Perceived Economic Pressures and Farmer Ethics

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Abstract: We consider the effect of perceived economic pressures on the ethical attitudes of farmers. We hypothesize that an increase in the economic pressures a farmer faces could result in that farmer being more tolerant of unethical conduct than farmers not experiencing economic pressures. To test this hypothesis, we use data from a survey of 3,000 Missouri farmers with farm sales in excess of $10,000 in 2005 in which farmers were asked how acceptable they considered various unethical or questionable farming practices. The survey also contained questions designed to measure perceived economic pressures. We find evidence that economic pressures result in a greater willingness of farmers to tolerate unethical conduct, particularly in the case of actions that have the potential of causing harm or that are influenced by law or contract. We also find that the more frequently a farmer reports observing an unethical action, the more acceptable he is of it.

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Introduction

There are two broad categories of ethical problems (Comstock, 2002; James, 2003). One consists of philosophical problems in which there is not a consensus of what is right. Examples in agriculture include the appropriateness of genetically modifying crops and raising animals in large confined feeding operations. The other occurs when people face incentives to violate generally accepted norms of behavior. Agricultural examples include violating food safety standards in food production and engaging in crop insurance fraud. This paper deals with behavioral problems in the context of agricultural production. Specifically, the purpose of this paper is to examine how perceived economic pressures affect the ethics of agricultural producers.

An examination of farmer ethics is important for several reasons. First, recent food safety scares involving E. coli contamination of spinach (Lorin, 2007) and Chinese imports of gluten mixed with melamine (York, 2007) have resulted in people feeling less certain about their food, thus reinforcing the fact that we cannot take our food for granted. Because food is such a necessary part of everyone's lives and regulation of food production is imperfect, it is of paramount importance to society that those producing it or working in the agrifood sector have high ethical standards so that the food produced is safe and wholesome.

Second, ethical behavior and adherence to basic ethical principles, such as being trustworthy, keeping one's promises and not intentionally harming others, not only are necessary for economic growth and development generally, but also are important for understanding the direction and pace rural development takes. This is because "[e]thics and values as integral parts of our particular world views, direct everything we do, including rural development" (Lanier, 1986, p. 122). A study of farmer ethics is timely because technological changes and industry consolidation occurring within the agrifood system might cause farmers to feel they need to engage in unethical behavior in order to survive.

Finally, farming is often seen as a more virtuous activity than paid employment, and life in rural settings is often considered to be more conducive to family life than life in cities, economic and material realities notwithstanding (Struthers and Bokemeier, 2000). For example, Thompson (1998, p. 95) said the

current generation of adults may believe that rural residents, particularly farmers, are
more likely to exhibit ethically praiseworthy conduct and more likely to base action and
decision on ethical principles. In one manifestation, agrarian ideology has maintained the
notion that farm families are more likely to be guided by principles of ethics than are
others, and that because farming is morally significant, agriculture should be given
special consideration in matters of public policy.

Nevertheless, "those who … farm increasingly tend to see their operations as a business
and resent the suggestion that they should be held up as moral exemplars" (Thompson, 1998, pp.
183-184). Thus, although the general public may believe otherwise, the ethics of farmers may
not be that different from the ethics of men and women in non-farm businesses and may, in fact,
be affected by similar factors, such as economic conditions (see, for instance, James, 2000).
Research has shown that rural residents are less tolerant than urban residents of unethical
information gathering techniques (Hallaq and Steinhorst, 1994). However, research also suggests
that some farmers engage in unethical conduct because they believe it is in their interest to do so
(James, 2005). Consider the following example: During the 1995-1996 grain marketing season
when corn prices increased dramatically, many farmers committed to hedge-to-arrive contracts
reneged on these agreements in order to minimize losses or capture the economic benefits
associated with the rising corn prices (Baumel and Lasley, 1997).

Scholars have examined the values and motivations of farmers generally (Young,
Shumway, and Goodwin, 1990; Schoon and Te Grotenhuis, 2000), as well as farmer attitudes
towards farming (Sullivan, McCann, De Young, and Erickson, 1996). However, only one study
has attempted to determine directly the ethics of farmers. *Farm Futures* magazine surveyed its
readers to evaluate the ethical perceptions of farmers. The survey "contained information on
perceptions of the state of farm ethics, reasons for that state, multiple ethical choice and problem
situations, values and opinions, and personal information including church attendance, farm type,
sales and profit levels, and current degree of satisfaction with farming" (Rappaport and
Himschoot, 1994). The results, reported by Knorr (1991) and Rappaport and Himschoot (1994),
show that farmers believe the ethics of agricultural producers have declined during the previous
10 years and that "their own ethics have also deteriorated" (Knorr, 1991, p. 11). The study also
found that "respondents believe the ethical decisions they face are more difficult than those faced

by an earlier generation" (Knorr, 1991, p. 11). The reasons appear to be rooted in the economic realities of farming. As one farmer quoted in the study said, "Ethics have always been hard to maintain when profit and loss become a matter of survival or going broke" (Knorr, 1991, p. 13). While innovative in examining the ethics of farmers, the *Farm Futures* study might not be representative of all farmers because the population from which the sample was drawn was subscribers to the magazine, and the study did not examine systematically whether farmer ethics are correlated with economic and other conditions farmers face.

In this paper we examine explicitly the connection between farmer ethics and economic conditions by exploring how economic pressures as perceived by farmers affect the ethical attitudes and behaviors of farmers. Our hypothesis is that there is a correlation between the economic pressures and a deterioration of farmer ethics. Although we examine empirically the ethical *attitudes* of farmers rather than their actual *behavior*, we draw on cognitive dissonance theory to argue that our findings have implications for farmer behavior.

Background Literature

Although relatively little literature exists examining farmer ethics, there is a considerable literature examining the ethics of people in business generally. Since "it is important also to remember that a farmer is a businessman" (Edwards, 1991, p. 75), lessons derived from the business ethics literature might also apply to agricultural production.

The causes and correlates of ethical decision-making and behavior is an extensively researched subject (Collins, 2000; O'Fallon and Butterfield, 2005; Treviño, Weaver and Reynolds, 2006). The causes of unethical conduct are complex, and no single explanation or theory can account for all cases of questionable conduct. However, most explanations offered as to why people engage in unethical behavior can be grouped into dispositional (i.e., inner determinant) and situational (i.e., outer determinant) factors (see Zimbardo, 2007, ch. 1; Staub, 1978, ch. 2). Dispositional explanations focus on personality and cognitive considerations, such as the role of moral awareness, moral judgment, and moral intent on ethical behavior (Rest, 1986) and on the normative frameworks people use when making moral judgments, including the role of emotional commitment (Frank, 1996; Elster, 1998) and self-identity (Bergman, 2004). Situational explanations, in contrast, focus on the context within which behavior occurs, such as the organizational climate (Victor and Cullen, 1988), including the incentives and disincentives

created by the organizational structure (James, 2000). Although ethical decision-making is expected to be a function of both kinds of factors, it is helpful to distinguish between dispositional and situational factors and the tradeoffs that often arise between the moral proclivities of individuals and the contextual incentives affecting their actions.

For example, James (2002) develops a model in which a principal must assess the relative temptation of an agent to exploit a principal's trust. James shows how two major classes of variables affect the relative temptation of an agent to engage in an unethical action (in the case of the model, to exploit trust). The first class consists of environmental factors, such as the formal laws, informal norms, and enforcement mechanisms of society that define what is gained or lost when an agent behaves ethically. The idea is that from a consideration of situational or environmental factors only, an agent "is honest or trustworthy *only* if he has an incentive to be" (James, 2002, p. 232; emphasis in original). The second class consists of the disposition, proclivities and other personal characteristics of the agent. James models the tradeoff between incentives and one's moral bearings to show that "the stronger are the environmental incentives for an agent to exploit trust, or the weaker are the agents' moral qualities, other things being equal, the greater will be the relative temptation the agent faces" (p. 233).

An important application of research on the tradeoffs between the dispositional and contextual forces is the examination of how business, economic and other pressures affect ethical decision-making. Unfortunately, empirical evidence on the effect of outside pressures is mixed. Butterfield, Treviño and Weaver (2000) provide evidence that, contrary to expectations, a survey of business professionals finds that the greater the perceived competitive environment, the more aware the professional are of ethical situations. Similarly, Hunt and Jennings (1997) find that high performance teams are more likely to make ethical decisions. However, Robertson and Rymon (2001) find that the more competitive the performance environment is for purchasing agents, as measured by perceived pressures to perform, the more likely they are to engage in deceptive behavior. More generally, Shleifer (2004) argues that in some circumstances economic competition might encourage individuals and firms to engage in unethical conduct, such as the use of child labor, the condoning of corrupt business practices, and the manipulation of earnings. However, he also argues that the same competitive forces that promote these practices also increase economic growth and incomes, and economic growth can lead to improved ethics,

because as "societies grow richer, their willingness to pay for ethical behavior – through both government enforcement and private choice – increases as well" (p. 10).

Clearly more research is needed to identify and understand factors affecting ethical proclivities of people generally (Treviño et al, 2006) and in the specific context of economic pressures, particularly when applied to agriculture. This paper contributes to the literature by exploring the effect of perceived economic pressures on farmer ethics.

Conceptual Framework

We consider the class of actions in which there is a tradeoff involving money and ethics. Examples might include cheating on one's taxes, utilizing low quality inputs when high quality was promised, dumping waste in the environment, not returning a money-filled wallet one finds on the road, or engaging in an activity that one finds morally objectionable because of a perceived material gain. These are in contrast to decisions that do not involve a money-ethics tradeoff. For example, there may be some circumstances in which there is a net monetary gain in doing the right thing (e.g., reputation for integrity increases the number of business prospects). In other cases, a question of ethics may not have a monetary impact (e.g., a parent lies to her child about the quality of the child's artwork) or a decision to increase one's income may not involve a question of ethics (e.g., a farmer chooses to sell 60 rather than 80 percent of his corn harvest).

We examine the relationship between perceived economic pressures and farmer ethics by utilizing the model developed by Hendrickson and James (2005). In their model, an agent has a choice that involves a money and ethics tradeoff. They show that an agent who is constrained from taking his most preferred action may be inclined to engage in unethical behavior. Following Hendrickson and James, we assume that the utility of agents is affected by their ethics, money wealth, and other factors, and that the utility function can be expressed according to standard neoclassical economic principles. If preferences are well-behaved, agents face a tradeoff in the ethics-money space as depicted in Figure 1. The vertical axis measures the level of the agent's ethics, which we assume can be represented along a continuum. At this point we make no distinction between a change in ethics expressed from a behavioral perspective (e.g., lying, cheating or stealing) and ethics conceived as a cognitive consideration (e.g., rationalizing or being tolerant of lying, cheating or stealing). Let e_M represent behavior that is fully ethical. For example, e_M might represent never telling a lie, or believing it is never justifiable to return less

than 100 percent of the money to the owner of a lost wallet. A lower level of ethics, for instance at point e_1, represents behavior that is less than fully ethical, such as modestly padding expense accounts or keeping a small fraction of money found in a lost wallet. The horizontal axis measures the level of money wealth held by the agent.

[Figure 1 about here]

If an action involves an ethics-money tradeoff, then the straight line represents the additional dollars gained for a given decrease in ethics or the budget constraint with respect to ethical behavior; we call this the agent's *ethics constraint*. Thus, if an agent's level of ethics is initially at point e_M with a level of money at m, the gain to the agent of lowering his ethics to e_1 is to increase money wealth to m_1. An agent who is fully unethical can obtain a maximum level of money at m_M. The slope of the ethics constraint is determined by the particular circumstances giving rise to the disincentives reflected by the ethical dilemma. In some cases, the monetary gain from a given reduction in ethics may be small, while in other cases, it may be large. Cases in which a decision involves a question of ethics but does not result in a monetary impact are indicated by a vertical ethics constraint. A horizontal constraint represents actions that have only monetary impacts. The amount of money indicated at point m is wealth that arises from ethically neutral activities. Actions that result in additional wealth but at a loss of ethics are indicated by points on the money axis to the right of m.

The curved line represents the agent's indifference curve, which is the combination of ethics and money that produce constant utility. An increase in utility is indicated by an indifference curve located to the right of Utility$_1$. The steepness of the indifference curve reflects in part the disposition of the agent to lower his ethics in exchange for a given increase in money. For agents with indifference curves that are relatively steep, a small increase in money can result in a large decrease in ethics. For agents who view themselves as possessing relatively high "morals," in the sense that they are not easily tempted to engage in unethical conduct, the indifference curve might be relatively flat, suggesting that very large increases in money are needed to induce them to lower their ethics. Conventional neoclassical economic analysis predicts that given the agent's preferences and a situation reflecting a cost of ethics as depicted in Figure 1, the initial level of ethics and money chosen by the agent is at point A. In other words, point A represents the combination of personal ethics and money wealth that maximizes the agent's utility.

We are interested in the effects of perceived economic pressures on the ethics of farmers. The most direct way that economic pressures are manifested is by an adverse shock or a sudden loss of wealth. In the case of agricultural production, this might occur if a storm destroys a farmer's storage of grain, a contract grower routinely requires an integrator to upgrade his chicken barns, a farmer must unexpectedly repair a piece of expensive farm equipment, a farmer or member of his family requires a costly medical procedure, or a change in governmental rules increases the cost of compliance. In this case then there would be a leftward shift of the ethics constraint, as illustrated in Figure 2a, resulting in a decrease of money wealth from m_1 to m'_1. The combination of ethics e_1 and money m'_1 is at a utility curve that is to the left of $Utility_2$. The agent could increase utility by increasing income to m_2, but doing so requires a reduction in his personal ethics to e_2, indicated at point B.

[Figures 2a and 2b about here]

A second but indirect form of economic pressure can be expressed most aptly as an increase in the cost of ethics (or decrease in the price of money in terms of ethics) – that is, by a change in the slope of the ethics constraint, as illustrated in Figure 2b. For example, an unexpected increase in crop prices might create an incentive for farmers committed to a futures contract to renege on the agreement. Similarly, more liberal crop insurance payments may create an increased incentive for farmers to commit crop insurance fraud. In these cases, there would be in a reduction in ethics as well as an increase in money earned, illustrated at point C.

Of course, economic pressures might reflect a combination of shifting and rotating ethics constraints, such as a dramatic reduction in farm prices. Regardless of the precise nature of the economic effect or manifestation of a reduction in ethics, this simple model reveals that economic pressures generally could lead agents to lower their ethics by engaging in or rationalizing activities that are relatively unethical, unacceptable or objectionable. This leads to the following hypothesis.

Hypothesis 1: An increase in the perceived economic pressures a farmer faces will result in a lowering of that farmer's ethics.

The connection between (un)ethical actions and attitudes towards ethical problems

A change in ethics could be expressed from either a behavioral or cognitive perspective. Although we are particularly interested in the ethical behavior of farmers, our empirical evidence

(described below) measures attitudes towards ethical issues, such as an expression of being more tolerant or accepting of unethical conduct in others. To link ethical behavior with attitudes, we utilize cognitive dissonance theory introduced by Festinger (1957). According to cognitive dissonance theory, conflicts between a person's beliefs and behavior create dissonance, which the person can reduce either by changing beliefs or behavior. If a person believes himself to be a good person but engages in an action he knows to be bad, the person will often modify his beliefs about the action, for example, by justifying the action or convincing himself the action was really not bad. For instance, a health-conscious person who indulges in eating chocolate may rationalize that behavior by noting the health benefits associated with consuming dark chocolate and may even begin to refer to it as a health food. (Unlike milk or white chocolate, dark chocolate is a potent source of antioxidants (Serafini, et al, 2003) and has been shown to lower high blood pressure (Taubert et al, 2003).) Importantly, "the theory of cognitive dissonance shows that the path between attitudes and action runs in both directions" (Tavris and Aronson, 2007, p. 56). In other words, people who engage in unethical actions will tend to change their attitudes so as to view the action as less unethical, while people who are relatively tolerant of unethical actions would be more disposed to engage in unethical conduct than people who have strong opinions that the actions are wrong, other things being equal. Hence, we propose the following revision of hypothesis 1:

> **Hypothesis 1a:** An increase in the perceived economic pressures a farmer faces will result in a lowering of that farmer's ethics, manifested as an increased willingness to justify or rationalize unethical conduct or to express attitudes more accommodating of unethical conduct.

According to cognitive dissonance theory, people tend to seek out information that is consistent with their beliefs (Frey, 1986; Nickerson, 1998). That is, they tend to accept or recognize information that confirms their beliefs but discount or ignore information that is inconsistent with their beliefs. Thus, farmers willing to tolerate unethical conduct might also be more likely to observe it; conversely, the more frequently a farmer admits to observing questionable practices, the more willing he may to view the action as relatively acceptable. This results in our second hypothesis.

Hypothesis 2: An increase in the frequency a farmer reports observing an unethical action will result in a lowering of that farmer's ethics, manifested as an increased willingness to justify or rationalize the unethical conduct or to express attitudes more accommodating of the unethical conduct.

In summary, if we obtain information on farmer attitudes towards various ethical scenarios, we expect to find that a negative relationship between perceived economic pressures and the ethics of farmers, other things being equal. We also expect to observe a negative correlation between the stated frequency of observing unethical actions within the community and our measure of farmer ethics.

Methods and Procedures

We surveyed a sample of 3,000 agricultural producers from the population of Missouri (USA) producers with farm sales in excess of $10,000 in 2005. According to USDA data, 41 percent of all Missouri farms had sales in 2005 exceeding $10,000. The sample was stratified by size to ensure a statistically representative sample across size categories. The survey design consisted of a heads-up postcard followed by two waves of surveys. We mailed the first wave of surveys in late February 2006, with a second mailing to non-respondents completed in March 2006. Of the 2,941 surveys that were deliverable, we received 692 responses, representing an overall response rate of 23.5 percent. This response rate is not unusual for surveys mailed to farmers early in the calendar year (see Pennings, Irwin, and Good, 2002). We asked farmers for their opinions on a variety of ethical scenarios, how satisfied they were with their life and financial situation, as well as about their personal and farming backgrounds. The average respondent in our sample farmed approximately 940 acres, had 31 years of farming experience, and had sales in 2005 of between $50,000 and $250,000. For this study we focus only on respondents who were active producers, thus excluding landowners and retired farmers. Removing observations with missing variables resulted in a sample size of about 400.

We operationalize ethical attitudes from responses given to a series of 16 different ethical scenarios that might arise within an agricultural or rural setting. For each scenario, we asked respondents to answer two questions. First, we asked them to indicate on a 7-point Likert scale (where 1 represents acceptable and a 7 represents unacceptable) "the degree to which you believe

the activity is acceptable or unacceptable." Second, we asked respondents to indicate on a 5-point Likert scale (where 1 represents never occurs and a 5 represents always occurs) "whether you think the scenario never or always occurs in your community, or something in between." Table 1 lists each scenario, along with the average ethic (range 1-7) and average perceived frequency that action occurs (range 1-5).

[Table 1 about here]

We assume that each scenario represents an unethical action. We also assume a response towards the "acceptable" (i.e., lower) end of the scale represents a greater tolerance for the unethical action, whereas a response towards the "unacceptable" (i.e., higher) end of the scale represents a greater intolerance for the unethical action, which we define as indicating a higher level of ethics. In other words, we assume responses to these ethical scenarios can be interpreted as follows: Other things being equal, if one producer's belief that a particular ethical scenario is relatively unacceptable (e.g., he scores the action as a 6 on the acceptable to unacceptable scale of 1 to 7), while another producer believes the same scenario is relatively acceptable (e.g., she scores the action as a 3), then we say the attitudes of the first producer are more consistent with a higher level of ethics than those of the second producer.

We use principal component analysis with varimax rotation to identify underlying dimensions of ethical attitudes giving rise to the responses to the 16 ethical scenarios. This analysis resulted in three eigenvalues that were greater than one, suggesting that we focus on three underlying dimensions. We accepted scale items with factors loadings greater than 0.40 in our interpretation of the underlying dimensions, which are listed in Table 1 according to how they grouped in each of the three dimensions. Only one of the 16 scale items did not group into any of the three underlying dimensions (i.e., it had a factor loading less than 0.40 for each dimension), while two items were grouped into two of the three dimensions. Cronbach alphas for the first two component dimensions exceed the customary limit of 0.70 (alphas of 0.76 and 0.73 respectively), while the third factor has a Cronbach alpha of just under that level (alpha of 0.66). One possible reason for the low Cronbach alpha of the third dimension is that the components represent an amalgam of ethical scenarios that are too dissimilar to be influenced by one construct. Because the Cronbach alpha for the third dimension is less than 0.70, we recognize that caution must be exercised in our use of this indicator.

The first dimension consists of seven individual scale items. Interestingly, each of these items reflects a scenario in which physical or financial harm could befall some members of society as a result of the unethical action. For example, the scale items with the largest loadings are continuing to use herbicides that are found in community wells, mixing low quality with high quality grain, and telling a buyer that crops are organic when in fact chemical fertilizers and pesticides were use. For this reason, we identify this dimension as ethical problems that are "*Harmful*." The second dimension consists of five scale items, which reflect issues of right or wrong as determined by law or contract. For example, the factors with the largest loadings are failing to report a rebate as income, claiming depreciation for a truck used by other family members, and brown bagging genetically-modified seed in violation of licensing requirements. Therefore, we identify this dimension as ethical problems that are "*Unlawful*." The third dimension consists of factors that are not necessarily harmful or illegal; rather, they are examples of practices that some people may consider merely inappropriate or "*Bad Form*," hence the name for this grouping.

We constructed our ethics variables by summing the scale items identified for each of the three underlying components weighted by their respective factor loadings. Thus, the variable *Harmful* is the sum of the seven individual scale items identified from the principal component analysis weighted by each item's factor loading. The variables *Unlawful* and *Bad Form* are created by summing the weighted five scale items identified for these two groupings respectively. Table 2 presents the means, standard deviations and ranges for these variables (as well as for all variables used in our analysis). We assume that the higher the values of *Harmful*, *Unlawful* and *Bad Form*, respectively, the greater are the respondent's ethics for each dimension (or, conversely, the less tolerant or accepting a farmer is of the collection of scenarios comprising the construct).

[Table 2 about here]

Because we expect that there is not a single measure of economic pressure, we consider different ways in which pressures might be felt or manifested. To this end, we operationalize economic pressure from responses given to the following three questions:

How impossible is it to make a living if farmers followed all government rules and regulations? We expect that farmers who believe it is difficult or impossible to follow all rules and regulations may be inclined to rationalize unethical conduct. To test this hypothesis, we use

the following question asked in the *Farm Futures* survey reported by Knorr (1991). "It would be impossible to make a living if farmers followed all government rules and regulations." Respondents were asked to select one of the following options: strongly disagree, somewhat disagree, neutral, somewhat agree, strongly agree, and don't know. We expect a negative relationship between this variable and our measures of farmer ethics.

How much freedom of choice and control do farmers feel they have over the way their life turns out? Farmers who feel considerable economic pressures may also feel that they have little free choice and control in their lives. Therefore, we expect that farmers who believe they have freedom and choice and control will be less likely to rationalize or condone unethical conduct. To test this hypothesis we use the following question taken from the World Values Survey (see Inglehart, et al, 2005): "Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Using the scale from 1 to 10, indicate how much freedom of choice and control you feel you have over the way your life turns out." We expect a positive relationship between this variable and farmer ethics.

How satisfied are farmers with the financial situation of their households? Farmers who face considerable economic pressures may not be as satisfied with their household finances as farmers not constrained by economic factors. To test this relationship, we use another question derived from the World Values Survey: "How satisfied are you with the financial situation of your household? Using the following scale [from 1 to 10], indicate where you would put your satisfaction with your household's financial situation." We expect a positive relationship between this variable and our measures of farmer ethics.

Definitions and summary statistics for these explanatory variables as well as control variables are given in table 2. We control for farm size, whether farmers raise animals, the age of the farmer, the farmer's religiosity, and farmer gender. Regarding farm size, there is some evidence that in smaller firms workers are more ethically sensitive than workers in larger firms (see Collins, 2000). However, more recent research suggests firm size is not an important factor in ethical decision-making (see O'Fallon and Butterfield, 2005), suggesting that there may not be significant differences between small and large farms. We have no *a priori* expectation of how production of animals will affect farmer ethics, although it is possible that farmers who raise farm animals might be more sensitive to issues of harm, particularly as they relate to or are

affected by their animals. The effect of age is ambiguous, while religiosity is generally positively related to ethical proclivities (O'Fallon and Butterfield, 2005). When differences are identified, women tend to express higher levels of ethical sensitivity than men (Collins, 2000).

The econometric specification of our model is as follows:

$$FarmerEthics = a_0 + bEconomicPressureVariable + cPerceivedFrequency$$
$$+ \sum_k d_k ControlVariables_i + ErrorTerm$$

We estimate this equation using a Tobit (censored regression) model, because the dependent variable has arbitrarily censored low and high values. Marginal effects of a change in the dependent variable for a given unit change in an independent variable are calculated by multiplying the estimated coefficient times the probability that the dependent variable lies within the range of minimum and maximum values (see Greene, 2000, ch. 20).

Results

Of the scenarios listed in Table 1, the actions that farmers considered to be the most unethical, as defined by a perceived "unacceptable" value of 6 or 7, are planting part of a field but claiming crop damage to the entire field, telling buyers that crops are organic when they are not, continuing to use herbicides that are found to seep into water wells, and claiming that a mixture of low and high quality grain is high quality. More than 70 percent of respondents scored each of these scenarios as either a 6 or 7 on the 7-point Likert scale, suggesting a relatively strong consensus that these actions are unacceptable. In contrast, several scenarios listed in Table 1 had low percentages of respondents indicating the actions as either a 6 or 7, suggesting a relative tolerance for the action or lack of consensus that the action is unethical. Examples include forcing a farmer to fulfill a forward contract at a loss, decreasing cage space for poultry, withholding roughage from veil calves, and outbidding a neighbor on rental farmland.

Generally, those actions that farmers considered to be the most unethical, as measured by the percent of respondents coding the action as either a 6 or 7, were those that had the potential of causing harm (i.e., were elements of the *Harmful* component), although there is a range in the consensus of how unacceptable the items are (e.g., in the case of *Harmful* actions, the percent indicating 6 or 7 ranges from nearly 80 to about 42 percent). The average percent of respondents reporting a 6 or 7 for the items grouped as *Harmful* is 65.5 percent. For the items grouped as

Unlawful, the average percent of respondents indicating a 6 or 7 is 54.6 percent. Actions that tended to be the most tolerable in terms of the mean ethics rank, however, tended to group into the *Bad Form* component; the average percent of respondents reporting a 6 or 7 for these items is 34 percent. Thus, there seems to be a relative progression in terms of how respondents perceive the acceptability of various ethical dilemmas. *Harmful* actions are judged to be more unethical than *Unlawful* ones, on average, which tend to be perceived as more unethical than *Bad Form* actions.

The table of correlations (Table 3) shows that our measures of economic pressures are correlated with the *Harmful*, *Unlawful* and *Bad Form* measures of farmer ethics. The signs for *Harmful* and *Unlawful* indices are negative for the impossible rules measure and positive for the control over life and satisfaction with finances measure, consistent with our first hypothesis. Interestingly, the signs for the *Bad Form* index are contrary to expectations. There is also a significant and negative correlation between perceived frequency of each construct and the level of ethics. Considering all 16 ethical scenarios together, the correlation between mean ethic and perceived frequency is -0.61, suggesting that the more frequently a farmer believes the action occurs, the more tolerant he or she is of the action, consistent with our second hypothesis.

[Table 3 about here]

Tables 4a and 4b present the results of the Tobit analysis, controlling for farm and farmer characteristics, in which the dependent variable is the first two composite ethics variables created as a result of the principal component analysis, *Harmful* and *Unlawful*. We omit the analysis for the *Bad Form* composite because the low Cronbach alpha suggests the individuals items comprising the composite are too dissimilar. In the case of ethical problems that are harmful and unlawful, the effect of economic pressures is as predicted. The more impossible farmers feel it is to follow all government rules and regulations, the more tolerant they are of unethical actions that are harmful and unlawful (i.e., the lower their level of ethics, as indicated by the negative coefficient). Farmers who feel they have control over their lives and farmers who are satisfied with their finances indicate that the ethical problems are more unacceptable. By implication, farmers who believe they have less control over their lives or who are less satisfied with their finances are relatively more accepting of the unethical practices embodying the *Harmful* and *Unlawful* constructs.

[Tables 4a and 4b about here]

The relationship between perceived frequency of occurrence and our measures of farmer ethics is as expected, except the effect is not significant in the case of harmful actions. We also find that farmers who raise animals have higher levels of ethics when ethical issues involve harm, but the presence of animals on the farm does not appear to significantly affect attitudes towards unlawful problems. Age is positively correlated with farmer ethics that result in harm and are unlawful. Generally, male farmers are more accepting of unethical actions than female farmers, although the significance disappears for unlawful problems. Religious activity has a positive effect on harmful and unlawful actions, but the effect is significant only in the case of unlawful scenarios. Finally, we find no significant effect of farm size on farmer ethics.

Commentary

We find that there is a relatively strong consensus among respondents that situations resulting in harm are more unacceptable than those that are wrong because they are defined so by law or contract or because they are socially inappropriate. Not surprisingly, this suggests that farmers recognize that not all ethical problems are the same and that some are more serious (i.e., unacceptable) than others. We also find evidence that perceived economic pressures are correlated with a greater willingness of farmers to tolerate unethical conduct and that the more common a respondent believes an action is in his community, the more accommodating he is of it. Interestingly, the relationship between perceived economic pressures and farmer ethics is reversed for actions that are ethically questionable but are not necessarily harmful or unlawful.

That a negative correlation exists between perceived economic pressures and farmer ethics involving issues of harm and the law or contract suggests that farmers may be willing to consider the tradeoffs that arise by causing harm or violating the law. We can only speculate on what farmers believe the costs are, particularly those he is willing to internalize, when rationalizing his beliefs. For example, in the case of causing harm or violating the law, the cost to the farmer when "caught" might be the payment of compensatory, civil or even criminal damages. If farmers consider only these types of costs when deciding whether to engage in or condone unethical actions without a consideration of the larger impacts on society of their actions, then balancing the costs and benefits of actions that are harmful or unlawful would involve relatively standard economic considerations. In the case of ethically-questionable actions that do not readily fit into the harm or law/contract categories, enforcement of the ethical

standards may not involve strictly economic considerations. It could be that "bad form" problems are enforced by the community or by community norms and therefore these farmers feel they have to conform to be part of a community. Harmful or unlawful scenarios, in contrast, are enforced by the "outside" in most cases and probably matter only if one is caught.

Another consideration is that there is significant attention regarding the corporate social responsibility of business firms, including firms within the agrifood industry (Maloni and Brown, 2006). Corporate social responsibility refers to the expectations stakeholders place on the actions of a corporation. Stakeholders include not only stockholders but also employees, suppliers, consumers and other groups with an interest in how a firm performs. In the case of agribusiness firms, the dimensions that one might consider from a corporate social responsibility framework include concerns regarding animal welfare, biotechnology, health and safety, fair trade and other issues (Maloni and Brown, 2006). While most discussions of corporate social responsibility focus on the responsibility of the (agri)business firm, Goodstein and Wicks (2007) argue that business ethics requires a two-way communication with emphasis placed not only on the actions of the business firm but also on the actions of suppliers, customers and other stakeholders, because different stakeholders have different "regimes of responsibility." To this end, our study highlights the importance of considering the ethics of farmers qua agribusiness stakeholders in addition to that of agribusiness firms acting as downstream consumers of the inputs provided by agricultural producers. Similarly, there is increasing interest in food products that are produced in ethical ways (i.e. protections for farmworkers, fair compensation through the food chain, fair trade, humane treatment of animals, etc.). If ethical attitudes and behavior are related, as postulated by cognitive dissonance theory, then will farmers be willing or able to take advantage of these opportunities if they are tolerant of, and possibly resorting to, less ethical practices because of perceived economic pressures? While participating in these new market niches may increase ethical attitudes and behavior on the part of farmers, they may be as likely to exclude certain farmers from participation based on their economic situation.

The larger implication of these findings may be in how we choose to develop and implement policies relating to agriculture, food and the environment. Rules that place constraints on or that increase substantially the pressures farmers feel might exacerbate certain kinds of ethical problems, since farmers could respond to these rules by, over time, becoming more tolerant or accepting of unethical practices. Farming has the potential to have a very important

impact on environmental questions – clean air, clean water – and farming practices are some of the first points of intervention in achieving these public goods. In addition, more and more food safety issues (e.g. animal disease, fecal contamination, foodborne pathogens) are arising directly at the point of production. Understanding the situational components that influence ethical attitudes, and thereby ethical behavior, becomes a necessity in ensuring society's access to good, safe food, clean water and clean air. If farmers feel tremendous economic pressures and loss of autonomy and thus have a higher tolerance for some ethically questionable situations, then it may be wise for society as a whole to work to alleviate these pressures in order to achieve our desired public goods. In other words, society can develop and enforce regulations that promote the kinds of public goods it wants, but it might do as much good to find ways to alleviate financial pressures on farmers in order to get the same results. While we don't have evidence that farmers are treating the land, animals or the food they produce badly from this survey, we do provide a context for the way they may be thinking about these issues. Accordingly, we believe it is very important for scholars, policy makers and community leaders to understand the context within which farming occurs and to consider how situational factors and the environment within which agricultural production occurs affect the ethical attitudes and behaviors of farmers in order to develop policies that will achieve desired public goods.

References

Baumel, C. Phillip, and Paul Lasley, "Hedge-to-Arrive contracts represent ethics crisis for farmer co-ops," *American Cooperation*, 1997, 189-194.

Bergman, R. "Identity as motivation: Toward a theory of the moral self," in D.K. Lapsley and D. Narvaez, (eds.), *Moral Development, Self and Identity*. Mahwah, NJ: Lawrence Erlbaum, 2004, 21-46.

Butterfield, Kenneth D., Linda K. Treviño and Gary R. Weaver (2000). "Moral awareness in business organizations: Influences of issue-related and social context factors," *Human Relations*, 53(7), 2000, 981-1018.

Collins, D. "The quest to improve the human condition: The first 1,500 articles published in the *Journal of Business Ethics*." *Journal of Business Ethics* 26(1), 2000, 1-73.

Comstock, Gary, "Ethics," in G. Comstock (ed.), *Life Science Ethics*, Ames, IA: Iowa State Press, 2002, 5-16.

Edwards, S. "Farming's rewards at risk," in C.V. Blatz (ed.), *Ethics and Agriculture: An Anthology on Current Issues in World Context*. Moscow, ID: Univ of Idaho Press, 1991, 75-83.

Elster, J. "Emotions and economic theory," *Journal of Economic Literature*, 36(1), 1998, 47-74.

Festinger, Leon, *A Theory of Cognitive Dissonance*, Stanford, CA: Stanford Univ. Press, 1957.

Frank, Robert H., "What price the moral high ground?" *Southern Economic Journal*, 63(1), 1996, 1-17.

Frey, D. "Recent research on selective exposure to information." In L. Berkowitz (ed.), *Advances in experimental social psychology* (vol. 19). New York: Academic Press, 1986, 41-80.

Goodstein, Jerry D., and Andrew C. Wicks, "Corporate and stakeholder responsibility: Making business ethics a two-way conversation," *Business Ethics Quarterly*, 17(3), 2007, 375-398.

Greene, William H., *Econometric Analysis*, 4/e, Upper Saddle River, NJ: Prentice Hall, 2000.

Hallaq, John H., and Kirk Steinhorst, "Business intelligence methods – how ethical," *Journal of Business Ethics*, 13(10), 1994, 787-794.

Hendrickson, Mary and Harvey S. James, Jr., "The ethics of constrained choice: How the industrialization of agriculture impacts farming and farmer behavior," *Journal of Agricultural and Environmental Ethics*, 18(3), 2005, 269-291.

Hunt, Tammy G., and Daniel F. Jennings, "Ethics and performance: A simulation analysis of team decision making," *Journal of Business Ethics*, 16(2), 1997, 195-203.

Inglehart, Ronald, et al. *European and World Values Surveys Integrated Data File, 1999-2002, release I, 2nd ICPSR version*. Ann Arbor, MI: ICPSR, 2005.

James, Harvey S., Jr., "Reinforcing ethical decision making through organizational structure," *Journal of Business Ethics*, 28(1), 2000, 43-58.

James, Harvey S., Jr., "On the reliability of trusting," *Rationality & Society*, 14(2), 2002, 229-256.

James, Harvey S., Jr., "On finding solutions to ethical problems in agriculture," *Journal of Agricultural and Environmental Ethics*, 16(5), 2003, 439-457.

James, Harvey S., Jr., "The ethical challenges in farming: A report on conversations with Missouri corn and soybean producers," *Journal of Agricultural Safety and Health*, 11(2), 2005, 239-248.

Knorr, Bryce, "Ethics: The American farmer," *Farm Futures*, January 1991, 10-13.

Lanier, Ray, "The extent to which ethics and values undergird the rural development process," in T.T. Williams (ed.), *Human Resources Development in Rural America … Myth or Reality*, Tuskegge, AL: Tuskegee University Human Resources Development Center, 1986, 122-130.

Lorin, Janet Frankston, "Consumers still worried about spinach, produce after E. coli contamination," Associated Press Financial Wire, February 4, 2007.

Maloni, Michael J., and Michael E. Brown, "Corporate social responsibility in the supply chain: An application in the food industry," *Journal of Business Ethics*, 68(1), 2006, 35-52.

Nickerson, Raymond S., "Confirmation bias: A ubiquitous phenomenon in many guises," *Review of General Psychology*, 2(2), 1998, 175-220.

O'Fallon, Michael J., and Kenneth D. Butterfield, "A review of the empirical ethical decision-making literature: 1996-2003," *Journal of Business Ethics*, 59, 2005, 375-413.

Pennings, J.M.E., S.H. Irwin, and D.L. Good. "Surveying farmers: A case study." *Review of Agricultural Economics*, 24(1), 2002, 266-277.

Rappaport, Allen, and Robert A. Himschoot, "Ethics perceptions of American farmers: An empirical analysis," *Journal of Business Ethics*, 13(10), 1994, 795-802.

Rest, J.R. *Moral Development: Advances in Research and Theory*. New York, NY: Praeger, 1986.

Robertston, D.C., and T. Rymon, "Purchasing agents' deceptive behavior: A randomized response technique," *Business Ethics Quarterly*, 11(3), 2001, 455-479.

Serafini, Mauro, Rossana Bugianesi, Giuseppe Maiani, Silvia Valtuena, Simone De Santis and Alan Crozier, "Plasma antioxidants from chocolate," *Nature*, 424(6952), 2003, 1013.

Schoon, Ben, and Rita Te Grotenhuis, "Values of farmers, sustainability and agricultural policy," *Journal of Agricultural and Environmental Ethics*, 12, 2000, 17-27.

Shleifer, Andrei, "Does competition destroy ethical behavior?" NBER working paper no. 10269.

Staub, Ervin, *Positive Social Behavior and Morality: Social and Personal Influences*, New York, NY: Academic Press, 1978.

Sullivan, Shannon, Elizabeth McCann, Raymond De Young, and Donna Erickson, "Farmers' attitudes about farming and the environment: A survey of conventional and organic farmers," *Journal of Agricultural and Environmental Ethics*, 9(2), 1996, 123-143.

Struthers, Cynthia B., and Janet L. Bokemeier, "Myths and realities of raising children and creating family life in a rural county," *Journal of Family Issues*, 21(1), 2000, 17-46.

Taubert, Dirk, Reinhard Berkels, Renate Roesen, and Wolfgang Klaus, "Chocolate and blood pressure in elderly individuals with isolated systolic hypertension," *Journal of the American Medical Association*, 290, 2003, 1029-1030.

Tavris, Carol, and Elliot Aronson, *Mistakes Were Made (But Not by Me)*, New York, NY: Harcourt, 2007.

Thompson, Paul B., *Agricultural Ethics: Research, Teaching, and Public Policy*, Ames, IA: Iowa State University Press, 1998.

Treviño, Linda K., Gary R. Weaver and Scott J. Reynolds, "Behavioral ethics in organizations: A review," *Journal of Management*, 32(6), 2006, 951-990.

Victor, B., and J.B. Cullen, "The organizational bases of ethical work climates." *Administrative Science Quarterly*, 33, 1988, 101-125.

York, Geoffrey, "Beijing admits guilt in pet-food scandal; Two food-export managers arrested as officials acknowledge companies illegally added chemical to product," *The Globe and Mail* (Canada), May 10, 2007.

Young, Katherine D., C.R. Shumway, and Harold L. Goodwin, Jr., "Profit maximization: Does it matter?" *Agribusiness*, 6(3), 1990, 237-253.

Zimbardo, Philip, *The Lucifer Effect: Understanding How Good People Turn Evil*, New York, NY: Random House, 2007.

Table 1. Ethical scenarios with composite scales from principal component analysis.

Component	Scale items	Mean ethic (scale 1-7)	Percent indicating 6 or 7	Mean freq (scale 1-5)	Factor loading	Corr with total
Harmful C.α = 0.76	A farmer plants only a part of a field and later suffers crop damage, but he files a crop insurance claim on the entire field.*	6.429	79.7	2.793	0.5386	0.49
	A farmer tells buyers his crops are organic even though some chemical fertilizers and pesticides were used.[†]	6.355	77.4	2.750	0.6205	0.51
	A farmer continues using an herbicide, even though traces of it have begun to show up in wells in his community.[†]	6.147	72.8	2.768	0.7023	0.48
	A distributor mixes cheap, low-quality grain with high-grade grain and labels the product as 100% top-grade grain.	6.123	71.5	3.190	0.6786	0.43
	A farmer disposes of pesticide containers without rinsing them as required by law.*,[†]	5.841	62.1	2.985	0.5330	0.53
	A farmer applies a pesticide in windy conditions in order to keep to a production schedule.	5.546	53.6	3.063	0.5977	0.48
	A corn farmer fails to maintain a proper refuge between genetically modified (GM) and non-GM corn.	5.119	41.6	2.959	0.5461	0.43
Unlawful C.α = 0.73	A farmer plants only a part of a field and later suffers crop damage, but he files a crop insurance claim on the entire field.*	6.429	79.7	2.793	0.4147	0.56
	A farmer disposes of pesticide containers without rinsing them as required by law.*,[†]	5.841	62.1	2.985	0.4164	0.57
	A farmer growing a genetically-modified crop retains part of his harvest as seed in violation of the licensing requirements of the seed supplier.	5.327	53.0	2.697	0.5989	0.46
	A rancher claims business depreciation on a pickup truck used primarily by other members of his family.[†]	4.912	39.7	3.315	0.7827	0.50
	A farmer fails to report a $100 herbicide rebate as income to the IRS.[†]	4.761	38.3	3.180	0.7982	0.44
Bad Form C.α = 0.66	A bank forecloses on a farm loan without first offering to reduce the interest or principal owed.[†]	4.911	44.5	3.123	0.6385	0.39
	A farmer outbids a second farmer on rental farmland, even though the second farmer has farmed that land for years.	4.486	36.6	3.651	0.7334	0.48
	A producer withholds all roughage from the diet of his veal calf in order to improve the quality of the veal meat.[†]	4.748	32.5	2.844	0.4815	0.44
	A grower decreases the amount of room he provides for his laying hens in order to cut costs and increase production.	4.660	29.0	2.911	0.4030	0.40
	A grain elevator forces a farmer to fulfill a forward contract by buying grain from the market at a loss, even though drought caused the farmer's yields to be low.[†]	4.070	27.5	3.352	0.7924	0.33
None	A dairy farmer knowingly hires illegal aliens for his milking crew in order to keep costs low.	5.307	51.2	3.054	n/a	n/a

Note: For Mean ethic and Mean frequency, a higher value indicates perceived less acceptable and more common, respectively. C.α refers to Cronbach alpha. * Same scale item in Harmful and Unlawful component. [†] These scenarios are, with permission, taken or adapted from the *Farm Futures* survey reported by Knorr (1991).

Table 2. Variable names and summary statistics.

Variables and Definitions	Mean	St. Dev
Dependent Variables: Each variable is the sum of individual scale items identified from principal component analysis of respondent attitudes towards different ethical scenarios, with responses to each item ranging from 1 (acceptable) to 7 (unacceptable)		
Harmful: Sum of 7 ethical scale items related by the fact that the action could result in harm, weighted by factor loading (ranging from 7.2 to 29.5).	25.080	3.558
Unlawful: Sum of 5 ethical scale items related as actions that are either prohibited by law or contract, weighted by factor loadings (ranging from 3.0 to 21.2).	15.892	3.692
Bad Form: Sum of 5 ethical scale items reflecting cases that could be interpreted as being undesirable, though not necessarily illegal or harmful, weighted by factor loading (ranging from 3.0 to 21.3).	13.803	3.9468
Explanatory and Control Variables		
Frequency observed: How frequently respondent believes each ethical scenario occurs in their community, with responses ranging from 1 (never occurs) to 5 (always occurs).		
_**Harmful**: Weighted sum of 7 responses for Harmful scale items.	12.375	2.521
_**Unlawful**: Weighted sum of 5 responses for Unlawful scale items.	9.181	2.059
_**Bad Form**: Weighted sum of 5 responses for Bad Form scale items.	9.878	1.794
Impossible rules: Likert scale variable for question, "It would be impossible to make a living if farmers followed all government rules and regulations," ranging from 1 (strongly disagree) to 5 (strongly agree).[†]	3.077	1.251
Control over life: Likert scale variable for question, "How much freedom of choice and control do you feel you have over the way your life turns out?" ranging from 1 (none at all) to 10 (a great deal).[‡]	7.851	2.018
Satisfied with finances: Likert scale variable for question, "How satisfied are you with the financial situation of your household?" ranging from 1 (extremely dissatisfied) to 10 (extremely satisfied).[‡]	6.545	2.415
Larger than average farm: Dummy variable equal to 1 if respondent had a farm size greater than the average of 940 acres in the sample; zero otherwise.	0.301	0.459
Farm animals: Dummy variable equal to 1 if respondent raised at least one of the following farm animals: hogs, beef, dairy, goats, or poultry; zero otherwise.	0.771	0.421
Age category: Respondent's age, where 1=less than 35, 2=35 to 44, 3=45 to 54, 4=55 to 64, 6=65 and older	3.515	1.149
Active in church: Dummy variable equal to 1 if respondent attended church at least once a month; zero otherwise.	0.634	0.482
Male: Dummy variable equal to 1 if respondent is a male; zero otherwise.	0.942	0.234

[†]Adapted from the *Farm Futures* survey reported by Knorr (1991). [‡]Adapted from the World Values Survey (see Inglehart, 2005).

Table 3. Correlations.

Variable	D1	D2	D3	Y1	Y2	Y3	X1	X2	X3	C1	C2	C3	C4	C5
Harmful (D1)	1.00													
Unlawful (D2)	**0.58**	1.00												
Bad form (D3)	**0.29**	**0.21**	1.00											
Frequency_Harmful (Y1)	*-0.09*	**-0.19**	*-0.09*	1.00										
Frequency_Unlawful (Y2)	-0.01	**-0.20**	**-0.15**	**0.73**	1.00									
Frequency_Bad Form (Y3)	*-0.09*	**-0.15**	**-0.10**	**0.53**	**0.48**	1.00								
Impossible rules (X1)	**-0.13**	**-0.13**	*0.10*	**0.17**	**0.08**	0.06	1.00							
Control over life (X2)	**0.20**	**0.13**	-0.06	**-0.11**	*-0.07*	*-0.08*	**-0.16**	1.00						
Satisfied with finances (X3)	0.07	**0.18**	**-0.18**	-0.07	-0.07	*-0.11*	-0.04	**0.50**	1.00					
Larger than average farm (C1)	-0.03	0.04	*0.09*	**-0.16**	**-0.17**	0.07	**-0.13**	**0.09**	0.01	1.00				
Farm animals (C2)	**0.13**	0.03	0.01	0.05	0.07	0.01	0.07	0.07	**0.11**	**-0.27**	1.00			
Age category (C3)	**0.18**	**0.15**	0.01	-0.03	-0.04	0.00	0.01	-0.01	**0.18**	**-0.11**	**0.09**	1.00		
Active in church (C4)	0.05	**0.10**	-0.02	-0.04	-0.01	-0.00	-0.03	**0.12**	**0.14**	0.05	-0.00	0.02	1.00	
Male (C5)	**-0.12**	-0.02	**-0.12**	**-0.10**	-0.06	**-0.10**	-0.04	0.04	*0.07*	**0.11**	-0.06	-0.05	0.01	1.00

Bold indicates significant at 5%; italics indicates significant at 10%

Table 4a. Tobit analysis of factors affecting ethical variable *Harmful*.

Variable	Model 1	Model 2	Model 3
Intercept	27.162***	23.02***	25.992***
	(1.783)	(1.699)	(1.590)
Impossible rules	-0.426***		
	(0.163)		
Control over life		0.427***	
		(0.095)	
Satisfied with finances			0.136*
			(0.080)
Frequency observed _Harmful	-0.077	-0.103	-0.120
	(0.083)	(0.073)	(0.075)
Larger than average farm	-0.086	-0.183	-0.018
	(0.442)	(0.407)	(0.416)
Farm animals	1.085**	1.037**	1.211***
	(0.470)	(0.438)	(0.451)
Age category	0.549***	0.480***	0.385**
	(0.179)	(0.160)	(0.166)
Active in church	0.535	0.305	0.403
	(0.411)	(0.372)	(0.381)
Male	-2.828***	-2.631***	-2.862***
	(1.039)	(0.893)	(0.920)
Σ	3.615***	3.544***	3.628***
	(0.147)	(0.133)	(0.136)
N	343	406	405
Num obs at lower bound	1	1	1
Num obs at upper bound	28	34	34
Prob (lower<*Harmful*<upper)	91.5%	91.4%	91.4%
Log Likelihood	-881.2	-1034	-1040

Standard errors in parentheses. Marginal effects calculated by multiplying estimated coefficient with probability the dependent variable is within the upper and lower bound range.
***significant at 1%, **significant at 5%, *significant at 10%

Table 4b. Tobit analysis of factors affecting ethical variable *Unlawful*.

Variable	Model 1	Model 2	Model 3
Intercept	19.798[***]	14.042[***]	15.525[***]
	(1.699)	(1.624)	(1.489)
Impossible rules	-0.444[***]		
	(0.169)		
Control over life		0.376[***]	
		(0.101)	
Satisfied with finances			0.267[***]
			(0.082)
Frequency observed _Unlawful	-0.340[***]	-0.338[***]	-0.336[***]
	(0.103)	(0.094)	(0.095)
Larger than average farm	0.063	0.095	0.291
	(0.466)	(0.436)	(0.436)
Farm animals	0.124	0.236	0.284
	(0.463)	(0.468)	(0.472)
Age category	0.498[***]	0.560[***]	0.487[***]
	(0.184)	(0.166)	(0.168)
Active in church	0.642	0.864[**]	0.931[**]
	(0.429)	(0.393)	(0.394)
Male	-1.576	-0.584	-0.745
	(0.992)	(0.807)	(0.812)
Σ	3.866[***]	3.846[***]	3.856[***]
	(0.155)	(0.142)	(0.143)
N	361	429	428
Num obs at lower bound	1	1	1
Num obs at upper bound	34	44	44
Prob (lower<*Unlawful*<upper)	90.3%	89.5%	89.5%
Log Likelihood	-944.0	-1113	-1111

Standard errors in parentheses. Marginal effects calculated by multiplying estimated coefficient with probability the dependent variable is within the upper and lower bound range.
[***]significant at 1%, [**]significant at 5%, [*]significant at 10%
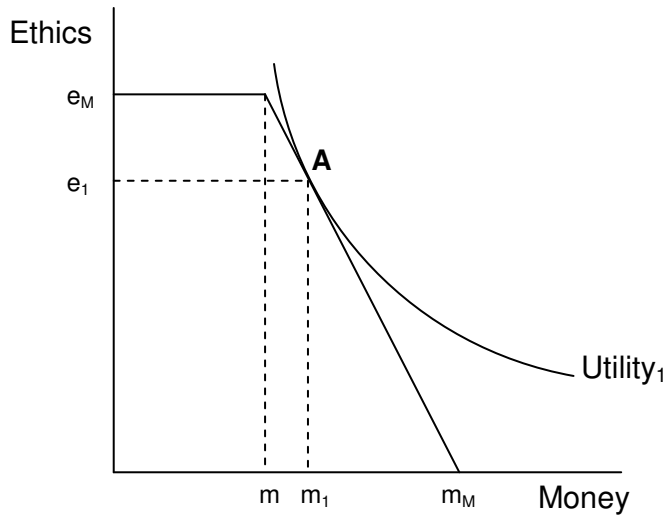
Figure 1. The tradeoff between ethics and money, based on Hendrickson and James (2005).
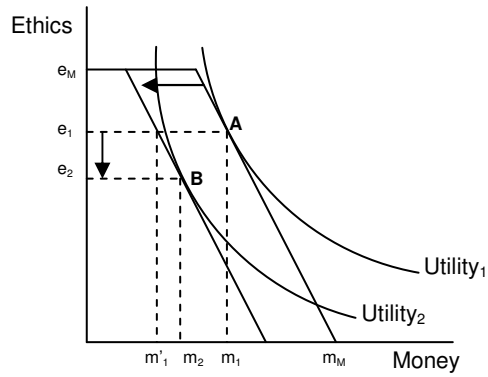

Figure 2a. How a sudden loss of wealth, represented by the leftward shift of the ethics constraint, results in a reduction in ethics.
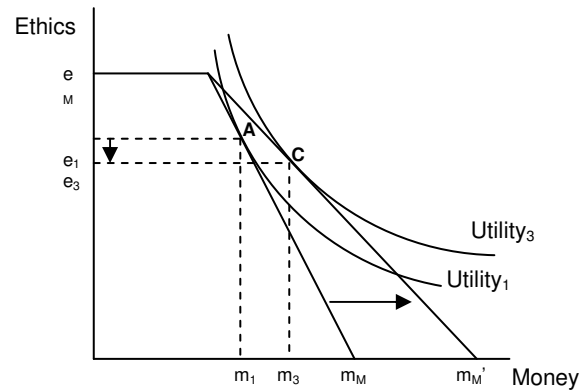
Figure 2b. How a change in the cost of ethics, represented by a rotation of the ethics constraint, results in a reduction in ethics.