

**If you can't trust the farmer, who can you trust? The role of certifying organizations in consumer willingness to pay for organic products.**

By

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ABSTRACT

In the organic produce market a moral hazard problem exists because it is difficult for consumers to observe whether a product is organically or conventionally grown. This is known as the "Lemons Problem". Various methods can be used to solve this problem including signaling, reputation, licensing and certification. There are problems related to using both signaling and reputation to solve the "Lemons Problem". Combining aspects of both licensing and certification seems to be the method that is most applicable. A survey instrument designed to test the efficacy of certification is presented along with qualitative predictions of the results.

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### INTRODUCTION

How do consumers know whether the produce they buy is organic or not? Many stores have an organic produce section, and various claims regarding growing methods are made. Generally speaking, organic produce commands a premium price, although distinguishing between organically and conventionally grown fruit and vegetables is quite difficult. This should cause consumers to be suspicious about any claims made regarding growing methods. If it is more costly for the farmer to raise organic produce, and if the consumer has no way to verify the growing method that was used, then a profit maximizing farmer will rationally claim that his output is organic, when in fact it is not. This enables the farmer to use lower cost conventional growing methods, and sell at the higher organic price. The asymmetric information creates a moral hazard (hidden action) problem.

Asymmetric information and moral hazard is a well known issue, first examined by Akerlof (1970) who demonstrated that a market with positive gains from trade could fail to exist. This "Lemons Problem" has been extended in several ways by Wilson (1979), who shows that multiple equilibria are possible in a model with asymmetric information such as that analyzed by Akerlof, and that these equilibria can be ranked in the Pareto sense (with higher price, higher quality equilibria generating higher social welfare). Rose (1993) demonstrates that Wilson's (and Akerlof's) multiple equilibria are extremely unlikely, and that lemons models generally contain only a single equilibrium. Grossman and Hart, (1983) consider a more general principal-agent framework and provide a way to overcome the lemons problem, by calculating a payment scheme based on signals of product quality. In addition to the theoretical literature, Akerlof's lemons idea has appeared in several areas including information labeling on food (Caswell and Mojduszka, 1996) experimental markets (Holt and Sherman, 1990), product safety (Kerton and Bodell, 1995), securities (Nofsinger, 1998), job markets (Ryoo, 1996) and yard sales (Cabral and Sakovics, 1995).

In this paper, we discuss the theory of moral hazard and its application to the market for organic produce. We then present three ways to overcome the moral hazard problem. Finally, we present a survey instrument designed to test the efficacy of certification as a solution to moral hazard. We discuss the tests that the survey instrument will allow, and make qualitative predictions regarding the relationship between variables. This survey will be administered by phone to a random sample of Utah residents in the early summer of 2001, at which time our qualitative predictions will be examined, and quantitative results produced.

### MORAL HAZARD AND THE LEMONS PROBLEM

A basic principal-agent model such as that presented in Akerlof (1970) may be used to describe the market for organic produce. In Akerlof's model, used car buyers cannot verify the claims made regarding the quality of the item for sale. High quality cars are more valuable to the seller, and should therefore command a premium. The buyers, having no way to verify the claims made regarding product quality, are willing to pay no more than what they expect the cars offered for sale are worth. The buyers have expectations on the probability of getting a high or low quality car, so the worth of the

car is a weighted average of the value of high and low quality cars. Assuming that the owners of high quality cars are not willing to sell for less than their cars are actually worth, only low quality is offered for sale at the price that buyers are willing to pay. Everyone should recognize this fact, so that buyers should rationally expect that if a seller is willing to sell, he must have a low quality car. But if the car offered for sale is sure to be low quality, then the buyer is paying too much. Conclusion - the market fails to exist.

Akerlof's model can be reinterpreted to describe the problem that producers and buyers of organic produce face. Given that organic growing methods are more costly than conventional methods, organic produce is more valuable than conventionally grown produce. In this sense, it is of higher quality. Buyers have no way to verify whether the fruit and vegetables they purchase at the grocery store are organically or conventionally grown. Thus, while they might be willing to pay a higher price for produce labeled organic (on the chance that it actually was grown organically), buyers will not be willing to pay the full price of organically grown produce. Assuming that organic growers are not willing to grow organic produce for less than the full price, then everyone in the market should expect that the only produce offered for sale is conventionally grown, no matter how it is labeled.

What if the buyers place an extremely high value on organically grown produce, so high that the price they are willing to pay (a weighted average of the value of organically and conventionally grown items) more than covers the cost to farmers of producing organically? Will we then see at least some produce grown organically? If consumers are not able to verify the claims made for the produce, and if organic growing methods are more costly than conventional methods, the answer is still no. Profit maximizing farmers would still rationally claim to have produced organically while actually using conventional methods, since this reduces their costs and therefore increases their profits. So, even when consumers are willing to pay enough to make organic growing methods profitable, the lack of verifiability means that no farmer will be organic.

There are several ways to overcome this "lemons" problem. The first of these involves the use of signals regarding the growing method. If consumers cannot directly observe the growing method, but can observe some signal of product quality (e.g. number of blemishes, size of the fruit, variations in color), then they can assess the likelihood that organic methods were used. Given this indirect signal, consumers can set up a pricing scheme that involves higher payment for increasing likelihood of organic production methods. Under this pricing scheme, farmers are either rewarded for using organic growing methods, or punished for using conventional methods. As long as the pricing scheme makes it more profitable for the farmer to use organic methods, he will do so. Grossman and Hart (1983) present the generally accepted methodology for using signals to set up such a pricing scheme, and demonstrate that noisier signals and smaller willingness-to-pay differentials make it harder to overcome the lemons problem. Similar results regarding moral hazard and quality are demonstrated for labor markets (Spence, 1973), and insurance markets (Rothschild and Stiglitz, 1976). Thompson and Kidwell (1998) found that organic produce did not always have more cosmetic defects, suggesting that appearance is a noisy signal. However, they admit that their study was limited to a small geographic area and may not be indicative of the market as a whole. As in Grossman and Hart (1983), the smaller the difference in consumer valuation, the harder it is to obtain organically grown produce, as the larger cost to produce organically is not covered by a big enough increase in price.

The "lemons" problem can also be overcome through the establishment of a reputation. As Akerlof (1970) noted, a brand name may allow firms to develop a reputation for selling high quality.

This reputation enables the firm to charge a price high enough to cover its costs, so that high quality goods may be sold in equilibrium. Kreps (1990) extends this idea even further, and suggests that the firm itself exists to hold a reputation for quality, and that as long as there is some way for potential customers to be informed regarding the firm's reputation, it is to the firm's benefit to sell quality goods. The easiest way to use reputation to overcome the lemons problem is to posit repeated interaction between the producer and the consumer. This is the solution that Heal (1976) proposes. Repeated interaction gives consumers the ability to withhold future purchases from farmers caught using conventional methods, so that farmers find it in their best interest to use organic methods even when they are more costly in the short run. Even if repeat purchases are not made, as long as new consumers have a way to discover the farmer's reputation, the lemons problem can be overcome.

Repeated interaction solves the lemons problem only if consumers can discover that conventional growing methods are being used, rather than organic. Because the health effects of most conventionally used fertilizers and pesticides are known only after a very long lag, and because the source of most produce is rarely traceable to a particular grower, consumers have limited ability to use the threat of withholding future purchases to punish growers.

Finally, moral hazard can be avoided if growers are able to make their claims regarding production methods verifiable, through certification or licensing. Leland (1979) demonstrates that establishing minimum quality standards can solve the lemons problem, although if these standards are set by the sellers, they will probably be too high. Thus, a publicly available standard for what constitutes organic produce could make at least some growers willing to use organic (and presumably more expensive) methods. In order to make claims verifiable, growers may wish to lobby for organic standards and certifying agencies to oversee their production and guarantee that only organic methods are used. Indeed, the USDA is in the process of establishing national standards for organically grown products along with a system of inspections to support truth in labeling regulations (Vandeman and Hayden, 1997; cited in McCluskey, 2000). Other programs have also been created to certify organic production, and while some are more stringent than the pending USDA standards, few of them are as well known or as widely applied. Klonsky (2000) gives a good overview of what has happened in regards to certification including the problems the USDA has faced in forming a standard for certification. Klonsky also mentions that the general industry consensus is that a national standard needs to be set.

Shapiro (1986) examines the issue of licensing and certification in a theoretical study of the market for professionals. He differentiates between licensing (in which a minimum human capital investment must be made before a person may practice a given profession), and certification (in which the government or some other separate entity provides information on the human capital investments made by various professionals). Education is a one-time input that is easily observable where making detailed educational information for every practitioner easily available is difficult, if not impossible. This makes licensing a practical choice over certification. Shapiro demonstrates that licensing improves welfare when investments are not observable. Certainly, growing methods are difficult (if not impossible) for consumers to observe. This suggests that the new USDA regulations defining organic will be beneficial. Shapiro's results regarding certification are not as encouraging, as he shows it may reduce welfare. This suggests that the USDA inspection program may cost more than the benefits it creates. However, Shapiro's arguments are based upon a one time investment rather than ongoing investments that organic production entails. As discussed below, when ongoing investments are

required certification is a necessary part of a licensing program.

In terms of organic produce, licensing would involve setting standards regarding which processes and inputs may be used in organic production (with the label “organic” reserved for products meeting the requirements). However, because growing practices involve ongoing investment, licensing is not sufficient to guarantee that produce labeled organic is actually grown organically. Certification would involve inspection and provision of information regarding which processes and inputs were used, without a definition of which techniques constitute organic production. It would be sufficient to guarantee which practices were used, but does not involve creating easily interpreted labels for consumers to observe. So there is still a need for licensing standards, but both licensing and certification are necessary (and sufficient) for the “Lemon Problem” to be solved. Separately both conditions are necessary to solve the “Lemons Problem” but neither one is sufficient.

As noted by Leland (1979), standards set by the growers themselves may be higher than is socially optimal. It would be interesting to compare the standards of different certifying organizations to see if this hypothesis holds up. It would also be interesting to compare the effectiveness of certification versus licensing to see which of these two ways to solve the lemons problem is most cost effective. In this paper, we do neither of these. Instead, we examine the issue from the viewpoint of the consumer, asking which form of certification is most believable. The survey discussed below will test the effectiveness of various certifying agencies in influencing consumer willingness to purchase organic produce.

## THE SURVEY

As discussed above, in the absence of signals or repeat purchases, and assuming that growing methods cannot be observed, consumers should rationally believe that conventional growing methods were used. It was noted above that cosmetic defects are not a reliable signal (Thompson and Kidwell, 1998) and problems exist with consumers being able to use repeat purchases of an individual farmer’s products. According to Lohr (1998), certification overcomes the moral hazard problem in three ways; it provides consumers assurances regarding the production methods used, it insures producers that conventional growers will not be able to make claims to be “organic” and thus water down the benefits of the label, and it makes the market more efficient, in that socially beneficial sales take place. In order for certification to overcome the moral hazard problem, however, consumers must be willing to believe the certifying organization. If the differences between organic and conventionally grown produce are small, it is relatively easy for producers to claim organic methods, even when they were not used. The lemons problem reappears when consumers do not believe the certifying organization. Consumer disbelief reduces willingness to pay, which makes covering the higher cost of organic production methods difficult, and reduces the likelihood that producers will actually use them.

Thus, for certification to increase social welfare, it must be believed. This suggests that social welfare will rise with the trust that consumers place in the certifying organization. More trust increases willingness to pay for produce labeled organic, which improves the likelihood that organic methods are actually used. The higher the degree of trust, the more likely it is that socially beneficial trades take place. Asking consumers how various types of certifications will change their organic purchases serves as an indicator of how believable each of these certifying agencies is.

We examine this issue of credibility through a survey of consumers of organic produce. A copy

is available from the authors upon request. In the survey, we asked a series of demographic questions, as well as questions regarding current consumption of both organic and non-organic produce. We then asked how their purchases of organic produce would change if various types of additional information were available. Additional information included both self-certification and certification by independent agencies and governments, as well as a record of how the produce was grown, shipped and handled. Finally, we asked whether a larger difference between the appearance of organic and conventional produce would affect purchases.

We can use this data to examine two types of questions. First, it will be possible to determine both the size and significance of the relationship between various demographic variables and the change in purchase of organic produce due to a given signal regarding production method (either certification or appearance). We anticipate that larger household income, higher education levels and larger current produce consumption will be positively related to the strength of response to additional information, while age may have a concave relationship with strength of response (with largest changes coming in the middle age group). The second comparison our data allows is between the various types of additional information. We will be able to group our data into various categories according to income, age or education level, and examine the strength of response to each type of additional information available. Controlling for demographics, we expect that certification by government agencies will create the largest degree of trust and thus lead to the largest change in organic produce purchases. Certification by individual farmers should be least believable, so that it will lead to the smallest change in organic produce purchases.

## CONCLUSIONS

A moral hazard exists in the organic produce market because of the difficulty consumers face in determining whether a product is truly organic. The methods of overcoming this “Lemons Problem” include signals, reputation, and certification or licensing. Signals of organic versus conventional produce often refer to cosmetic defects such as blemishes, although there is some evidence that organic produce may have fewer blemishes than conventionally grown produce (Thompson and Kidwell, 1998). Reputation is difficult to apply in this case because the consumer often does not know what farmer grew the produce and hence cannot punish an individual farmer by not purchasing their products in the future. Certification is a third way of correcting the “Lemons Problem”. The usefulness of certification depends in large part upon the credibility it has with consumers. If they do not believe the certification claims, the “Lemons Problem” is not solved. A survey was designed to test how consumers would change their purchases of organic produce in response to different types of certification. The survey will be administered early summer 2001. It is expected that consumers will place the highest value on government certification and the least value on an individual farmer certifying his own produce.

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