

## **Trading Stocks to Avoid the Winner's Curse**

In January 1995 an investment management company in Chicago introduced a strategy explicitly designed to avoid the Winner's Curse.

The chief investment officer, saying he had based the strategy on the Nash Equilibrium, claimed that the Winner's Curse is usually associated with stocks that have abnormally wide price ranges, which "means there is a lot of uncertainty about how the company will do".

A wide price range also indicates limited liquidity, which means that a relatively small volume of buying or selling will have a significant impact on the price of the stock.

He accordingly planned to select his portfolio from stocks with narrow trading ranges, an indication that they are priced around consensus views, with sellers and buyers more or less evenly matched.

The assumption is that such stocks can be bought for little more than their consensus valuation.

## **The Spectrum Auction**

In August 1993, the U.S. Federal Communications Commission (FCC) decided to auction off wireless communications rights. Two licences would be issued for each of 51 zones around the U.S.A.; no bidder could acquire more than one licence in any zone. The usual procedure in such auctions is to call for sealed bids and to award the contract to the highest bidders. This time, acting on the advice of Paul Milgrom, a Stanford professor, the FCC chose to conduct the auction according to game theory, calling it a “Spectrum Auction”.

1. All bids would be open, so that each contestant would always know what all the others were doing.
2. There would be successive rounds of bidding until no contestant wanted to raise its bid any higher.
3. Between rounds, contestants could switch their bid from one zone to another or could bid simultaneously for licences in adjoining zones; since there is an economic advantage in having licences in adjoining zones, a particular licence might be worth more to one party than it would be to another. In short, each decision would be based on the known decisions of the other players.

### *Case Discussion*

The contestants found that making decisions was no easy matter. Each of them had to guess about the intentions of the others, studying their

- reputation for aggressiveness,
- their financial capacity, and
- their existing licence structures.

On occasion, a properly placed bid by one contestant would clearly signal its intentions to the others,<sup>1</sup> thereby preventing a cycle of competitive bidding for some particular licence. Some contestants took out full-page ads to signal their intentions; others joined together to prevent costly bidding for the same licence.

The auction went on for 112 rounds over three months and fetched US\$7.7 billion. Although some argued that the government could have raised more money if the FCC had prohibited the alliances, the allocation of licences in the end probably turned out to be more efficient in terms of the economies of building franchises than it would have been under the traditional procedure.

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1. See the readings from *The Economist* in the Folder.

The motivation to avoid destructive bidding competitions is motivated by a desire to avoid **the Winner's Curse**—overpaying out of a determination to win. The Winner's Curse does not need a fancy auction—the same curse may be visited on an investor in a hurry to buy a stock on which someone has provided a hot tip, or on a company choosing between internal investment opportunities—it might choose the project with the highest “bid” made on its behalf (see BHP and Magma Copper).

To avoid the Curse, share trading sometimes takes place in a manner that closely resembles the spectrum auction: the players are anonymous, but all bids and offers are displayed on the screen together with reservation prices above which the investor will not buy and below which the seller will not sell.

## ToysToysToys

A new chain of toy stores, ToysToysToys Ltd., is searching for a number of sites to rent in Sydney. In addition to wanting to pay the lowest possible rent per site, the company has very particular requirements that the sites must satisfy: being on a main road, having at least 100 parking spaces, buildings with space and layout suitable for a toy store, and in locations with the target demographics.

Owing to its lack of in-house expertise, *the company decides to hire an external consultant* to identify sites. The consultant's compensation is to be specified in a contract.

How will the likely outcomes vary under each of the following contracts? Which is most likely to achieve ToysToysToys' objectives?

- a. An agreed fee for identifying a specified number of potential sites.
- b. An agreed fee for each site found with floor space exceeding a specified area and with the rent below a specified amount.
- c. An agreed fee for each site identified which ToysToysToys decides to rent.

## **Toyota and its Subcontractor**

Consider a contract between Toyota and a subcontractor for the supply of some parts. Compare, in terms of incentive and risk-sharing effects, (1) a contract that specifies a fixed price with (2) a contract that allows the subcontractor to pass on 50% of any production-cost increases.

### *Case Discussion*

The fixed-price contract (1) offers stronger incentives to the subcontractor to limit costs and so it results in lower production costs. But it shifts all of the risk onto the subcontractor. To induce the subcontractor to accept the fixed-price contract, Toyota must offer a price high enough to compensate the subcontractor for the risk he is to bear. If the subcontractor is risk-averse enough, and the scope of production-cost variations is small enough, the fixed-price contract might be more expensive for Toyota than the incentive contract (2) would be.

## Outsourcing Contracts

Under privatisation of government factories, suppose the government moves in steps. As owner, it has the power to establish the terms of the contract. Initially, contractors, such as Go Getters Inc., leasing government factories are required to *pay a fixed sum of money each year to the government*, and allowed to keep any profit beyond this. Later, after seeing how successful the factories have become under private management, *the government wants more of the profits*, and instead institutes *profit-sharing schemes*, with 20 percent to 30 percent of profits going to Go Getters, and the rest to the government.

- a. Would this change in policy lead to the government's revenues rising or falling? Discuss.
- b. How will Go Getters' attitude to risk compared to the government's attitude to risk affect the answer?
- c. How will Go Getters' private information about the profitability of the factory under its management affect the answer?
- d. Can you discuss any other management situations that have this property?

### *Case Discussion*

- a. The surprising answer is that *sharing in the profits probably reduces the government's earnings*. It costs Go Getters something to increase output and profit: the contractor's managers must work harder, and they must get their employees to work harder. Not all of these costs of increasing output will show up on the accountant's balance sheet. Thus Go Getters bears 100% of such costs. With a fixed-payment contract, Go Getters keeps 100% of any profit it generates above the required payment to the government. With the sharing contract, however, it keeps only 20% or 30% of the return to any extra effort it makes. Under the latter contract, therefore, *Go Getters will exert less effort and produce less total output*. With the fixed-payment contract, the total to be divided between Go Getters and the government is greater; the government would earn more by raising the fixed payment than by raising taking a share of the profits.
- b. This logic must be modified if either Go Getters is more fearful of risk (more risk-averse) than is the government, or if Go Getters' profit-making potential is known only by Go Getters. Either of these effects can make it in the government's interests to share the profits, but it seems implausible that these effects would be sizable enough to make it in the government's interests to set sharing rates as high as 70% or 80%.

The sharing parameter in this contract between the government and the contractor is 0.2 or 0.3. If we guess at 0.8 for the size of the incentive parameter, then by using the formula in reverse we deduce that the risk premium would have to be 80% in order for the contract with a sharing range to have been optimal, or a risk premium of 47% with a sharing rate of 0.3. These risk premiums imply extreme caution: Go Getters would give up most of its profits to be sheltered from risk. There therefore seem implausibly large. Either the government made a mistake in designing the contract, or they were taking account of other factors not considered in our simple model, or our guess of 0.8 for the incentive parameter  $\lambda$  is too high. If we were more pessimistic about the force of incentives and assumed  $\lambda$  to be 0.2, the implied risk premium assuming the optimality of contract is 20% (for the sharing rate of 0.2) or 12% (for the sharing rate of 0.3).

- d. Other interactions that are logically equivalent to this situation include:
1. A firm is deciding how to pay its production-line workers: fixed wage or piece rates?
  2. A contract for the supply of some equipment is being negotiated between two firms. The cost of producing the equipment are not perfectly predictable. What proportion of cost increases should the purchasing firm allow the supplier firm to pass on to it as the price increases?