Both cases involved a transaction that was not mutually beneficial. Because it wasn’t mutually beneficial, the court has a desire to correct it. But the court also wants to create an incentive to be informed.* Harris v. Tyson *described a transaction where the buyer knew more than the seller; though the seller later regretted the purchase, the court blamed him for not learning more than he could have. If the court undid this transaction, it would diminish the incentive for people to employ their valuable knowledge.*

*In* Wilkin v. 1st Source Bank*, there was no better-informed party: one party simply got a windfall and the other party lost it. The court could undo this non-mutually beneficial transaction without discouraging people from using their knowledge. Indeed, the court encouraged (buyers) to learn about the good as a result of this ruling.*

1. Is the problem of global warming more like a stag hunt or a prisoner’s dilemma? Of our remedies we discussed in Lecture 15, which, in your opinion, makes the most sense to address global warming? Justify both of your answers.

*With a strong negative externality, global warming is more like a prisoner’s dilemma than a stag hunt. If one country committed to reducing carbon emissions, other countries would have an incentive to not reduce it and free ride off of the first country.*

*One could argue, however, that if one major polluter cut emissions, another will because that additional benefit will be enough to cut it below some critical mark. This seems unlikely—even if two major polluters (U.S. and China) cut emissions drastically, global warming will probably still be a problem since so many other countries contribute to emissions. The temptation to free ride is high.*

*The last part of the question is up to you, though I would be surprised if you suggested we institute property rights over the atmosphere; that would be really hard! The big question is either transferable quotas or a tax.*

*My impression is that it’s hard to judge the negative externality of global warming since it affects multiple areas of the climate at once, all in unpredictable ways. So a tax would be tricky. In contrast, it seems reasonable we know the critical mass of emissions and we can track their source quite well (cows, cars, etc.) “Cap and trade” seems like a good idea. Now we just have to get everyone to agree on it…*

1. <http://www.palacios-huerta.com/docs/professionals.pdf> [↑](#footnote-ref-1)
2. This comes from Lambert v. California (1957); Wikipedia has an excellent summary of it: <http://en.wikipedia.org/wiki/Lambert_v._California> [↑](#footnote-ref-2)