Name and Student ID: _____

Due 18 Nov 2014. You can turn in these pages or another printed version.

1. (5 points) The 2006 Stern Review on the Economics of Climate Change used a discount rate of 1.4%. Calculate the net present value of a \$10 investment that returns \$1 per year in years 2-15 (14 payments representing "lower harm from CC") with a discount of 1.4% versus 4.0%. I recommend that you use Excel to calculate, with this formula:

$$NPV = \sum_{t=0}^{t=15} \frac{FV}{(1+\delta)^t}$$

Note that the NPV of the initial \$10 investment should be \$10.

Given your answers and the "payoff" under each scenario, give two reasons why someone might choose one discount rate (and its result) or the other (i.e., argue both sides). Discuss why some countries may use the lower rate while others would use the higher rate, from a common pool resource perspective.

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2. (5 points) China's One Child Policy (`https://en.wikipedia.org/wiki/One-child_policy`) has been credited with "reducing births" by between 100 to 400 million babies. Critics of this policy note that other countries (e.g., Thailand) have seen similar decreases in births/woman without such a draconian policies (forced abortions, civil penalties, etc.) due to the increasing "opportunity cost of children" to women.

(a) (2 points) Describe two ways in which the opportunity cost of children to parents (and mothers in particular) rises as a country develops.

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(b) (3 points) Draw a demand curve that represents the aggregate demand for children from couples, based on the "value" of children and supply curve based on their "cost" to the individual. Now draw another supply curve representing the "social cost" of children in terms of fewer resources for others, environmental strain, etc. These two supply curves will result in two different quantities of children in equilibrium.

Now explain how – *and* indicate where – a parent's decision to have a child may be sub-optimal from a social perspective using these curves.

Finally, compare a "market" allocation of children to the Chinese "bureaucratic" allocation of children via the one-child policy, in terms of efficiency. (Hint: compare one couple's decision to have their first child with another couple's inability (due to prohibition) to have a second child.)