

## 15. Measurement

The story goes that the automobile market is plagued by the problem that hidden flaws exist in used cars such that the market may have no equilibrium.<sup>1</sup> By this I mean that anyone who has a used car that is any good will keep it because if it is put on the market, everyone assumes that it must be bad. Because the seller knows more about the car than the buyer, at any price, half of the sellers will be receiving less for their autos than the cars are worth. In the limit this problem will cause there to be no used car market, just like Barzel's sorting problem. However, there is a used car market. Some equilibrium does obtain. Even so, we wonder how much the equilibrium is affected by informational asymmetries.

One way to pose this question is: "Are used cars a good deal?"

Let's turn to cows:

In any exchange, Barzel (1982) notes that the determination of value of the exchanged commodity is costly. That is, the cost of measuring the attributes and the verifying of measurement will be different for the buyers and for the seller. A potential remedy to the measurement cost problem is to use a proxy or signal. Furthermore, the less alterable the signal the more effective and more frequently it will be used than signals that can be manipulated.

Allen (1993) employs the signaling solution to explain veal calves sold at auctions.<sup>2</sup> In general, all breeds of cattle are sold at the auction. Veal calves, usually only four to seven months old and weighs approximately 200-250 kilograms, differ from apparently identical animal, a feeder calf—one to be raised for beef, in the method by which they are raised. Veal calves are raised in small pen in order to restrict muscle development and are fed only high quality grains and/or milk in order to produce tender pale meat. Calves raised on cheaper hay will develop to approximately the same size but will have a dark red meat.

At auction, sellers have advantage over measuring the attributes of calves, since they know what the calves are fed and how they are raised. Buyers, on the other hand, are unable to identify the sellers nor do they know how the animal were raised. Despite asymmetric information, there are sales of veal calves at auctions.

The reason for this is that Holstein calves give a signal concerning the quality of that they will yield veal meat. That is, measurement cost problem is resolved by an accurate and non-alterable proxy or signal to reveal relevant quality. Holstein calves develop a very distinct "pot belly" when fed hay, as opposed to only milk and grain. The pot belly is a signal of dark red meat.

Allen extends the analysis to distinguish veal calves sold at auction from veal animals sold in private transactions. Only animals intended for pink veal or baby beef are sold at auctions, not white veal. In producing either pink or white veal, animals are kept away from grass. The main difference is that white veal calves are raised only on milk or milk replacer.<sup>3</sup> Since neither animal develops the "pot belly" signal, the incentive is to substitute cheaper grain for milk because in cows sold at auction there is no way to distinguish the difference. Buyers anticipate that calves

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<sup>1</sup> Akerlof, George. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism" in Quarterly Journal of Economics. Vol 84. 1970. P488-500.

<sup>2</sup> Allen, Douglas W. "Pot-Bellies, Cattle Breeds and Revealing Signals" in Economic Inquiry. Vol 31. 1993. P481-487.

<sup>3</sup> Animal raised to produce white veal are kept in the dark.

sold at auction will have been fed mostly grain and bid accordingly. Therefore, only animals yielding pink veal are sold at auctions, while white veal is sold directly from farmers to the slaughter house.

We know two things from this story. Holstein calves are sold at auction for veal, and only holstein calves are sold for veal at auction. By this I mean that (1) if anyone buys a Holstein calf (without a pot belly) at auction for any reason other than to slaughter it for veal, then that buyer has made a mistake because the buyer has paid a premium price associated with the value of veal; and (2) if anyone buys a calf at auction hoping to slaughter it for veal, unless it is a Holstein without a pot belly, the buyer will be disappointed. The auction market for veal is not perfect. However, an equilibrium obtains where everyone knows what they are getting (within a narrow probability range) and pays accordingly for it.

Now let's return to cars:

How is the car market similar to the cow market? Most importantly, there is an auction for used cars just like there is an auction for cows. Car auctions are held in many places and are of various sizes, but the price and quality information about wholesale auction of used autos is distributed widely. From this, both buyers and sellers of used cars know what the average car is worth given all the informational asymmetries.<sup>4</sup> Buyers and sellers outside of auctions are unlikely to transact at prices that are far away from the auction prices.

Are used cars a good deal? This question does not have a direct answer. Used cars like veal calves are priced by the market based on the observable information available.<sup>5</sup> New cars are priced by the market as well, but this may be based on a consumption preference for newness, something like a "separating equilibrium" in which there are people who only buy new cars and people who only buy used cars. New cars sell at a premium because of this. The question "Are used cars a good deal?" has to be refined. If the question means, "Are used cars, *ceteris paribus*, more dependable?", then the answer can only be determined by empirical investigation of repair records.<sup>6</sup>

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Hall (1986) analyzes complementary markets by examining how 'claim horse' markets monitor the market for betting and assure honest of horse races.<sup>7</sup>

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<sup>4</sup> It is not nearly so obvious that there are informational asymmetries in the auto market as it is in the veal market. In auto's, the seller may know things about the maintenance history of the vehicle, but the buyer may know more about mechanical characteristics. Both parties are expected to suppress information that hurts their interests and promote information to their advantage.

<sup>5</sup> In Europe where title histories are recorded and observable, we are told that cars with a frequencies of turnover in the market sell for less.

<sup>6</sup> However, the European evidence suggests that used cars are less dependable. The *cet. par.* conditions would include year, make, mileage, etc. of the car. That is, if you have the option of going on a trip to Florida in my 5 year old, 4 wheel drive, Chevy Suburban with 100,000 miles on the odometer, or in a car that is exactly the same except that it was purchased used 2 years ago, which one would be more likely to make the trip without interruption.

<sup>7</sup> Hall, Christopher D. "Market Enforced Information Asymmetry: A Study of Claiming Races" in Economic Inquiry. Vol 24. 1986. P271-291.

Briefly, almost all horse races in North America employ a claim rule, a condition of entering the race, that every horse is committed to be sold at a price stipulated and advertised by the track. Prior to the start of the race, the track sets the claim price and assures that, if claimed, the horse is sold at the claim price after the finish. In addition, the track sets the purse or prize money, which is provided by the track in all claiming race and is divided in fixed proportions among the owners of the top five horses. A key feature of the claim rule is that only the horse is claimed, not the prize money.

The claim rule is used to reward experts for performing two functions: (i) experts police the list of race contestants to discourage horse switching and related fraud; and (ii) they advertise the honesty of race to bettors by claiming horse. In general, horse owners and trainers know more about their horse than bettors. To encourage betting (a disagreement over winning probabilities, where wages are placed when the pari-mutuel odds diverge from a bettor's expectations) it is essential that no significant information bias exist. Also, the track's revenues are derived as fixed proportions of the betting volume and this volume increases with the quality of the competitors in honest races. However, many types of fraud are possible, such as drugging horses, switching horse, and collusion between jockeys, but claiming discourages fraudulent activities because more people watch and inspect horses entering claiming races in hope of finding a bargain. This search for bargains substitutes for other policing expenses and compensates the track for the added prize money it offers to induce entries. Furthermore, an absence of claiming in races with large purse signals the track to investigate this group of horses and, thus, the reallocation of policing resources discourages fraud.

To summarize, when the purse and claiming price combination stimulate claiming, the new owners provide a signal to all observers, including bettors, that the horses are as listed- claims advertise honesty. In the absence of claiming, other policing methods will be employed by the track that acts as a signal to deter fraud. Thus, the signals that deter fraud (claiming, search for bargain horses, and bettors) indicate that policing is effective in these complementary markets.

In the opinion of Sauer, as well as my own, Hall over states the claiming race effect of signaling when the fix is in. There are relatively few horses claimed in claiming races. If racing officials were going to use the absence of claims as a signal that some fix was in, they would be investigating more than half of the races. Clearly such a rule is not suitably refined.

The main purpose of claiming in races is to equalize the field. Since all horses in a claiming race can be purchased at the same price, they must all have approximately the same value and ability. Claiming is a way of handicapping the race.

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Many people claim that education is nothing but a sorting mechanism.<sup>8</sup> We teach nothing. All education does is erect hurdles that cause people to self select into one group or another.

A more sophisticated version of this story is that education is a form of a bond. Workers invest time and maybe money in getting an education. In order to pay back this investment they will naturally work more hours than they otherwise would have.

Sobering thought

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<sup>8</sup> Spence, A Michael. "Job Market Signaling" in *Quarterly Journal of Economics*. Vol 87. 1973. P355-379.