

Problem Set 3  
Due in Class, April 4

- 1) Consider the problem of a parole board determining whether a prisoner is likely to commit more crimes if he/she is put on parole - in criminologist's terms, will the prisoner be a recidivist. Some researchers argue that a regression based on age, previous crimes, marital status, etc. can predict recidivism more accurately than the careful deliberations of a half-dozen parole board members who interview the prisoner and review his/her files. (Recall that we discussed such regressions as one way of determining whether a mortgage applicant should be approved.) Assuming this argument is correct, explain how it fits or contradicts the arguments of Blois in the readings.
- 2) In a number of different settings (repair solutions for problems in Ford cars, fixes for software problems in the Orlikowski paper, etc.), we have emphasized that information of this kind is *potentially* a non-rival good but that information technology can be important in reaching this potential.
  - a) Suppose that the network of Ford dealerships successfully implements information technology so that the solution to any new problem is quickly disseminated to all dealerships. What, if any, impact should this have on the distribution of mechanics' incomes? How might compensation mechanisms adjust to in response to this impact (e.g. wages per se versus wages plus bonus, etc.)?
  - b) What is the relevance of your answer in (a) to the situation postulated in Question (1) above?
  - c) Think about the popular music industry. Is it possible to construct an analogy with in which information technology has had the same effect on the distribution of entertainers' income as the effect on mechanics' income you describe in (a)?
- 3) Credit card companies constantly have to deal with the problem of fraud resulting from stolen cards.
  - a) Assume that a credit card company has histories of the purchases generated on each card - histories that are updated as daily purchase data is logged in. Explain as carefully as you can how a company might program a neural net to use this history to flag cards that may be stolen.
  - b) Could this same task be programmed using rules-based statements? If so, what are the pluses and minuses of each method?
- 4) Describe at least two mechanisms by which computerization (as we have defined it in class) could affect the creative destruction model described in the Thesmar-Thoenig paper in the readings. In each case, discuss whether the mechanism you describe should lengthen the product cycle, shorten the product cycle or have an indeterminate effect.