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Homework Problem Set No. 5

1. A village has a large number of poor peasants who have no access to credit from banks, and some wealthy families who can access loans from banks at an interest rate of 8% per annum. The latter can thus borrow from banks at this rate and then re-lend to poor peasants on the informal market. The informal credit market is competitive. Lenders are however subject to the risk of borrowers defaulting on their loans. Some borowers can post collateral. Apart from the risk of losing the collateral, informal lenders are aware that different borrowers incur different costs of default, which vary from 0 to \$500 in a uniform fashion (i.e., for any x between 0 and \$500, the likelihood of any given borrower having a default cost below x is $\frac{x}{500}$).

(a) Would a lender in the informal market manage to break even if they were to lend \$100 without collateral at an interest rate equal to the formal sector rate of 8%? What does this imply about the relation between formal and informal sector interest rates?

(b) How would the answer to a) change if the loan were secured with a collateral of \$50? With such a collateral, would an informal lender break even on the \$100 loan at a 20% interest rate?

(c) Show that with a collateral of \$50, informal lenders must impose a credit limit, above which they would be unwilling to lend at *any* interest rate. Does the answer change if the ratio of collateral to loan size is fixed at 50%?

2. Domestic manufacturers in a given country C are able to produce cement at a unit cost of \$5 a pound, upto a capacity limit of 10 million pounds per year. The world price of cement is \$1.50 a pound; unlimited quantities of cement can be sold or bought at this price in the world market. There are two types of buyers of cement in country C: industrial construction companies who are willing to buy 5 million pounds of cement at any price below \$10 a pound, and household construction companies who are willing to buy 25

million pounds a year at any price below $2 a pound. The market for cement in country C is perfectly competitive: all buyers and sellers are price-takers.

(a) Describe the outcome of the cement market when country C imposes no restrictions or tariffs on cement exports or imports.

(b) Suppose the government needs to raise revenues of $20 million a year for a public project. Could this revenue target be achieved with an import tariff on cement? Or with a sales tax on cement? If so, describe the outcome in each case.

(c) Show that there is a policy involving choice of a sales tax combined with an import tariff that will succeed in ensuring the survival of the domestic cement industry, as well as meeting the government's revenue target. What are the costs and benefits of such a policy compared to feasible policy options in (b) above?