

AGSM 5306  
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## ***STRATEGIC GAME THEORY FOR MANAGERS***

### ***Problem Set 3***

*Note: Make any economic assumptions you think necessary, but make them explicitly. You may talk to fellow students about this, but do not copy others' work.*

1. Game theory plays a very important role in business strategy (20) when the payoff to an action is often contingent on the actions of rival firms, and threats (credible and otherwise) are often employed. One of the important strategies open to a firm is the lawsuit. Read the newspaper clipping at the back and then answer the questions.
  - a. What are the strategies referred to in the article?
  - b. What were Borland International's and Lotus Development Corporation's strategies contingent on (i.e., the occurrence of what, if anything, did they depend on)? Explain in detail.
  - c. What was Borland trying to accomplish with its declamatory judgement?
  - d. Does the ruling in favour of Lotus Development Corp. in the Paperback Software case place it in a position to make credible threats? What can it threaten? Relate your answer to entry into the electronic spreadsheet industry.
  - e. In this situation, Borland was faced with the decision whether or not to file suit as soon as Lotus won against Paperback Software. That decision depended not only on the probability and payoff of winning the suit, but on whether Lotus would sue Borland if Borland didn't sue first.

We don't know whether Borland did sue first, but your research assistant has prepared a game tree (See at the back). It shows the hypothetical payoffs (in millions) to different courses of action and hypothetical probabilities of

Borland's winning or losing the suit. Borland wants to know what to do. What is your recommendation based on the game tree? Explain.

2. A reviewer of Peter Robinson's memoir of becoming an MBA (6) (*Snapshots from Hell: The Making of an MBA*, NY: Warner, 1995) writes:

Mr Robinson pretty much concludes that business schools are a sifting device—M.B.A. degrees are union cards for yuppies. But perhaps the most important fact about the Stanford business school is that all meaningful sifting occurs before the first class begins. No messy weeding is done within the walls. "They don't want you to flunk. They want you to become a rich alum who'll give a lot of money to the school." But one wonders: If corporations are abdicating to the Stanford admissions office the responsibility for selecting young managers, why don't they simply replace their personnel departments with Stanford admissions officers, and eliminate the spurious education? Does the very fact of throwing away a lot of money and two years of one's life demonstrate a commitment to business that employers find appealing?

What answer to this question can you give based on our analysis of strategies in situations of asymmetric information?

3. ABC Corp. wants to form an alliance with the foreign firm, (16) Zephyr. Zephyr has an alternative to this alliance, which both believe will reap Zephyr a certain \$10 m per year, but without the alliance ABC earns nothing.

After Zephyr agrees to sign the contract (if it does), ABC can decide whether to target rich customers or poor customers, but Zephyr has no influence on this decision, and cannot alter it once ABC has decided. The contract cannot bind ABC to one strategy.

There is some uncertainty over the economy's path: consensus is that the economy has a 25% chance of shrinking, in which case targetting the rich would return zero dollars to Zephyr, but targetting the poor would return \$8 m. If the economy grows (a chance of 75%), then Zephyr earns \$20 m from targetting the rich, but only \$4 m from targetting the poor.

Perhaps because of political issues, ABC sees things differently: when the economy is growing, they would prefer to

target the poor (18 units of utility), and when the economy is shrinking to target the rich (36 units of utility). But when the rich are targetted while the economy is growing, ABC's utility is 12, while it's 6 when the poor are targetted while the economy is shrinking. The two players' payoffs are common knowledge.

1. Plot the game tree and state the expected payoffs if neither firm can tell whether the economy will grow or shrink until after the market target has been chosen by ABC. What will Zephyr choose to do? What will ABC choose to do? Explain whether this makes sense.
  2. Plot the game tree and state the expected payoffs if ABC knows with certainty whether or not the economy will grow before it chooses its marketing target, while Zephyr remains ignorant (and realises it). What will ABC choose? What will Zephyr choose? Explain.
4. A firm's maintenance division regularly does work for the rest of (6) the company. On these jobs, its cost estimates are generally right: sometimes a little high, sometimes a little low, but correct on average. When the work inside the company is slack, under a policy to earn returns from idle company assets, the division (sealed) bids competitively for outside jobs (where the lowest bid is usually the winner). "Those outside jobs are different," says Beatrice, the head of the division. "They almost always end up costing more than we estimate. I'm puzzled."

Assuming that Big Bea's team's estimating skills do not differ between jobs, what can explain the difference?

### Lotus Takes Hard Line On Software

By Ron Suskind

3 July 1990

The Wall Street Journal

CAMBRIDGE, Mass. — Lotus Development Corp., emboldened by its copyright victory against a small software company, is now waging battle against more formidable rivals.

Lotus filed suit against California-based Borland International Inc., claiming that Borland's upstart Quattro software infringes on the copyright of Lotus's best-selling 1-2-3 spreadsheet.

The suit, which includes a similar complaint against Santa Cruz Operation Inc., another California software maker, comes on the heels of Lotus's copyright infringement victory last week over Paperback Software International.

Legal experts say that last week's decision, while not ensuring future success in court, has strengthened Lotus's position. "Lotus is now in an extremely powerful position to enforce its copyright against Borland and others," says Lee Gesmer, a partner at the law firm of Lucash, Gesmer & Updegrave, a specialist in copyright law.

Regardless of what happens, Lotus's aggressive posture could deter other potential rivals from trying to invade its turf.

Borland and Quattro Pro were obvious targets for Lotus's next legal attack because Quattro has become a hot product. While Lotus dominates the spreadsheet business with a market share of about 60%, Borland claims that Quattro Pro is winning some business from Lotus. In heavy national over-the-counter trading yesterday, Borland stock plummeted \$4.375, or more than 20%, to close at \$17a share. Lotus's stock closed at \$34.625 a share over the counter, down 12.5 cents.

"The heart of the case for us is the similarity in menus," or screens and keystrokes that the user sees and uses, says Lotus general counsel Tom Lemberg, noting Lotus's special interest in Quattro Pro, Borland's latest version of its Quattro spreadsheet. "Without the Quattro Pro, we wouldn't have a case."

In terms of keystrokes, Lotus, for instance, claims that Quattro Pro's use of the "C" key to denote what type of currency to use on a spreadsheet, as well as the use of "FR" for file retrieve, constitute infringements on Lotus's 1-2-3.

"We believe that the Quattro software is of original design," responds Borland spokesman Dick O'Donnell, "and if you ask Quattro users why they use our software, they'll tell you it's because of the features they get that they can't get elsewhere."

Borland has specifically targeted Lotus's 1-2-3 with its Quattro Pro. Borland sells Quattro Pro for just \$99 to owners of 1-2-3, compared with the normal Quattro Pro price of \$495.

Borland, anticipating Lotus's suit, actually fired the first shot. Friday, the company filed for a declaratory judgment in federal court in San Jose, Calif., stating that Quattro doesn't infringe on Lotus's copyright. Because of Borland's lightning strike, says Rick Sherlund, an analyst with Goldman Sachs, the case will most likely proceed in California rather than before the federal judge in Boston who ruled in Lotus's favor in the Paperback case. "It was a shrewd move," says Mr. Sherlund.

Santa Cruz Operation said the software Lotus has legally attacked, called SCO Professional, is a

spreadsheet package for a multi-user UNIX operating system. "We haven't seen the complaint, but, to the best of our knowledge, we haven't violated any copyrights," said company spokeswoman Janet Morton. She added that SCO Professional has been selling in the multi-user arena since 1986, while Lotus only recently entered the UNIX-spreadsheet market.

"We have every intention of appealing" last week's decision, said Michael Burdick, a vice president for marketing of Paperback Software International of Berkeley, Calif. "The judge's extending of copyright law to user interface has created broad adverse effects on the computer software industry, as is evidenced by the Lotus-Borland suit just filed. The legal wrangling has already begun."

The suit underscores how litigious the software industry has become. Apple Computer Inc., for example, has lawsuits pending against both Microsoft Corp. and Hewlett-Packard Co., charging their products infringe on Apple copyrights. Many small developers of software have decried the trend, claiming that the lawsuits stifle the creativity and entrepreneurial spirit that helped build the software industry. But the companies filing the suits counter that they are simply protecting their property from competitors who seek to benefit unfairly by copying unique features.

