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U.S. Animal Agriculture Policy: Problems and Solutions

Steven Mischel

ABSTRACT. The current structure of the American animal agriculture industry is fraught with problems. The externalities from it are disproportionately felt by a limited group of individuals who lack political and economic influence. Far from taxing or constraining animal agriculture, The U.S. Government subsidizes its worst practices through a variety of direct and indirect methods. This paper recommends four specific reforms in agriculture policy that will level the playing field for small farmers and push the industry toward greater economic efficiency.

I. Introduction

When consumers imagine the origin of their meat, milk, eggs and other animal products, they tend to think of green pastures and jovial farmers. As late as the 1950s, this may have been reasonably accurate. In reality, the US animal agriculture industry has been on a path of industrialization since the 1930's (Pew 2008, 5). Farms have come to bear a greater resemblance to warehouses or factories than to the idyllic green fields of the consumer imagination.

The agricultural industrial revolution has not been costless. Intensive animal agriculture creates air and water pollution, antibiotic resistance, declining home values, as well as concerns about environmental justice and animal rights. Due to poor policy, many costs associated with these problems are shifted to the public in the form of either externalities or taxes to pay for subsidies. As jurist doctorate candidate Kyle Landis-Marinello explained:

Companies like Tyson Foods and Cargill never pay for their contributions to the climate change, water, and topsoil crises. Nor do they pay for the pain they cause their animals by raising them in some of the most inhumane conditions imaginable. Economists call this situation a market failure (Landis-Marinello 2008, 150).

Industrial agriculture, however, is not without its benefits. In the last fifty years, US milk production has doubled, meat production has tripled, and egg production has quadrupled (Delgado 2003, 3907). In 2005, the

average American consumer spent just over 2% of his annual income, and still took home 221 lbs of meat. Thus, consumers were able to purchase 13% more meat in 2005 than they would in 1970, for about half the price (Pew 2008, 3). Thanks to industrialization, Americans could spend less and take home more than ever before.

Government has played a significant role in the shift toward greater industrialization. Subsidy and regulatory policy supported the highly industrialized segment of the industry more than smaller farmers. A thorough review of the literature reveals that poorly thought-out agricultural policies have broad and often unforeseen consequences, which affect the economic and physical wellbeing of every American. Therefore, this paper asks in its final section: what specific reforms of US policy should be implemented with respect to animal agriculture?

A. THE RISE OF INDUSTRIAL AGRICULTURE

As late as the 1950s the American agricultural industry was dominated by a large number of small farmers. A family unit usually owned each farm, and it was common for the farm to be passed from generation to generation. Most animal producers farmed crops in addition to their livestock, which provided greater diversification and allowed them to add value to their crops by feeding a portion to their animals (Starmer and Wise 2007, 2). This system began a radical transformation in the 1960s. As farm policy changed, it encouraged greater production and lower prices (Starmer and Wise 2007, 6-7).

As prices for grains fell, an inconspicuous yet revolutionary event occurred. In the mid 1960s, Wendell Murphy, a small North Carolina grain mill owner, opened the first hog feeding operation (Stith and Warrick 1995). As a grain mill operator, Murphy had an excess of useless cornhusks and other biomass that he would otherwise pay to dispose of. Instead of discarding this byproduct, he fed it to a small herd of hogs kept near the mill. This process turned waste into a valuable commodity and quickly turned Murphy from part-time schoolteacher to agricultural entrepreneur.

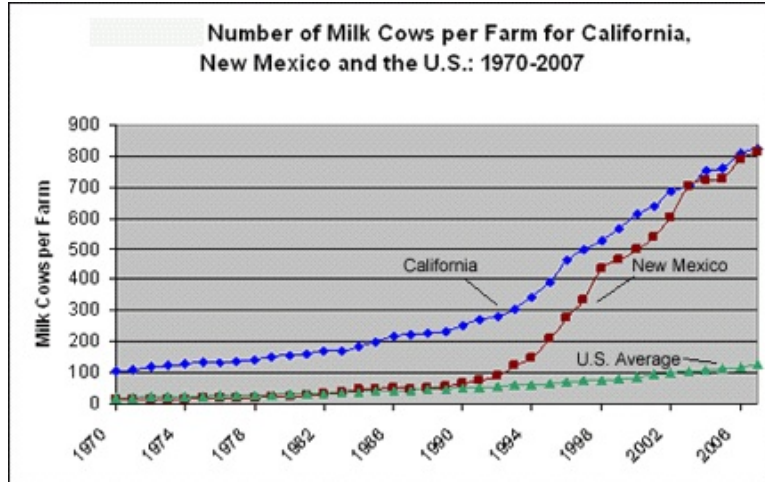
What made this process revolutionary was not the feed; after all, farmers had been feeding grains to their animals for centuries. The revolution was that Murphy was not a “farmer” in the traditional sense. Previously, animal farmers raised both crops and animals; Murphy raised only pigs and kept them in a facility geographically distant from the

source of food. He effectively took the farm out of animal farming. A new designation arose to describe these facilities: “Animal Feeding Operations” (AFOs). The EPA defines AFOs as facilities that hold animals in high density for at least 45 days a year and do not produce their own grain (Gurian-Sherman 2008, 83).

As grain prices continued to fall, the business model developed by Murphy evolved from feeding hogs scraps to buying large quantities of grain as feed. Today, 95% of a confinement-fed pig’s diet is corn and soy (Starmer and Wise 2007, 10) and 37% of all grains produced in the U.S. are used for feed (USDA 2010, 3). Almost none of the diet consists of the grasses traditionally consumed by hogs. This model has gradually spread as fewer farmers participated in mixed grain/animal production. The model was also extended to include cows, chickens, and turkeys.

As more operations of all types adopted the big confinement facility model, they bought or pushed out smaller farms through a series of anti-competitive practices and embraced ever-increasing economies of scale. Between 1982 and 2006, the number of hog farms fell by 500,000 to about 60,000 (Gurian-Sherman 2008, 15), with similar results for other animals. Despite a fall in the number of farms, the number of animals raised has remained relatively constant. This consistency was possible only through increasing farm size and concentration.

Larger and more concentrated farms raised new environmental concerns, which are discussed further in the next section. The EPA responded by creating a new class of farm, the “Concentrated Animal Feeding Operation” or CAFO. A CAFO is defined as a facility that houses more than 1,000 animal units (700 milking cows, 1,000 beef cows, 2,500 hogs, or 82,000 laying hens) and does not produce its own feed (Gurian-Sherman 2008, 83). The number of animal units produced in CAFOs increased by 91% from 1982 to 1997 (USDA 2000, A-4), making it the dominant form of animal farming in the United States.



(Center for Agriculture 2004)

The graph above describes the increasing size and concentration of animal farms in the dairy industry. The Center for Agriculture found “the average herd size for the U.S. grew from just 19 cows in 1970 to 128 cows in 2007, [an annual] growth rate of 5.1 percent” (Center for Agriculture 2004). More important than the steady rise in the national herd size is the dramatic jumps in California and New Mexico. This is indicative of a broader trend toward geographic concentration. Another example is the striking increase of hog CAFOs in eastern states like North Carolina, where two counties experienced an increase of one million hogs each in the 1990-98 time period. These trends threaten to push affected regions past their environmental carrying capacity as the air and water is contaminated by millions of gallons of animal waste (Hubbell and Welsh 98, 294).

B. SUMMARY OF ISSUES IN ANIMAL AGRICULTURE

This section describes the externalities created by the animal agriculture industry. It is important to realize all of the issues addressed are more pronounced in highly industrialized farms. Their size and geographic proximity to one another concentrate and magnify negative externalities, which are diminished by smaller or more traditional facilities.

Additionally, properly managed CAFO alternatives benefit from sustainable manure management and are more dispersed, which allows for greater environmental sustainability.

1. Air Quality

Anyone who has lived near a CAFO can tell you they do not smell pleasant. The odor can carry for miles, often attracting flies and other pests (Burmeister 2002, 72). The objection to CAFOs, however, goes beyond sensitive noses. Exposure to air from CAFOs, both by those working inside the facility and those living in its vicinity, has been linked to symptoms such as respiratory illness, diarrhea, headaches, burning of the eyes, and deterioration of the brain and nervous system (ICASH 2002). This has led prominent health advocates such as the American Public Health Association to cite more than 40 scientific studies in their call for a moratorium on CAFOs (Ikerd 2008).

2. Water Quality

Animal waste contaminates the water table in three distinct ways. The first source of contamination is the application of manure to cropland for fertilization. The chemicals and bacteria found in the manure to run off with rain or irrigation. The result is the pollution of both ground water and aquifers. (Pew 2008, 23-27) The second source of contamination is major spills. Manure is often stored in large open-air pits called "lagoons". These lagoons often swell with rain and can burst, contaminating local waterways (Gurian-Sherman 2008, 51-52). The final source of contamination is leakage from waste storage facilities. Researchers estimate leakage from an average large facility to be more than four million gallons a year (Williams 2006, 377). Ground water around CAFOs is frequently contaminated, even if there is no obvious leakage.

Water pollution poses major health risks to those who eat fish or drink from polluted sources. Pollution from animal waste is also a major cause of "dead zones," areas of extreme biological scarcity both inland and near the US Coastline (Cook 1998, under Consequences of Water Pollution). The loss of aquatic life in major fisheries poses a major threat to the US fishing industry, and water contamination leads to the closing of major beaches. The dual impact on fishing and tourism has brought

economic ruin to many coastal communities (Walsh 2008). It is important to note that CAFOs are not the only cause of these dead zones. Fertilizers, pesticides and other agricultural runoff are also likely causes. But given that animals consume more than a third of U.S. grain harvest, they account for a large part of this pollution at least indirectly (USDA 2010, 3).

3. Antibiotic Resistance

Any human patient prescribed antibiotics receives a relatively large therapeutic dose so that none of the microbes survive. If a patient were to take antibiotics in levels too low to kill off all the bacteria (referred to as sub-therapeutic) or took the drugs infrequently, it would likely lead to the evolution of drug resistant bacteria, which would endanger the wellbeing of the patient and pose a threat to public health. On the other hand, the feed industry adds sub-therapeutic levels of antibiotics to animal feed to induce them to add weight and mature faster. This practice saves the meat industry about \$1.5 billion to \$3 billion annually (NRC 1999, 185-186). Medical professionals studying the issue are fearful that antibiotic feed additives will lead to the evolution of new strains of antibiotic resistant diseases (Gilchrist et al. 2007, 314). This is no trivial matter. Antibiotic resistant infections kill 90,000 people a year and cost the US between \$4 billion and \$5 billion. Additional resistance would make the situation exponentially worse (Pew 2008, 15).

The European Union recognized the threat of emerging antibiotic resistance and responded by banning the use of veterinary antibiotics to promote growth. After antibiotics were taken from the feed “the prevalence of resistant bacteria declined in farm animals, retail meat and poultry, and within the human general population” (ScienceDaily 2005). It appears that this problem can still be solved if we act quickly.

4. Land Prices

Due to the significant hazards and inconveniences associated with living near a CAFO, it is not surprising that surrounding property is not in high demand. Herriges et al. (2005) found that property could experience a 9% decline in value when a moderate to large CAFO is constructed upwind. This is a significant cost to the local communities, and one not borne by all equally.

5. *Environmental Justice*

The EPA defines environmental justice as “fair treatment and meaningful involvement of all people, regardless of race, ethnicity, culture, income, or educational level with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” (EPA 2002). CAFOs, with all of their environmental risks, violate this principal by locating “in poor and African American rural communities, causing disproportionate adverse health and socioeconomic impacts” (ICASH). The citizens of these communities therefore receive less protection from environmental laws, and the previously mentioned hazards are born by those least financially able to cope with externalities forced on them.

6. *Animal Rights/Welfare*

Living conditions for the animals in CAFOs are deplorable by any measure. Livestock are cramped, abused, and often left to die without proper veterinary care (Matheny and Leahy 2007, 325). Because there is no economic or legal penalty for abusing animals, the practice is likely to continue. Although there is no way to put a price on the suffering, the misery felt by animals in CAFOs is not something that should be inflicted if reducing suffering is a goal. Further, there are more humane alternatives like free-range, and hoop barns, which can produce meat at similar cost (Gurian-Sherman 2008, 23-24).

7. *Production and Price*

Some have defended the rise of industrial agriculture or the subsidies it receives by arguing that it has led to increased production and lower prices. They additionally argue that the industrial model is necessary to feed America’s and the world’s growing demand for food. All three of these arguments are at best only half true.

While it is true that industrialization leads to greater production, it is not true that modern alternatives are incapable of producing at the same cost. Medium sized AFOs (animal feeding operations) can produce meat of equal or greater quality at a similar price while avoiding many of the environmental externalities of their larger competitors (Gurian-Sherman 2008, 2). A large number of studies, including those performed by the USDA, find that once profits from subsidies are excluded, medium sized

operations are about as cost effective as large CAFOs. A smaller number of studies of free-range farms find those facilities that implement new rotational grazing systems can operate at even lower cost, with virtually no environmental damage.

The second issue to consider is whether cheap animal products are in fact desirable. It is undoubtedly desirable to have an agricultural industry that is able to produce efficiently. It would, however, be highly inefficient for that industry to artificially lower prices by shifting cost to the public either through externalities or through taxes used to pay for subsidies. As was shown above, the industry shifts major environmental cost to the public and, as will be shown in the next section, is the beneficiary of major subsidies as well. Higher prices are not in and of themselves a good thing. If, however, those prices are accurate signals of the true cost of production, then economic theory suggest they will lead to a more efficient level of production.

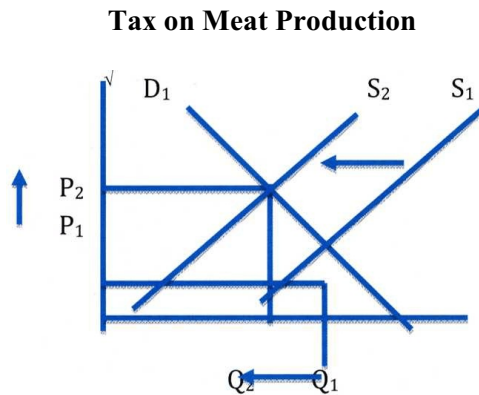
The final issue to consider is if industrialized animal agriculture is the only way to feed the growing population. As was already shown, alternative methods can produce animal products in similar quantities. There is, however, the more fundamental question of whether it is best to feed the world's growing population animal products at all. The grain-to-meat conversion ratio, that is the amount of grain required to produce a single pound of meat, varies from species to species. Cows are by far the most inefficient. It requires thirteen pounds of grain to produce a single pound of beef. Hogs are somewhat better with a conversion rate of six to one. Chickens are the most efficient with a conversion ratio of three to one (Singe and Mason 2006, Ch. 16). Any animal requires more calories of raw grain as feed than it produces in meat. There are similar inefficiencies in terms of water and fuel. If the goal is to feed a growing population, the solution would be to feed grains directly to people and not to process those foods through animals.

II. Government Interventions

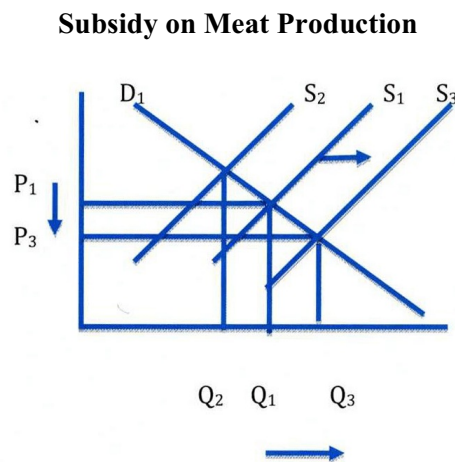
A. ANALYSIS OF GOVERNMENT INTERVENTIONS

When an industry generates negative externalities, theory dictates the industry should be taxed such that the supply curve reflects the true social cost. The result would be a shift in the supply curve from S_1 to S_2 , a

decrease in equilibrium quantity from Q_1 to Q_2 , and a rise in price from P_1 to P_2 .



In his 2008 study, Fiala found that, far from taxing the animal agriculture industry, the United States and other Organization for Economic Cooperation and Development (OECD) countries provided a variety of subsidies and support programs. This shifts the supply curve right from S_1 to S_3 . The price falls from P_1 to P_3 , and equilibrium quantity rises from Q_1 to Q_3 . The effect is to move the market ever further away from the socially optimal level.



It is difficult to estimate the exact values for each of these points, due to a variety of indirect government actions that obscure the total support given to the industry. It is even more challenging to estimate the socially appropriate level of production (Q_2), as it is difficult to estimate the total cost of the externalities. Thanks to reporting by the OECD, however, the total production (Q_3) in 2002 is known to have been 24,511,138 metric tons of beef. It is also certain that total direct producer support for the same group was close to 23 million US dollars. Using this data, and available data on the supply and demand curves for meat production, Fila estimates production was approximately 9 million metric tons greater than it would have been without any subsidy, a 37% increase (Fila 2008, 17).

It is important to recognize the shortcomings of Fila's estimates. First, he does not account for indirect subsidies or regulatory programs that may benefit the industry. I discuss these programs in more detail later in this section. Second, he aggregates all OECD countries and gives no US specific estimates for either subsidies or overproduction. Finally, Fila estimates over production only for the beef industry and does not look into the other highly subsidized sectors of animal agriculture.

Before continuing to look at the specific government support programs, it is important to consider in each case what effect the program has on the size and composition of the industry. Certainly, each program has the effect of increasing production (Moving from Q_2 to Q_3), but some programs also favor one form of production over another. As we saw in the summary of issues, large production facilities tend to be more prone to externalities than smaller or free-range operations. In spite of this, each of the federal programs examined tend to favor large CAFOs over their smaller competitors.

B. DIRECT SUBSIDIES

The Environmental Quality Incentives Program (EQIP) was originally included in the 1985 farm bill to help small farmers meet new EPA regulations. For the first seventeen years, the program was relatively small (e.g. only \$200 million in 1996) and payments were capped at a modest \$50,000 per operation. CAFOs were specifically excluded from participation. As a result, many small farmers received modest subsidies to cover their environmental compliance expenses (Gurian-Sherman 2008, 37).

The program underwent dramatic changes in the 2002 and 2008 farm bills. In 2002, the restriction on CAFO participation was lifted, and the maximum funding level per farm rose to \$450,000. The total federal outlay for the program also increased to \$400 million, and has since increased to a projected \$1.75 billion in FY 2012 (USDA 2008). The 2008 farm bill did little to change the situation. It reduced the maximum payment to \$300,000 but allowed the secretary of agriculture to make exceptions for special projects such as methane digesters. On the other hand, it specifically caps payments to organic farmers at \$80,000, 27% of the maximum amount non-organic producers can receive (USDA 2008).

Because pasture-based operations have little to no compliance cost, the EQIP subsidy overwhelmingly goes to support CAFOs. Furthermore, the USDA uses potential environmental damage, among other criteria, when prioritizing among competing projects. This allocates money to the most dangerous farms first, favoring CAFOs over smaller operations (Gurian-Sherman 2008). It also directly encourages many of the externalities discussed earlier by reducing the cost of activities associated with them. For example, EQIP encourages water pollution by paying for the transportation and spreading of manure over cropland. In total, approximately \$113 million dollars of compliance costs are shifted to the taxpayer every year through this program (Gurian-Sherman 2008, 38).

USDA milk subsidies include both direct and indirect subsidies that have often conflicting effects on the price consumers pay. The Milk Income Loss Contract (MILC) provides direct payments to farmers whenever prices fall below a level set by the government (James 2006, 4). The Dairy Product Price Support Program (DPSP), formerly the Milk Price Support Program, provides an indirect subsidy to producers. The program buys all the surplus milk offered for sale at a given price. This effectively creates a price floor and ensures producers will earn a guaranteed profit (Jesse, Cropp, and Gould 2008, 2). The MILC's direct payments encourage farmers to produce as much milk as possible as their incomes are guaranteed even if prices fall drastically. This would otherwise cause the retail price of dairy to fall except that the DPSP creates a price floor that keep retail prices high. The result is massive surplus of dairy products, which the USDA attempts to sell abroad through large export subsidies. In total, the direct subsidies cost \$4 Billion annually, and the additional costs to consumers due to price floors are difficult to estimate but are likely in the millions (James 2006, 1).

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C. INDIRECT SUBSIDIES

The Department of Agriculture makes counter cyclical payments to farmers of Title I crops when the market price falls below the cost of production. As a result, even when prices are low, farmers are encouraged to plant more corn, soy, and other commodities. Additionally, commodity farmers receive an annual direct payment for every acre of grain farmed. The result of both programs is massive over-production of grain and a steep fall in price.

The most commonly used blend of feed in hog CAFOs consists of 95% corn and soy, with similar blends for other animals. Feed costs represent 60% of a CAFO's operating expense. As a result, a reduction in corn and soy prices is a major benefit to animal farmers. Starmer and Wise (2007) employ a model commonly used to evaluate the impacts of "commodity dumping" to estimate the price reduction for corn and soy due to subsidies. They find that, because of subsidies, feed costs were 26% below the cost of production between 1995 and 2007. That translates into as much as a 15% savings for CAFOs, worth an estimated \$945 million per year in the period between 1997 and 2005 (Starmer and Wise 2007, 10-11). This disproportionately benefits CAFOs because smaller farms, particularly grass-fed farms, have little to no feed cost. The table below details the significant savings experienced by different types of CAFOs.

Indirect Subsidies to CAFOs Through Reduced Grain
Cost Between 1997 and 2005

Sector	Average Annual Subsidy	Average Annual Subsidy per CATO	Average Annual Subsidy per Large CAFO	Average Reduction in Cost of Production
Broilers	\$1.25 billion	\$766,000	na	13%
Dairy	\$733 million	\$233,000	\$588,000	6%
Eggs	\$432 million	\$388,000	na	13%
Feedlot Beef	\$500 million	\$72,000	\$2.20 million	5%
Swine	\$945 million	\$325,000	\$5.01 million	15%
Total	\$3.86 billion			

(Gurian-Sherman 2008, 34)

Starmer and Wise find that, if the subsidies for corn and soy were eliminated, it is likely that CAFOs would lose much of their current advantage. They concede, however, their estimates were made in a period of low food prices. And if the prices rose above the cost of production, CAFOs would experience a major increase in operating cost, and the indirect subsidy to CAFOs would become less significant. In 2008 and 2009, food prices, including corn and soy, were pushed up by a combination of ethanol production, increased demand, and market speculation. As they predicted, meat producers have taken a significant hit in profitability, but the market does not appear to have yet fully adjusted (Schmitz, Furtan, and Schmitz 2009). This is likely because the capital-intensive business model used by CAFOs presents significant barriers to entry and exit.

The second major indirect subsidy to CAFOs comes from the National School Lunch Program (NSLP). The NSLP, which is administered by the USDA, has been providing free or reduced-cost lunches since 1946 and currently serves about 27 million students (Yeoman 2003). Although at first it might not seem obvious that this is a subsidy program, its primary function has been to absorb agricultural excess.

The USDA buys hundreds of millions of pounds of excess beef, pork, milk and other high-fat meat and dairy products to bolster or normalize dropping prices. It then turns around and dumps those raw commodities into the National School Lunch Program (Dillard 2007, 223).

The USDA appears to have a poor eye for quality when purchasing products for students. In 1998, they bought 20 million pounds of beef from a ConAgra subsidiary, even though it had a history of *E. coli* contamination. Twelve children became sick, and one was hospitalized (Nibert 2002, 170). The program has been especially kind to the dairy industry. Despite the prevalence of lactose intolerance, especially among minorities, “schools are helpless in the face of current USDA regulations that require that cow’s milk be the only beverage permitted in all federally assisted school meal plans” (PCRM 04).

D. MARKET CONCENTRATION

As CAFOs have become more prevalent, they have also changed the structure of the meatpacking industry. Through vertical and horizontal concentration, they have pushed out or bought out much of the competition and now control meat virtually from birth to table. This level of control has come at the expense of independent firms who find it increasingly difficult to operate in this environment.

Anti-trust lawyers with the justice department use the Herfindahl-Hirschmann Index (HHI) to measure market concentration. A measure of less than 1000 is considered unconcentrated, and over 1800 is considered highly concentrated. In 1998, the HHI for the beef packing industry was 1936 (Cowan 2001, 12). To state this figure in a more understandable way, the top four firms in the beef industry controlled 84% of the slaughter capacity. Similar concentration exists in the market for pork (66%), chicken (59%), and turkey (59%) slaughter (Hendrickson and Hefernan 2007, 1-2). This concentration was the result of a long process of horizontal integration by retail meat vendors such as Tyson and Cargill. As they expanded, they bought out most of the independent slaughterhouses traditionally used by small farmers.

Expanding firms have also integrated their supply chain vertically through a system of production contracts. Under such a contract, the meat packer owns the cow, often even before it is born, and the farmer cares for it until it is old enough to slaughter. The meat packer then takes possession of the animal. After the animal is slaughtered, it is sold. Because many of the packers also own their own brand of meat products (eg. Tyson or Smithfield), the packer simply ships it to the grocery store. Under this model, control and ownership of the product can be maintained throughout the supply chain (Pittman 2005, 4-6).

Some have argued greater market control, especially the production contract system, is good for small farmers as it eliminates the risk of owning a large herd (Stokes 2006, 2-3). However, increased market control has the effect of pushing out small, independent farmers. If one company controls all of the slaughterhouses in an area, it can refuse to slaughter a farmer's animals unless he signs a production contract. This has the effect of forcing farmers to enter the corporate farming infrastructure, or leave farming altogether. The Packers and Stockyards Act bans this practice. But the GAO and USDA Inspector General both find that poor enforcement has left the law toothless (Hayes 2006, 2-3).

III. Recommendation for Change

A. FRAMEWORK

Four criteria were used to decide which recommendations to make in this paper. First, does the proposal help address one or more of the problems or causes of industrialization? Second, does the proposal favor one segment of the industry over another? Many of the changes in agricultural policy undertaken of the last fifty years were implemented without considering who would benefit. As a result, CAFOs were often the beneficiary and have managed to overpower their smaller competition. In this paper, proposals are evaluated with an eye toward restoring balance to the animal agriculture industry. Third, is it economically efficient? Many proposed reforms come with major costs in implementation or administration. This paper attempts to weed through all the proposals and find the ones that are most efficient. Finally, is it politically feasible? The agricultural lobby, the animal agriculture lobby in particular, is very powerful (Williams 2006, 371). As a result, reform of agricultural policy takes much political effort. Therefore, each proposal is evaluated on its political feasibility in addition to its practicality.

1. Reform the National School Lunch Program

The USDA should:

1. Shift funds away from meat and dairy and towards toward more fruits and vegetables
2. Provide calcium rich non-dairy alternatives such as orange juice and soymilk
3. Provide low-fat vegetarian alternatives

Reforming the National School Lunch Program meets all four of the criteria. It lowers demand for meat by eliminating an indirect subsidy, shifting the market toward the socially efficient equilibrium. Because CAFOs are the primary source of NSLP supplies, it levels the playing field for smaller producers. It comes at very little cost as the funds are merely shifted to healthier foods. And because it has the support of

dietitians, parents, and physicians, it is politically feasible (PCRM). It does not directly solve one of the problems, but by reducing demand for animal products, it will move the market toward a more socially efficient level of production.

In addition to those who would like to see NSLP reform, government efficiency advocates would like the program to be ended outright. The program is prone to fraud, both on the part of contractors who use excessive billing to charge expenses to the USDA as well as on the part of parents whose children are ineligible for the program but still participate (Edwards 2009). Schools have little incentive to investigate either case as the bill is passed along to the federal government. Some schools may even encourage parents to enroll their children fraudulently in order to receive greater aid.

This paper recommends reform rather than repeal for two major reasons. First, outright cancellation would eliminate an important social program. Almost 60% of school children participate in the program and without it many would go hungry (Levine 2008, 2). Although the program contributes to obesity amongst school children, its absence would signal an equally precarious possibility of malnutrition (Waterloo Courier 2010). Second, total cancellation is politically infeasible. Despite several waves of criticism over the decades and a radically changing political climate, the NSLP has managed to maintain overwhelming public support; perhaps because no politician is willing to put themselves in the position of taking food from schoolchildren (Lavine 2008, 9).

Many budget hawks are opposed to reform as well. Most of the reforms suggested by parents' groups are often very expensive as they include requirements for things like local, free range, and organic food. One study estimates that the increased cost for such programs could be as much as 25% (James 2009). Although this paper does not call for any of reforms beyond a shift away from animal products, it should be recognized that such reforms are not without cost.

2. Enforcement of the Packers and Stockyards Act

The USDA should increase its enforcement of the Packers and Stockyards Act and other anti-trust legislation. This will allow small and medium-sized farmers access to slaughter facilities without being forced into producer contracts. It has the advantage of not requiring any new laws as the legal and enforcement framework already exist but is underutilized.

Because new laws do not need to be passed, it is more politically feasible.

This reform is supported by economists (eg. Stokes 2006), anti-trust advocates (eg. Hayes 2006, O'Brien, Hamilton and Luedeman 2005), and producer advocates (Farmer Legal Action Group). But there are two main sources of objection. The first comes from those who argue that increased concentration and contracting reduces price volatility for producers and consumers (eg. Stokes 2006). The true benefits of risk reduction, however, are likely outweighed by the benefits of increased competition. The second is from those who argue that increased enforcement would come with a high cost. Certainly, there would be increased cost associated with trying more cases and employing more investigators, but this cost should be minimal given there is a pre-existing framework for enforcement including lawyers trained in anti-trust law.

3. Animal Rights Legislation

Current law protects wild animals and pets from many forms of animal abuse. States make exceptions, however, for animals used in agriculture. Further, the primary federal legislation, the Humane Methods of Livestock Slaughter Act, is poorly enforced. Due to a lack of legal protection, animals experience inhumane conditions both on the farm and in the slaughterhouse.

State and federal authorities should extend some legal protection to farmed animals and increase enforcement of existing laws. Such a policy could be modeled after nations with tough animal rights laws, such as Switzerland and Sweden. Under such statutes, farms undergo inspection by government veterinarians, and prosecutors aggressively pursue those accused of animal abuse (Ball 2010). Smaller farmers using humane practices would be little affected, while larger producers would be forced to internalize the cost of better animal treatment (Matheny and Leahy 2007, 343). Furthermore, because legal action can happen at either the state or federal level, it is more politically feasible and can benefit from experimentation among the states. It would, however, score low in the efficiency criteria. Nations implementing tough animal rights laws have found there are few prosecutors and judges knowledgeable about the complexities of animal rights law and the United States would likely be no different (Ball 2010).

Increased legal protection has obvious support from animal rights advocates (eg. Landis-Marinello 2008; Singer 1990) but has the surprising

support of another group. Many domestic abuse advocates (e.g. Sauder 2000) recognized that abusive individuals often begin with cruelty toward animals. They call for increased legislation and enforcement of animal rights as a way to prevent domestic violence before it begins.

On the other hand, there is criticism of this proposal. Some legal and philosophical scholars argue that animals do not deserve rights, and extending them to animals confuses our understanding of rights themselves (i.e. Cohen 2001). This paper assumes that animals have and deserve rights and does not delve into the question any further as it is covered at great length in other sources.

Still others argue that responsibility lies with the consumer, and we should vote with our wallets rather than look to the government (e.g. Webster 2002). These commentators advocate for labeling like free-range and cage-free. There are, however, significant challenges that make the implementation of a labeling system impractical. Current USDA requirements for animal welfare labels are lax and inspections are rare. If stricter labeling standards were implemented, producers would likely either engage in “window dressing” to give the appearance of welfare or abandon labeling all together (Bracke, De Greef, and Hopster 2004, 37).

4. Reform EQIP

Congress should:

1. Reduce the maximum payment any individual entity can receive from the EQIP program
2. Remove language from the law that favors large farms including:
 - Funding for manure spreading and storage
 - Funding for methane capture facilities
 - Special limits on funding to organic facilities

Reform of the EQIP program would make it look much like it did before the 2002 farm bill. A greater number of facilities and a higher proportion of small farms would receive funding which would eliminate a major imbalance in the market. It would be significantly more efficient as the compliance costs associated with high-polluting operations are shifted back to the operations themselves, and they are not paid for by

taxpayers.

It has been speculated that elimination of this subsidy alone would cause major shifts in the industry. As Ribaudo et al. found in their study of the economic effects of water quality management: “The costs of complying with manure management requirements could instigate structural and geographical shifts in the livestock and poultry sectors” (Ribaudo et al 2003, 2).

Reform of EQIP is supported by small farm advocates (e.g. Gurian-Sherman 2008; Pew 2008) who believe it will make small farms more competitive. On the other hand, efficiency and small government advocates argue for total elimination of the program (e.g. Riedl writing for the Heritage Foundation 2002). Although total elimination would be the most economically efficient option, it would not be politically feasible, which is why this paper argues for a more modest reform.

Even in its weaker form, it is worth noting that reforms like this would come with significant administrative cost. The (stated) reason the Natural Resource Conservation Service recommended the maximum payment level be raised in 2002 was to reduce inspection and oversight cost. Issuing more payments to a greater number of farmers will certainly mean greater cost, but the benefits will likely outweigh the costs.

B. REFORMS NOT INCLUDED

There are two reforms which are noticeably absent from the recommendations mentioned here. The first is a total ban on sub-therapeutic antibiotics. This could be accomplished either through legislative action or by decree of the FDA. Either action would likely receive little public support, as the issue is largely unknown to the general public, while at the same time drawing a heavy response from the pharmaceutical industry. If the recent healthcare bill is any indication, the pharmaceutical industry is one group you do not want to be opposed to. The second missing reform is an end to subsidies for corn and soy. While this would end indirect subsidies and be highly efficient, it would take on the very powerful grain farmers lobby. Additionally, the rise in grain prices in recent years has led to a significant decline in subsidies as countercyclical payments were phased out. As a result, a removal of those subsidies would have little effect but still be very politically costly.

IV. Conclusion

The current structure of the animal agriculture industry is highly inefficient and creates significant externalities. Economic theory would suggest that governments should tax producers to limit production to a level that is economically efficient. However, Fiala (2008) finds that developed countries including the US have chosen to do the opposite and provide subsidies to this industry. Moreover, Gurian-Sherman finds that the subsidies overwhelmingly aid the largest and most externality-prone producers in the industry. Hayes (2006), O'Brien, Hamilton and Luedeman (2005), the General Accounting Office, and the USDA Inspector General all find that that poor enforcement of regulations exacerbate the problem by allowing large producers to acquire significant market power.

This paper has outlined four specific ways to eliminate or reduce the externalities associated with modern animal agriculture by limiting government support to the industry. First, reduce the amount of animal products purchased through the National School Lunch Program. That will limit the indirect subsidy to the industry (Edwards 2009) and lead to better student nutrition (PCRM). Second, increase enforcement of the Packers and Stockyard Act (O'Brien, Hamilton and Luedeman 2005), which will allow more independent producers into the industry and thereby reduce the externality associated with large producers. Third, strengthen animal rights laws and enforcement. That will improve the quality of life for livestock. Finally, limit EQIP payments to create a more equitable distribution of funds and allow small operations to compete.

This paper has attempted to look at all the major issues in the industry, but there are inevitably things left out. Chalk (2004) and Seebeck (2004) both study the issue of food security and animal agriculture. This is a complex issue dealing with international trade, homeland security, and major veterinary diseases like mad cow. The second issue that is noticeably absent is global warming. FAO (2004) finds that emissions of green house gasses from animal agriculture are a major cause of global warming. Although neither issue was addressed in this paper, they merit further research.

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