EC 701 Advanced Microeconomics, HW 8: Ethics and Welfare Economics

The following homework assignment is to be submitted via email to Leonard (Haoyu) Wang at hw00052@mix.wvu.edu with a "cc" to me. The answers are due before class time on the day after we begin the next block of material. They should be typed up and emailed to Leonard in Word. (This will take a bit of time, but it is good practice.)

Table 8.1 The Shirking Dilemma of Team Production in Natural Cooperatives (hours of effort)

		Bob			
		8 hours	6 hours	4 hours	2 hours
Al	8 hours	(A, B)	(A, B)	(A, B)	(A, B)
	6 hours				
	4 hours				
	2 hours				

(1) (a) Populate the following 4x4 game matrix to illustrate the shirking dilemma associated with team production. (Do not use the same numbers as in class or in the text.) Clearly identify the Nash equilibrium.
(b) Explain briefly why the result is a dilemma as far as the team members are concerned.
(c) Copy the payoffs from table 8.1 into table 8.2 and then add a virtue increment or guilt decrement that solves the dilemma. Clearly identify the new Nash equilibrium.
(d) Discuss briefly how internalized ethical dispositions might affect the hiring decision of firms.

Table 8.2 The Shirking Dilemma of Team Production in Natural Cooperatives (hours of effort)

		Bob			
		8 hours	6 hours	4 hours	2 hours
Al	8 hours	(A, B)	(A, B)	(A, B)	(A, B)
	6 hours				
	4 hours				
	2 hours				

(2) (a) Populate game matrix 8.3 below with numerical payoffs that illustrate the dilemma of law enforcement in a setting where all law enforcers are pragmatists. The choice setting is one where the anti-fraud enforcer is predisposed to accept bribes from those engaging in fraud. Clearly identify the Nash equilibrium.

Table 8.3 The Enforcement Dilemma: Enforcing Laws Against Fraud and Bribery

		Bob (Enforces anti-corruption law)	
		Enforce law	Accept bribe
Al (Enforces anti-fraud law)	Enforces law	(A, B)	(A, B)
	Accepts bribe		

(b) Copy the payoffs from game from matrix 8.3 into matrix 8.4 below and add a virtue increment or guilt decrement sufficient to solve the above dilemma.

Table 8.4 The Enforcement Dilemma: Enforcing Laws Against Fraud and Bribery

		Bob (Enforces anti-corruption law)	
		Enforce law	Accept bribe
Al (Enforces anti-fraud law)	Enforces law	(A, B)	(A, B)
	Accepts bribe		

(c) Briefly describe why laws are unlikely to be well enforced by law enforcers that have only pragmatic interests. And, discuss briefly a few types of norms that may solve this problem.

(3) Let B(Q) be the social benefit function, C(Q) be an industry's cost function, and X(Q, R) be an external cost function. And let G be the cost of implementing regulation R. Assume that the social net benefit function is strictly concave. (a) Characterize the social net benefit maximizing output level for a given level of regulation (R). (b) Use the implicit function theorem to characterize how R affects Q**. (c) Substitute Q*=q(R) relationship into the net benefit function and then take the derivative of that function with respect to R to characterize the ideal level of regulation. (d) Explain why this twostage substitution method accounts for the effects of regulation on the social net benefit maximizing level of output.

(4) Discuss briefly the difference between a Pareto efficient outcome and an outcome that maximizes social net benefits or aggregate utility. Illustrate that difference with a game matrix for an externality problem.

(5) Assume that there are N individuals and that individual utility functions are of the form $U_i=u_i(Y_i,E)$ and that $Y_i=y_i(R)-g(R)/N$, and $E = e(R)$. Assume that both the social welfare function and the individual utility functions are strictly concave.

(a) Characterize the social welfare function – optimand.

(b) Characterize the optimal level of regulation.

(c) For interested students, and a bit of extra credit, now attempt to revise this choice setting to be one more like that of question 3. This will require adjusting the model to make utility function a function of Q as well as the variables used for parts a and b. One way to do this is assume functions along the lines of $E=E(\sum Q,R)$ and $U=u(q(P), Yi, E)$ with $Y_i= y_i(R)-g(R)/N – PQ$. If pragmatists ignore externalities, then each person chooses Qi* for a given price. The sum of these purchases determines the total purchase of the good which determines environmental quality. At this point one can replicate problem 3 using a social welfare function.