

The Evidence for Property Devaluation Due To the Proximity to CAFOs

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Introduction

A major reason concentrated animal feeding operations (CAFOs) locate in a region is that the region has a reputation for loose environmental regulations and lax enforcement of those regulations. The stricter environmental regulation and enforcement becomes, the more likely that CAFOs will locate elsewhere. CAFOs attracted by loose regulation and enforcement have an incentive to pollute and, lacking other local controls, the sole deterrent to this incentive is the ability to implement and enforce meaningful regulation.

Failure to enforce regulations can have dire economic consequences for regions in which CAFOs locate. The pollution associated with CAFOs is not compatible with the in-migration necessary to stimulate the economy of rural areas. In fact, this pollution, unless controlled, can stimulate out-migration. A 2000 study of 1,106 rural communities by Gómez and Zhang of Illinois State University found that economic growth rates were 55% higher in areas with conventional hog farms as opposed to those with larger hog operations even though these growth rates had been almost identical in the studied communities before the advent of larger hog operations. This study also showed that communities with heavy hog concentration suffered larger population losses than those with conventional hog operations.¹

The Incentive to Pollute:

Industrial Organization and Contract Issues Involved in Operating CAFOs

If a region fails to control the pollution generated by CAFOs, it will attract even more CAFOs. The rationale for both the incentive to pollute and for the attraction of other polluters is based on the following economic theory:

There is a strong incentive for agricultural producers to develop formal partnerships through cooperatives, joint ventures, and vertical arrangements.² These partnerships usually create two contracts of interest when a CAFO enters a region:

1. The contract with the CAFO's vertical organization that controls all aspects of animal production from the feed and breeding through the actual marketing of the meat. In this case, information is equally shared and the motives of all players are a consistent and singular search for profit.
2. The contract between the residents in the region and the CAFO where asymmetrical information exists.

When a CAFO enters a rural region, it strikes a bargain with the rural residents in that region. This implicit contract is usually formed around stated, but not legally enforceable promises of jobs and economic impact on the region. The CAFO promises these things in return for land, water, access, power and the other factors required for the CAFO to operate. This implicit contract also implies a certain physical relationship with the region that manifests itself in the presence (or lack) of pollution, traffic, resource consumption, etc., that arise from the operation of the CAFO.

The CAFO is typically well informed about the legal contract with its organization and the implied contract with the region because it signed the legal contract and it extended the offers on which the regional contract is based. But the residents of the region are privy to very little information about the CAFO's explicit contract with its organization. As a result, there is an incentive on the part of the CAFO to shift costs between the contracts based on each party's access to information about those costs. The party with the least information about costs is most likely to have those costs shifted in its direction.

Local, county, state, and national laws and policies on the environment and on zoning are important determinants of the location of CAFO facilities.³ Further, these laws and policies affect the ability of CAFOs to control information about their operations and they are major determinants of the role the CAFO plays in the physical, social and economic environment of a region. Thus, the physical relationship between the CAFO and the region is essentially predetermined by the rules and policies that are already in place in the region--and this set of rules and policies is often based on the pivotal assumptions that:

1. all agricultural operations are similar to the conventional, closed systems that previously dominated agriculture.
2. animal waste, as a natural product, while annoying, is essentially harmless, and not as toxic as human waste.
3. most animal-raising operations can be treated as if the waste that results is from ruminant animals.

As a result of these assumptions, when a CAFO enters a region it encounters a set of rules that have generally been structured to control a kind of agricultural production whose inputs and waste byproducts are not representative--either in quantity or chemical composition--of the Concentrated Animal Feeding Industry. The question here is not whether the CAFO can make an implied contract with the residents of the region. Instead, the issue is that in addition to this contract being physically defined around incorrect assumptions, it will also be based on asymmetrical information that heavily favors the CAFO.

Problems with Asymmetrical Information

Asymmetrical information is created when one of two individuals in an agreement or contract possesses more information than the other individual about the nature of the bargain. When only one party—the CAFO—possesses critical additional information about the contract, they can use this proprietary information to gain an advantage in the bargain. Such a contract is likely to increase the profits of the CAFO by shifting the operating costs of the CAFO either to the region in which it is situated or, through some mechanism of pollution migration, to another region further removed from the CAFO. The certainty of this outcome follows directly from existence of asymmetrical information about the operation of the CAFO and from the motivation of the CAFO owners.

As opposed to this model, capitalism is based on the concept of full and free information about all aspects of the market—something that was easy to achieve under the traditional agricultural model where no single player was big enough to affect the market or, by implication, to operate in such a manner that it could hide information on and shift its costs. In theory, the permitting process used to evaluate CAFO applications should insure that the citizens of a region are fully informed about all aspects of the CAFO’s proposed operation. If this was indeed the case, there would be no asymmetrical information. However, the nature of the permitting process—which is usually based on incorrect assumptions that all agricultural projects are conventional in nature—allows the CAFO operator to acquire an operating permit while withholding significant amounts of information from the residents of the region.

This creates an agreement (contract) between a CAFO and the residents of the region based on non-enforceable promises of jobs and economic development, but for which most of the information needed to validly assess the impact of the CAFO on the physical, social and economic environment is withheld from the public and is available only to the owners/operators of the CAFO. The result is that the permitting agency has inadvertently created what economists call a moral hazard, a process that occurs when one party is better informed than the other about the characteristics of the transaction. By definition, a moral hazard leads to lower efficiency and higher costs for the party that is least informed (in this case, a higher cost to the region that hosts the CAFO.)

The Likelihood of Attracting Additional Polluters

Having created a moral hazard, the region is now faced with a second condition called adverse selection. There is now an incentive for additional producers who also want to shift costs to the residents of the region to migrate to the area. Thus, additional CAFOs are likely to be attracted to the region. As Milgrom and Roberts note, adverse selection is “a kind of precontractual opportunism that arises when one party to a bargain has private information about something that affects the other’s net benefit from the contract and when those whose private information implies that the contract will be especially disadvantageous for the other party agree to a contract.”⁴

Casson has determined how the relationship that develops between the region and the CAFO must be controlled to stop the unwanted behavior (in this case, pollution). He finds that:

the crucial question... is whether the other party to the transaction can be trusted. There are two fundamental approaches to engineering or creating trust. The one most commonly used in much of the Western world is to monitor performance through the institutional and legal system and penalize those parties that do not fulfill their negotiated commitments. The alternative approach to engineering trust is to manipulate the incentive structure so that individuals fulfill their commitments based on rewards they receive rather than penalties they incur.⁵

For CAFOs, the issue of trust is directly tied to out-of-area ownership and the asymmetrical information in the agreement between the CAFO and the community. Since the motivation of a CAFO is to create profit, not to control pollution or engage in any of the other social benefits the region may desire, the CAFO can only be trusted to act in its own self interest. The interests of the region could initially be protected by disclosure of full information concerning the operations of the CAFO during permitting. However, the CAFO usually controls the information in this part of the process. The only recourse for the region is monitoring by knowledgeable regulators.

Unfortunately, monitoring measures compliance with laws that are often crippled by the same underlying assumptions about the nature of agriculture listed earlier in this section. CAFOs are able to use laws based on loose, conventional agricultural standards to avoid pollution controls that would more fully assign the costs of waste to the CAFOs. In addition, most of the factors that make it difficult to get information on proposed CAFO operations during the permitting process also complicate attempts to monitor CAFO operation. This leads to a condition called low separability. Separability is "...the feasibility to see who has done the work. With low separability, the principal [in this case, the region] will face either high control costs or intense cheating."⁶

So far, the history of CAFO operations shows that cheating is likely. And it is made even more likely by the decision on the part of many regulating agencies to rely on citizen complaints instead of more costly professional monitoring. If monitoring fails or is not effectively implemented, the only other option for controlling the behavior of the CAFO is through economic incentives. But, as previously noted, a powerful economic incentive structure is already in place and this incentive structure has been formalized in the explicit contract between the CAFO, its own organization, and its investors. This contract directs the CAFO to operate in such a way as to maximize profit, and if it can do this by shifting the costs of its waste to its neighbors in the region, that is how it will operate.

Counteracting the Incentive to Pollute

There is only one way out of a dilemma where one partner in a contract is likely to cheat and where failure to curtail that activity will result in other potential cheaters locating in the area: full and complete enforcement of regulations. Therefore, before any regulatory body approves a CAFO, it should be able to promise the region where the pollution impact of the CAFO is felt that there will be immediate and full enforcement of all regulations—and that detection of

polluting activities is not the responsibility of the local residents, but that it will be a daily emphasis of professional regulators.

If this does not occur, the problems experienced by neighbors of the CAFO can be so severe they can cause diminished enjoyment of the neighbors' private property and, in some cases, so degrade the neighbors' ability to use their property that they are unable to utilize the property for any of the purposes a normal property owner would be expected to pursue. The pollution problems that accompany a CAFO are, at their core, centered around the issue of economic costs that are transferred from the CAFO to the residents without compensation—and this is the specific problem enforcement of environmental regulations is supposed to prevent.

In fact, in a legal case decided in Iowa in 2002, the Court stressed this specific point. Sioux County District Judge Dewie J. Gaul ordered a CAFO--Pork Xtra LLC-- to pay \$100,000 to Joseph and Linda Gacke of Garfield Township when the couple's home dropped \$50,000 in value after the CAFO was built. The Gackes sued Pork Xtra, alleging the company's 4,000-head hog farm near their home was a nuisance that attracted bugs and harmed their emotional and physical health. In the past, Iowa courts usually threw out lawsuits by neighbors who alleged CAFOs were a nuisance, but Judge John Ackerman ruled in August, 2001 that throwing these suits out was unconstitutional because larger farms could interfere with the use of a neighbor's property and the right to seek compensation.⁷

Demonstrated Economic Losses—The Evidence

The magnitude of the economic loss suffered by the neighbors of a CAFO can be significant. The costs shifted to the residents of the region by a CAFO adversely affect the value of neighboring properties. This, in turn, lowers the taxable value of these properties and shifts costs to all other residents of the region. Palmquist et al., in a 1995 study in North Carolina, found that neighboring property values were affected by large hog operations based on two factors: the existing hog density in the area and the distance from the facility. The maximum predicted decrease in real estate value of 7.1 percent occurred for houses within one-half mile of a new facility in a low hog farm density area. 1997 and 1998 updates of this study found that home values decreased by \$.43 for every additional hog in a five mile radius of the house. For example, there was a decrease of 4.75% (about \$3000) of the value of residential property within 1/2 mile of a 2,400 head finishing operation where the mean housing price was \$60,800.^{8 9}

A 1996 study by Padgett and Johnson found much larger decreases in home value than those forecast by Palmquist. In Iowa, hog CAFOs decreased the value of homes in a half-mile radius of the facilities by 40%, within 1 mile by 30%, 1.5 miles by 20% and 2 miles by 10%.¹⁰ In addition, an Iowa study found that while some agricultural land values increased due to an increased demand for “spreadable acreage,” total assessed property value, including residential, fell in proximity to hog operations.¹¹

An eighteen month study of 75 rural land transactions near Premium Standard's hog operations in Putnam County, Missouri conducted by the departments of Agricultural Economics and Rural Sociology at the University of Missouri found an average \$58 per acre loss of value within 3.2 kilometers (1.5 miles) of the facilities. This study primarily evaluated farmland

without dwellings. These findings were confirmed by a second study at the University of Missouri-Columbia by Hamed, Johnson, and Miller that found that proximity to a hog CAFO does have an impact on property values. Based on the averages of collected data, loss of land values within 3 miles of a hog CAFO would be approximately \$2.68 million (US) and the average loss of land value within the 3-mile area was approximately \$112 (US) per acre.¹²

Real estate appraisers have also noted the problems associated with property values and large hog operations. In an article in the July, 2001 Appraisal Journal, John Kilpatrick found that

"[w]hile the appraisal profession has only begun to quantify the loss attributable to CAFOs,.....diminished marketability, loss of use and enjoyment, and loss of exclusivity can result in a diminishment ranging from 50% to nearly 90% of otherwise unimpaired value."¹³

Tax Impacts of Reduced Property Values

A compilation by the Sierra Club of tax adjustments by county assessors in eight states documented lower property taxes for neighbors of facilities like those run by Premium Standard Farms. Local property tax assessments were lowered in Alabama, Illinois, Iowa, Kentucky, Maryland, Michigan, Minnesota and Missouri by ten to thirty percent due to their close proximity to the corporate hog CAFOs.

Diminishment effects continue to be considered when tax valuations are determined around large CAFOs. On September 14, 2001, the Clark County, Illinois Supervisor of Assessments announced the county has established an assessment abatement for the fifty residential homes around the Welsh Farm (a hog CAFO) in northeast Clark County. For those homes within a half-mile of the hog production facility, there is a 30 percent reduction in the property assessment; 25 percent reduction within three-quarters of a mile; 20 percent within one mile; 15 percent within one and one-quarter miles; and 10 percent for one and one-half miles.¹⁴

¹ Gómez, Miguel I. and Zhang, Liying, Impacts of Concentration in Hog Production on Economic Growth in Rural Illinois: An Econometric Analysis, Presented at the American Agricultural Economics Association annual meeting in Tampa, Florida, July 31 to August 2, 2000.

² Jones, Elund, "The Role of Information in US Grain and Oilseed Markets," Review of Agricultural Economics, vol. 21, no. 1, Spring/Summer, 1999, pp. 244-247.

³ Hennessy, David A. and Lawrence, John D., "Contractual Relations, Control, and Quality in the Hog Sector," Review of Agricultural Economics, vol. 21, no. 1, Spring/Summer, 1999, p. 53.

⁴ Milgrom, P. and Roberts, J., Economics, Organization, and Management, Prentice Hall, Englewood Cliffs, NJ, 1992.

⁵ Casson, M., The Economics of Business Culture: Game theory, Transaction Costs and Economic Performance, Clarendon Press, Oxford, England, 1991.

⁶ Sauvee, Loic, "Toward an Institutional Analysis of Vertical Coordination in Agribusiness," in The Industrialization of Agriculture, Jeffrey S. Royer and Richard T. Rogers, eds., Ashgate Press, Brookfield, VT, 1998, p. 55, 56.

⁷ AP, "Judge awards Iowa couple \$100,000 in hog lot lawsuit", Amarillo Globe-News, Amarillo, Texas, <http://www.amarillonet.com>>www.amarillonet.com, January 12, 2002, p. 3E.

⁸ Palmquist, R.B., F.M Roka, and T. Vukina. 1997. "Hog operations, environmental effects, and residential property values," Land Economics, 73, 114-124.

⁹ Palmquist, R. B. et al., "The Effects of Environmental Impacts from Swine Operations on Surrounding Residential Property Values," Department of Economics, North Carolina State University, Raleigh, North Carolina, 1995.

¹⁰ Park, Dooho, Lee, Kyu-Hee, and Seidl, Andrew, "Rural Communities and Animal Feeding Operations," Department of Agricultural and Resource Economics, Colorado State University, Ft. Collins, CO, 1988.

¹¹ Ibid.

¹² Mubarak, Hamed, Johnson, Thomas G., and Miller, Kathleen K., The Impacts of Animal Feeding Operations on Rural Land Values, Report R-99-02, College of Agriculture, Food and Natural Resources, Social Sciences Unit, University of Missouri – Columbia, May 1999, <http://www.cpac.missouri.edu>.

¹³ Kilpatrick, John A., "Concentrated Animal Feeding Operations and Proximate Property Values", *The Appraisal Journal*, July, 2001, p. 306.

¹⁴ Beasley, Lee, "Cumberland hog facility may affect Clark County homeowners property values", Guardian Publishing, September 24, 2001.