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Farm Animal Welfare and Quality Verification

Adrian Uzea and Jill E. Hobbs
Department of Bioresource Policy, Business & Economics
University of Saskatchewan

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Department of Rural Economy
Faculty of Agriculture & Forestry,
and Home Economics
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Adrian Uzea and Jill E. Hobbs
Department of Bioresource Policy, Business & Economics
University of Saskatchewan

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Existing empirical evidence suggests that farm animal welfare may not be a top-of-mind issue for many consumers in North America. Nevertheless, there is pressure from animal welfare groups on food retailers and processors to implement more stringent requirements for their suppliers. Is the demand for more stringent animal welfare protocols primarily determined by a subset of consumers with very strong preferences or by an underlying change in consumer and societal preferences? Who do consumers trust for credible quality assurances with respect to farm animal welfare attributes? This paper provides a basis for further analysis of these issues. The roles of different stakeholders in delivering farm animal welfare quality assurances to consumers are first discussed. Then a social welfare analysis of the Canadian market for animal friendly pork is presented under different scenarios with respect to the strength of consumer preferences and the existence of voluntary standards versus mandatory standards. The analysis suggests that a situation of voluntary labelling that is reasonably credible is desirable as it maximizes the welfare that accrues to all players on the market. Furthermore, this scenario allows heterogeneous consumers to choose between different combinations of price and quality according to their preferences. The paper concludes with suggestions for further research.

Keywords: farm animal welfare, quality assurance, labelling, certification, heterogeneous consumers.

JEL Classifications: Q13, Q18

Introduction

As society becomes more affluent, food is increasingly differentiating by a growing array of quality attributes, from nutrition, to food safety, to convenience, to ethical and process attributes that relate to the way in which the food is produced. Animal welfare (AW), and farm animal welfare (FAW) in particular, is a process attribute that has been garnering increased attention in recent years. Increases in livestock productivity have been made possible through the use of animal confinement systems, scientific feed selection, and productivity-enhancing pharmaceuticals (Blandford, 2006). All of these improvements have facilitated a supply of affordable meat to consumers, but some contend this is a trade-off that has led to the deterioration of the conditions in which animals are raised (Norwood et al, 2007). The efforts of animal rights activists have created a new awareness of FAW that has encouraged changes in public policy and industry standards in some jurisdictions (Norwood et al, 2007, p.1).

Most developed countries have regulations related to humane animal treatment, for example, in the 1970s the European Economic Community enacted regulations related to the slaughter and transportation of animals. Consumer research suggests that European Union (EU) consumers place considerable importance on farm animal welfare; for example, this emerged as one of the clearest findings of a 2007 Eurobarometer survey[1]. In the United Stated (US), there are signs of increasing interest in FAW issues. In 2000, a number of US animal rights organizations (AROs) demanded that individual restaurant chains, e.g. McDonald's, require their suppliers to follow specific animal welfare guidelines developed by activist organizations. In an effort to respond in a manner that would demonstrate to their restaurant customers their concern

[1] EC 2007 - Special Eurobarometer 270– The average respondent rated the importance of the FAW issue at almost 8 out of 10 on a maximum scale of 10.

for FAW, several restaurant chains began to develop their own animal welfare guidelines and programs (Brown and Hollingsworth, 2005).

More recently, in January 2007 several large players in the meat industry, e.g. Smithfield Foods Inc. and Maple Leaf Foods Inc. announced that they will require their suppliers to phase out the confinement of sows in gestation crates over the next decade (HSUS, 2007). Following the same pattern, in February 2008 in a letter sent to The Humane Society of the United States (HSUS), the California-based retailer Safeway indicated that buying decisions would give preference to poultry manufacturers in North America that use or switch to an AW friendly controlled slaughter systems (HSUS, 2008)[2].

These events may signal the beginnings of an interaction between animal rights organizations and food retailers, but are these issues paramount in the minds of North American food consumers? Norwood et al (2007) elicited the opinion of US consumers with respect to FAW, finding that it was ranked relatively low compared to other social issues, i.e. human poverty, the US health system, and food safety. In 2006 Agriculture and Agri-Food Canada (AAFC) commissioned Ipsos-Reid to conduct market research regarding Canadian consumer perceptions, attitudes and behaviours with respect to food safety and food quality (AAFC, 2006). FAW was addressed indirectly. The survey suggested that FAW was not a major issue for most consumers; it was rated as important by less than 3% of respondents. When it came to the importance of different food attributes in the decision-making process, "knowing that animals were treated humanely", was only the eighth most important. Opinions of Canadian consumers

[2] In its letter to HSUS, Safeway indicated that currently it is buying pork from vendors who are phasing out the crates and will increase that business by purchasing an additional 5% in the first year, 10% in the year two and 10% in year three. In addition, Safeway indicated that it would implement a new policy that gives preferred supplier status to firms providing cage free eggs. This buying preference is intended to favour producers who are converting away from battery-cage confinement systems. Nearly 3% of the eggs that Safeway sells are from cage-free egg producers. Over the next two years, the company indicated that it plans to more than double that amount to 6% of Safeway's overall egg volume HSUS (2008).

have also been evaluated through Ipsos-Reid polls conducted in 1999, 2002 and 2004, where animal care ranked among the top concerns specifically for Canadian hog production, along with food safety and environment (Lawrence, 2007). For example, the 2004 survey showed that among the issues related to hog production, AW was ranked fourth, after production issues and environmental concerns (Jones, 2006)[3]

The limited evidence available to date suggests that animal welfare may not currently be a top-of-mind issue for many consumers in North America, and yet we are seeing pressure from animal welfare groups for food retailers and processors to adopt more stringent requirements of their suppliers. Clearly consumers are heterogeneous in their preferences, values and attitudes, and, therefore in their expectations for food products. These beliefs modify with increasing incomes (Blandford, 2006). How might these preferences change over time? Is the demand for more stringent animal welfare protocols driven primarily by a subset of consumers with very strong preferences, or does it signal an underlying change in consumer and societal preferences? Who do consumers trust for credible quality assurances with respect to FAW? This paper begins by defining the concept of animal welfare and summarizes legislative approaches to animal welfare in the EU, Australia, US and Canada. The paper then discusses the roles of different stakeholders in delivering FAW quality assurances to consumers in the Canadian context. Using the pork sector as a case study, the paper concludes with a social welfare analysis of the market for animal welfare friendly pork products under different scenarios with respect to the strength of consumer preferences for FAW products, the existence of voluntary standards versus mandatory standards, and the credibility of third party certification. Suggestions are provided for further

[3] Jones (2006) - Q3. "When thinking about hog farming, what thoughts or topics come to mind?" Answers were counted as total mentions over a sample of 1601 consumers.

research, particularly with respect to assessing consumer attitudes and preferences on the basis of the analysis presented in this paper.

Defining Farm Animal Welfare

Recently in the media and through other information sources there has been a host of different representations of specific farm production practices in their relation to animal welfare. For instance, stalls (i.e. for gestation or farrowing) are a popular choice in pig farming as they allow closer monitoring of sows' health, enable the sows to be fed/watered while facing no competition from the other sows, and protect newborn piglets from being crushed when a sow lies down unexpectedly (Saskatchewan Pork Development Board, n.d; BC SPCA, 2008). It is also argued that stalls may not provide enough room for sows to move and may deprive them of the ability to express important natural behaviours, such as roaming, rooting, and interacting with other animals (BC SPCA, 2008). As this example shows, a specific production technology may have conflicting impacts on AW, and the interpretation of what is 'good' for an animal's well-being is not always straightforward.

Currently, there is no universally accepted definition of animal welfare. Some scientists take the approach that AW relates only to the physical wellbeing of the animal, while another approach holds that AW should be expanded to include what the animals feel. A general definition of AW relates to how well the animal is coping with a situation it is in. If an animal does not appear to be coping then its welfare is considered to be at risk (DPIA, 2004). At the same time, there is a widespread acceptance of the definition of the "Five Freedoms", as elucidated by the United Kingdom Farm Animal Welfare Council (FAWC). The Five Freedoms consist of: freedom from hunger and thirst (ready access to fresh water and diet), freedom from discomfort (provision of an appropriate environment), freedom from pain, injury or disease –

prevention, freedom to express normal behaviour, and freedom from fear and distress (FAWC, 1988). Other authors, such as Fraser and Weary (2004), have identified three main aspects of welfare: biological functioning, affective states (pain), and natural living.[4]

While the above approaches for defining FAW suggest an ideal environment in which animals can be raised, they are often not consistent with many conventional farming practices. For instance, production systems, such as confinement in cages or battery stalls, restrict the ability of animals to express their natural behaviour. Certain production practices, such as restriction of feed for laying hens to induce moulting, beak trimming and toe clipping to decrease injuries to confined poultry, castration methods and early tail docking for cattle and pigs, are also seen to be inconsistent with these definitions of FAW. The transportation of animals to slaughter plants can affect the welfare of animals depending on the length of time animals are transported, the duration of rest periods, the loading densities, and their handling at loading and unloading. Finally, the method of slaughter, particularly the use of different methods for stunning animals and their handling in slaughter plants, is an element of humane treatment.

McInerney (2004) argues that although there is no formal way to measure or even rank FAW states, we do form images about what constitutes better, good or bad conditions. In this sense, he argues that, despite the animal scientists' definitions, FAW is in reality a subset of human welfare: the animals' preferences and well being having relevance only to the extent they are important to us. These challenges in defining FAW notwithstanding, society's growing interest in FAW has spurred an increase in legislative activity, codes of practice implemented by

[4] Biological functioning refers to the health and performance of animals under different production systems; affective states means pain, fear and distress displayed by animals under different systems; and natural living is the extent to which natural behaviours of animals can be accommodated by production systems (Fraser and Weary, 2004).

producer organizations, and in some cases buyer restrictions on production practices (Blandford, 2006).

Legislation Related to Farm Animal Welfare

Legislation related to animal welfare can now be found in many countries, and international initiatives also exist (Arey and Broke, 2006). Countries can prohibit certain human behaviours towards animals by proscribing it in the criminal law or they can adopt legislation that specifies a minimum level of welfare. In parallel, governments have employed rounds of consultations with the public and with the food processing industry in the development of laws intended to assure sustainable livestock production and AW (Whiting, 2005a). All of these legislative initiatives related to FAW vary from one region of the world to another. This section provides a review of legislation across the EU, Australia, the US, and Canada.

Legislation in the European Union

Many of the animal welfare issues in livestock production have been raised within the EU, which has been the main driver of legislative actions worldwide. The Council of Europe and European Commission (EC) play an important role in the formation of the EU's AW policy. Although the driving force related to animal welfare was public opinion, the EU legislation is based upon input from the scientific community, usually on reports from the EU Scientific Committee on Animal Health and Animal Welfare (Moynagh, 2000)[5].

[5] This is a scientific advisory committee of the EU composed of 19 scientists active in the field of animal health and animal welfare. The function of the Committee is to advise the Commission, which is the body charged with proposing new legislation (Moynagh, 2000).

The first EU legislation on FAW was enacted in 1974 and was related to the slaughter and transportation of animals[6]. The EU's original slaughter legislation was replaced in 1993 to restrict the slaughter of animals outside slaughterhouses and to regulate the humane slaughter of farm animals. A 2005 regulation, related to transportation, includes mandatory requirements for shorter transportation times for different species, i.e. 24 hours for pigs, as well as improved conditions for the animals during transport, i.e. permanent ventilation and access to water.

In order to have a uniform FAW policy across all of its member states, the EU included a protocol on the welfare and protection of animals in the 1997 Treaty of Amsterdam. The Treaty asked the Community and Member States to pay full regard to the welfare requirements of animals when formulating and implementing policies related to agriculture and transport. More recently, in January 2006 the EC adopted the Community Action Plan for the protection and welfare of animals for the period 2006-2010.

Other EU regulations address the issue of confinement, affecting the welfare of calves, pigs, and laying hens. For instance, several minimum standards have been approved since 1988 – the Laying Hens Directive (88/166/EEC of 7 March 1988) and 1991 – Pig Protection Directive (91/630/EEC of 19 November 1991). Council Directive 98/58/EC of 20 July 1998 prohibited the use of individual pens for calves over eight weeks old, banned the use of tethers except in specific circumstances and included requirements for feed.[7] Producers are required to comply with these AW production standards. The EU subsequently pushed the FAW barrier even further with a 1999 ban on conventional cages for laying hens to be phased-in over a number of years;

[6] The main EU legislative actions were: 1974/1993 Stunning and Killing, 1977/1995 Transport protection Transport time limit and densities, COUNCIL REGULATION (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97

[7] Council Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes.

the existing systems are being modified to comply with the more stringent standard.[8] In addition, the 1991 directive for minimum standards for the protection of pigs has been amended twice by directives 2001/88/EC and 2001/93/EC[9]. For dry sows, the new standard effectively bans the use of tethers for sows and gilts from 2006 and the use of sow stalls (except for the first four weeks of pregnancy) from 2013. Sows must be kept in groups from 4 weeks after serving until a week before the expected time of farrowing (Arey and Broke, 2006).

All the regulations outlined above have to be applied uniformly by the EU members. The EC's Food and Veterinary Office carries out audits in the member states to check the status of implementation (Horgan and Gavinelli, 2006). However, there are notable differences between the EU countries in this respect. For instance, Sweden, Denmark and the United Kingdom have adopted more stringent national FAW standards, i.e. for space allowances in some species, compared to the minimum EU standards.

Legislation in Australia

Australia's animal welfare strategy is based on an agreement among various stakeholders. The guidelines related to AW were developed by the National Consultative Committee on Animal Welfare (NCCAW)[10]. These guidelines are developed based on scientific knowledge and

[8] Moynagh (2000) states "Legislation in force sets a minimum space for caged hens of 450 square centimeters or 70 square inches per hen. This minimum requirement increases to 500 square centimeters for existing cages. By 2003 the minimum space allowance increased to 550 square centimeters for such cages. By 2012 all existing cages must meet this 750 square centimeter cage requirement. Also, each cage must be enriched. An enriched cage will have facilities in the cage to allow the birds to express normal bird behavior. For example, the birds will have the ability to stretch their wings" (p.111).

[9] Arey and Broke (2006, p. 67) - "These two new directives lay down the new minimum standards for the housing and management of pigs. Minimum general housing refer to all of the following: stocking densities, pen sizes, pigs' ability to see other pigs, keeping sows in groups, comfort and rest, construction, maintenance, cleaning, heating, ventilation, flooring, lighting, noise. Minimum general management standards refer to all of the following: inspection, treatment of sick or injured pigs, mutilations such as castration and tail docking, feeding and drinking, access to foraging material such as straw and mushroom compost, training of stockpersons".

expertise, and are suggested practices for the acceptable use and treatment of animals (MAFF, 2007).

The MAFF developed Model Codes of Practice for FAW in cooperation with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and with feedback from the other stakeholders. For instance, the recent code on the welfare of pigs is intended as a guide for all people responsible for the welfare of pigs under both intensive, deep litter and outdoor systems (MAFF, 2007).

Other sectors like the egg industry have developed similar voluntary codes of practice, i.e. the Model Code of Practice for the Welfare of Animals – Domestic Poultry 4th Edition adopted in 2001. Based on this code, the Australian Egg Corporation (AECL) is the organization mandated to help egg producers to determine if their layer cages comply with these new standards and to determine the number of hens that can be housed in their cages (AECL 2008)[11]. The 2001 standard specifies increasing the space allowance for hens in cages (i.e. from 450 cm^2 to 550 cm^2) as well as an economic life for cages of 20 years from the date the cages were commissioned[12]. These decisions have been endorsed by each State and Territory Government and are the basis for achieving improved hen welfare outcomes in Australia (AECL, 2008).

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[10] MAFF (2007) - NCCAW functions are to: assess and advise the Federal Government on the national implications of welfare issues affecting animals, advise on the effectiveness and appropriateness of national codes of practice, policies, guidelines and legislation to safeguard or further the welfare of animals and protect the national interest, liaise with other relevant bodies such as the Animal Welfare Working Group (which is a working group of the Animal Health Committee), and other functions that were required or conferred on the committee by the Minister.

[11] AECL (2008) - The AECL is a producer owned company which integrates marketing, research and development and policy services for the benefit of all stakeholders. AECL is mainly funded through statutory levies collected under the Egg Industry Service Provision Act 2002 and Australian government funds for the purposes of research & development.

[12] AECL (2008) - Cages commissioned prior to 1 January 2001 have until 1 January 2008 to meet the 1995 standards and may be stocked with a minimum space allowance per bird of 450 cm^2 (3 or more fowls (< 2.4kg) per cage) for 20 years from the date they were commissioned or until 1 January 2008, whichever is the later. Cages commissioned after 1 January 2001 must immediately comply with the 1995 standard and must be stocked at 550 cm^2.

Legislation in the United States

All US states have an anti-cruelty statute, but the legislation does not deal with farm animals specifically. The Humane Slaughter Act is the Federal law regulating the transport and the slaughter of livestock. It focuses on processors, banning specific equipment used in livestock slaughtering.

For the last few years there has been an increase in the legislative activity related to AW. Animal rights organizations (AROs) had various ballot initiatives on banning certain livestock practices at the state level. For instance, under the pressure of the HSUS, Florida voters approved a measure in 2002 that amended the state constitution by prohibiting gestation stalls in hog production. In a similar manner Arizona voters approved a measure in 2006 prohibiting gestation stalls and veal stalls (Siemens, 2007). Further, there has been an average of 50 to 60 Federal and state level bills related to AW introduced annually in recent years (Rollin, 2004). It is worth noting that the Farm Animal Stewardship Purchasing Act (H.R. 5557), a pending bill introduced in 2006 in the US congress, requires that those supplying food to the Federal government for the military, federal prisons, school lunches, and other programs meet a basic set of modest welfare standards for farm animals (HSUS, 2006).

Legislation in Canada

The Canadian Federal Government protects AW through several federal laws. First, AW has been included in The Criminal Code of Canada, which prohibits anyone from wilfully causing animals to suffer from neglect, pain or injury. The S-203 bill, a recent enactment of the House of Commons, amends the Criminal Code to increase the maximum penalties for an animal

cruelty offence (Parliament of Canada, 2008a)[13]. Second, The Health of Animals Regulations Part XII defines conditions for the humane transportation of all animals in Canada by all modes of transport (CFIA, 2008a)[14]. The regulations are enforced by the Canadian Food Inspection Agency (CFIA), with assistance from the Canadian Border Services Agency, provincial police forces and the Royal Canadian Mounted Police. Third, sections 61 to 80 of the Meat Inspection Regulations set standards for the humane handling and slaughter of food animals in federally inspected slaughter facilities. CFIA's inspectors, stationed at every federally registered slaughter establishment, monitor the handling and slaughter of food animals (CFIA, 2008a). Each province has its own legislation dealing with AW, which typically recognizes accepted humane practices. In the majority of the provinces there is an exemption for generally accepted practices of animal management (Blandford, 2006).

Currently, Canada does not have a farm animal welfare policy similar to that of Australia or the EU. FAW was not included in the first two rounds of the "Agricultural Policy Framework" developed by AAFC in conjunction with the Provincial and Territorial governments. Almost three decades ago, in 1980, the Federal government (AAFC) created the Animal Welfare

[13] Parliament of Canada (2008, b) – The bill was passed by the Senate on November 27, 2007, was adopted in the House of Commons on April, 9 2008, and came into force in May, 2008. Sections 444 to 447 of the Criminal Code were replaced. For instance section 444 of the Criminal Code is replaced by the following: "444. (1) Every one commits an offence who wilfully: (*a*) kills, maims, wounds, poisons or injures cattle; or (*b*) places poison in such a position that it may easily be consumed by cattle. Every one who commits an offence under subsection (1) is guilty of (*a*) an indictable offence and liable to imprisonment for a term of not more than five years; or (*b*) an offence punishable on summary conviction and liable to a fine not exceeding ten thousand dollars or to imprisonment for a term of not more than eighteen months or to both" Parliament of Canada (2008a, p.1).

[14] CFIA (2008a) - These regulations prohibit overcrowding, transportation of incompatible animals in the same stall, transportation of animals unfit to travel. Also they specify appropriate conditions for loading and unloading of animals, adequate feeding and watering regimes, maximum transit times, minimum rest periods, bedding requirements, and states that animals that become compromised while in transit must not be transported beyond the closest area where they can receive proper medical care.

Coordinating Committee to develop recommended codes of practice for all major farm species[15]. At the national level the codes represent voluntary guidelines and include various minimum standards for producers and others. Since 2005, the codes have been one of the responsibilities of the National Farm Animal Care Council (NFACC) (CFIA, 2008a) whose role will be discussed in detail in section 4.1, where a summary will also be provided of other non-legislative approaches to FAW in Canada.

Quality Verification and the Role of Different Stakeholders

From the consumer's perspective farm animal welfare practices are credence attributes: the consumer cannot determine through inspection at the point of purchase or experience after consumption, whether the producers used production methods designed to enhance animal welfare[16]. Since consumers cannot assess whether the livestock product incorporates the FAW attributes advertised by the producer, the producers have an opportunity to supply false information to consumers. This is a classic case of information asymmetry. Given that consumers are not able to assess the accuracy of the information provided by sellers, they may not trust these assurances. In other words, buyers will not react to accurate claims (MacDonald, 2005) and the market will under-provide FAW.

Mechanisms to address market deficiencies for FAW products include legislation, codes of practice and labelling. Legislation is an instrument that the government uses in setting

[15] These codes were developed as a result of co-operation between researchers, federal and provincial representatives, and nongovernmental organizations (NGO's), such as the Canadian Federation of Humane Societies and the Canadian Veterinary Medical Association.

[16] Stigler (1961) named the first category of features as search attributes. Later on, Nelson (1970) gave a more accurate definition of search attributes by considering them "as those that consumer can know by inspecting the product prior to the purchase". Additionally he expanded his assessment to permit experience characteristics that can be evaluated after purchase and consumption. Darby and Karni (1973) introduced the third category of attributes, namely credence attributes that cannot be evaluated by the buyer even after consumption. Thus the product's quality is dependent on a mix of search, experience, and credence characteristics (Caswell and Mojduszka, 1996).

minimum mandatory AW standards. Legislation promulgated by the government aims to reflect government's assessment of the demands for minimum standards of FAW coming from society (DPIA, 2004).

Codes of practice act as a starting point for the procedures of livestock industries and provide information for the other interested stakeholders, i.e. Animal Rights Organizations (AROs), animal industry participants and the general public. Sometimes, private enterprises - i.e. farm industry organizations, processors, retailers – have their own FAW industry codes of practice, which are generally more stringent than the minimum required by the legislation (DPIA, 2004). While it is important to be able to define industry practices that improve AW – i.e. standard setting – the certification and verification of these practices through an assessment and audit process cannot be neglected. It therefore becomes important to monitor livestock products along the product chain – i.e. starting with production at the farm level, continuing through transport to and slaughter at the abattoir – to ensure that all supply chain members comply with the existing set of FAW codes of practice. This provides a credible assurance to consumers that the "friendly" products marketed do indeed carry the desired FAW attributes.

Labels are an additional mechanism that producers and governments use to help consumers make informed choices. Labels are an important tool for producers to achieve price premiums if there are a significant number of consumers who are willing to pay for FAW products (DPIA, 2004). Frewer et al (2005) consider that consumers may make product choices based on knowledge about the production system itself, effective traceability of AW products through the food chain, and trust in product labels. Credible labelling also requires the effective implementation of a farm monitoring system for FAW-oriented products, independent of whether this is imposed voluntarily or through statutory requirement.

Irrespective of the stakeholder responsible for setting and auditing the FAW standards and labels, the assurances that they provide to consumers have to be assessed through criteria that evaluate the meaningfulness of FAW claims. For example, Dotson (2007) suggests that credibility hinges on whether the standards are a measurable, verifiable and defendable program that will be widely accepted and trusted by the consumer. Farm Sanctuary (n.d) suggests that third party certification programs could be assessed on the basis of whether they are *transparent*, based on *public input*, *objective* and *measurable*, *independently verified*, *reliable* and *consistent*, and *relevant* (Farm Sanctuary, n.d.)[17]. As well, these criteria may be used to a more limited degree to evaluate producer labelling product claims and industry quality assurance programs (Farm Sanctuary, n.d, p.15)

Other authors –i.e., Frewer et al 2005 – consider that consumers' confidence in these stakeholders is multidimensional, and that various psychological constructs determine trust or distrust. They hypothesized that the trust dimensions are the extent to which an institution or a food chain actor is perceived to be "accountable to others for maintaining high standards of AW", has the "expertise to maintain high standards of AW", is likely to "distort information about its activities to promote a vested interest", and is trustworthy regarding AW issues.

[17] A standard is **transparent** when complete guidelines, as well as information on how standards were developed, reviewed and verified are available to the public. **Public input** consists of multiple stakeholders – i.e., consumers' organisations and AROs – that have the opportunity to comment on development and revision and program standards. Industry representatives may also play an advisory role as long as they do not have financial ties to the certifying organization. Standards are **objective** when they are written in a form that allows for objective verification of compliance and are measurable – i.e., when quantitative indicators for assessment are available. For instance, what constitutes compliance with a standard should be clearly stated for the benefit of both the producer and the auditor. **Independently verified** means a certifying organization and individual auditors who are financially independent of the facility being audited and have no professional or business ties to the industry must perform the verification process. The identity and qualifications of the auditors, as well as the description of the auditing process, should also be available. **Reliable and consistent** means that certifying organizations should implement quality control measures to ensure the quality of the auditing process. This may be accomplished by periodically shadowing the auditors and interviewing clients regarding the audit process. **Relevant** means that standards must be meaningful measures of the well-being of farm animals. Moreover, they should be comprehensive, covering all aspects of animal care and handling from breeding to slaughter (Farm Sanctuary, n.d, p.16).

The following subsections analyze the role of different stakeholders, i.e. government, farmer industry groups, retailers and processors, third party organizations, and animal rights groups, involved in providing consumers with appropriate FAW in the market place. Where applicable, we provide examples highlighting Canadian and US stakeholders' activities in this respect.

The Role of Government

Society consists of heterogeneous individuals with various preferences and different levels of awareness about animal welfare. Government has the role of taking into account the preferences of all stakeholders and using them in the development of appropriate policies. The main goal of the government is expected to be the maximization of the well-being of the whole community (DPIA, 2004).

The intervention of the government is usually motivated by different market failures, including externalities and information problems (information asymmetry and incomplete information). An externality occurs when the action of a firm imposes uncompensated costs or benefits on an outside party (MacDonald, 2005). Appropriate conditions for raising farm animals provide private economic benefits to producers and some level of positive external benefits to people who care about AW status (McVittie et al, 2006). Some people can suffer a loss of utility by knowing the conditions in which animals are raised at the farm – i.e. members of AROs – or by knowing that other consumers eat meat – i.e. some vegans. The farm activities necessary to generate optimal private returns may typically not deliver the level of public good externality that is demanded by some members of society (McVittie et al, 2006). To the extent that these

views are representative for society, and if the benefits of intervention outweigh the costs, there is a rationale for the government to intervene in the market in order to address the market failure.

By simply tasting the meat, a consumer cannot determine whether the pork chops are from a pig grown on straw bedding in a free-range environment or from a pig housed in a barn on slatted floors. If consumers knew all relevant information about the FAW conditions associated with the production of free-range pork they could make fully informed choices and transmit these preferences to producers through price signals (MacDonald, 2005). In order to deal with these types of informational failures, MacDonald (2005) considers that the government has three policy alternatives.

The first alternative is mandatory FAW regulation which would require producers to comply with minimum standards. In order to assure producer compliance with these standards, the government's agencies – i.e., CFIA –, would have to ensure enforcement. The pitfall of government intervention through mandatory standards is that the costs associated with livestock production, as well as the costs associated with standard setting and enforcement, would be higher. In particular, these costs have to be incurred by all buyers irrespective of their preference for FAW products (this case is analyzed in Section 6.0).

The second alternative is that of mandatory labelling of AW practices, which in theory would provide information about AW by requiring labelling of all livestock products sold to all consumers. The "public good" nature of advertising would allow humane providers to benefit from the 'advertising' provided by the mandatory label attached to non-humane sellers (MacDonald, 2005). Again, an assessment of the relative costs and benefits of this approach would be necessary.

The third policy alternative is government involvement in the provision of certification and accreditation services to producers. Government agencies would likely have to ensure compliance through enforcement (Dotson, 2007). Government standard-setting and certification is not without risks, even if consumers view the information as credible. If product designs and relevant attributes are changing rapidly standards may need to be redesigned over time and alternative certifications may be desirable. MacDonald (2005) argues that government-set standards tend to be inflexible, and suggests that government standard-setting may not respond quickly to changing industry conditions.

In addition to these three alternatives, the government could intervene in addressing potential misinformation on AW issues. In developing preferences with respect to AW, the broader community relies on receiving truthful information. In some instances, more radical AROs may use emotional and graphic arguments in their campaigns. In the absence of other objective opinions, i.e. from independent AW scientists, the public could assume that conventional farming is totally detrimental to AW. If society perceives a standard of FAW to be too low, then it will demand what it perceives as a higher level regardless of the actual level of AW or suffering (DPIA, 2004)[18]. In this situation the livestock industry would have a strong incentive to respond with an alternative information campaign, although consumers may be left wondering who to believe.

Of course, government awareness of the preferences of society regarding AW may be imperfect. It is difficult for government to measure the level of AW that the public considers appropriate, since it usually does not have any benchmark i.e. market for friendly products with

[18] For instance, members of society may demand that a certain practice, i.e. gestation stalls or battery cages be phased out because they believe it to be cruel, when such a ban may not lead to higher standards of animal welfare (DPIA, 2004).

varying levels of AW. Thus, governments may invest in strategies to identify society's preferences, through consumer research, public consultations, etc. for the purposes of informed policymaking (DPIA, 2004).

The last type of information deficiency, incomplete information, occurs when the relevant information is not known by any of the stakeholders involved in an AW issue. For instance, one cannot identify a widely accepted definition of AW. Additionally, the stakeholders disagree as to how best to measure animal welfare[19]. This lack of agreement makes it difficult to measure AW and to formulate a widely agreed and scientifically sound definition of animal welfare. Good policy on AW relies on the quality of existing knowledge (DPIA, 2004).

Canadian Government Approaches to FAW

Rather than instituting minimum mandatory standards related to farm animal welfare, the Federal government in Canada has several different initiatives that relate, directly or indirectly, to FAW. The development of Canadian food labelling requirements and guidelines for method of production claims is ongoing. The responsibility for food labelling regulation is shared between Health Canada and the CFIA[20]. In particular, the CFIA Food Labelling Information Service consolidates and coordinates voluntary federal food label reviews. The CFIA has attempted to find an effective way to apply proposed guidelines for the use of methods of production claims – i.e., AW claims such as "free range", "freedom raised", "free run", antibiotic and hormone free

[19] While some groups use definitions based on physical measures of wellbeing such as fertility rates, output and growth, others believe the definition should incorporate the emotional wellbeing of the animal and take into account such factors as stress, fear and discomfort.

[20] CFIA (2008) - Health Canada is responsible, under the Food and Drugs Act (FDA), for the establishment of policies and standards relating to the health, safety, and nutritional quality of food sold in Canada. The CFIA is responsible for the administration of food labelling policies related to misrepresentation and fraud with respect to food labelling, packaging and advertising, and the general agri-food and fish labelling provisions respecting grade, quality and composition specified in the Canada Agricultural Products Act, the Meat Inspection Act and the Fish Inspection Act.

claims – in the labelling and advertising of meat, poultry and fish products. Accordingly, the CFIA launched rounds of public consultations, such as the 2005 consultation round on "Clarifying the Labelling Guidelines for Method of Production Claims on Meat, Poultry and Fish Products". These drew upon stakeholders' knowledge, concerns and opinions to identify key issues. To date, it appears that the consultations have not produced a consensus of opinion on an appropriate way forward with respect to the application of Method of Production claims to AW.

In a second approach, the Federal government became involved in the establishment of the National Farm Animal Care Council (NFACC). This organization was founded in 2005 with broad participation of stakeholders from the animal product industry. The main goal of NFACC is to provide a forum for coordination and collaboration among stakeholders regarding FAW issues, and to assume responsibility for ensuring the ongoing development of codes of practice. AAFC and CFIA are represented on NFACC, as are a number of producer associations, consumer organizations, and animal welfare organizations[21]. In addition to the development of recommended codes of practice, the NFACC has also defined an "Animal Care Assessment Model" (ACA) which is intended to provide guidance on AW, outline high level principles and is proposed as a credible approach to the establishment of verification programs (NFACC, 2008). Currently, the ACA model is not publicly available and therefore an assessment of its likely efficacy is not possible at the present time.

If the Federal government's approaches to FAW are assessed through the 'credibility rules' outlined previously, it could be said that they are reasonably transparent since the complete guidelines, as well as information on how voluntary standards were developed,

[21] Other members are: producer groups associations (i.e., the Canadian Pork Council, the Canadian Poultry and Egg Processors Council), processors' associations (i.e., the Canadian Meat Council), retailers' and food service associations (i.e., Canadian Council of Grocery Distributors), and animal rights organizations (i.e., Canadian Federation of Humane Societies) (NFACC, 2008).

reviewed and verified are available to the public (with the exception of details on the ACA model). As well, the NFACC's activity is based on public input, since multiple stakeholders had the opportunity to comment on development and revision and program standards. The relevance of these activities is underscored by the fact that standards were comprehensive, covering all aspects of animal care and handling from breeding to slaughter. While it was important to define industry practices that improve FAW, the certification and verification of these practices along the supply chain through an assessment and audit process may be key to maintaining consumer confidence. The appropriate role for government in Canada in certification and verification activities for animal welfare remains undefined.

In summary, governments have a role to represent the public interest and to contribute to the nation's economic welfare. The strength of the government is grounded in its ability to institute legislation and its power to publicly condemn certain outcomes. However, the danger that the government faces is making policy on the basis of non-representative opinions. Further, policymakers face the danger of instituting ineffective legislation and wasteful bureaucracy, i.e. in the case of mandatory certification when it is not required. Despite these limitations, as Meredith (2000) argues, governments have the opportunity to foster public understanding of all stakeholders' point of view, and encourage dialogue and collaboration among stakeholders with the objective of achieving a socially optimal level of FAW.

The Role of Farmers and Farmers' Industry Associations

Producers have more information on the production of livestock products than consumers and society in general. They also have a different interest in the adoption of production standards and farm animal welfare standards in particular. The factors that affect their individual decision-

making include trade-offs between AW and profitability, level of concern for animal welfare regardless of profitability, level of understanding about welfare issues, management skills, incentives that may exist for higher AW standards (e.g. market advantage) and deterrents for poor AW (e.g. litigation) (DPIA, 2004).

Rising social pressure by consumers groups and AROs is forcing the livestock industry to re-examine its production practices. The campaigns of the AROs, such as HSUS or People for the Ethical Treatment of Animals (PETA), aim to eliminate certain production systems, e.g. battery cages, gestation stalls. A number of constraints might preclude farmers from changing their production practices, including financial considerations, lack of understanding of the ethical preferences of consumers, insensitivity to welfare needs of livestock, and rejection of the welfare concerns of animal rights organizations, in other words, alternative views of what constitutes 'humane' treatment of animals (Meredith, 2000).

Potentially, externalities also provide incentives for the industry to develop industry codes of practice related to FAW: codes that aim to ensure good behaviour by all participants. An externality occurs when the actions of an individual producer influence society's perception of the industry as a whole, thus affecting the profitability of other producers (DPIA, 2004). According to Dotson (2007), livestock producers have four alternatives for addressing these issues. First, they can do nothing and just let activists define the FAW agenda for them. Producers who choose this route over time may be unable to find a market for their product. Second, producers can self-certify using self-endorsed programs and policies. This is the choice that many producers and livestock associations have made. For example, Burnbrae Farms Ltd, a Canadian egg producer, uses its own certification for products such as eggs carrying FAW

attributes (i.e., free run)[22] [23]. A number of examples of livestock and poultry associations that self-certify using endorsed programs also exist. In 2003 the US National Pork Board introduced a voluntary initiative called the Swine Welfare Assurance Program (SWAP). Similarly, the Canadian Egg Marketing Agency and the Canadian Pork Council launched the Animal Care Assessment (ACA) and Animal Care Program (ACP) in 2002 and 2005, respectively. These programs set out the requirements for animal care for participating producers. More information on these examples of codes of practice and certification in the US and Canada can be found in Appendices 1, 2 and 3.

The common feature of the Canadian industry programs is that they are based on the recommended codes of practice released by AAFC in the 1980s and subsequently revised and updated by the two farmer industry organizations[24] [25]. In addition, the two producer organizations sought input from other stakeholders involved in the development of these codes. The major difference between the two programs is that currently the CPC is focusing on promoting the implementation of the ACA program. In addition, the CPC program is a voluntary

[22] According to the firm, "Burnbrae Farms Limited is a family owned and operated company that has been producing eggs for over 50 years. With farms in Ontario, Quebec and Manitoba, Burnbrae Farms is one of Canada's leading egg producers and a thriving participant in its agribusiness industry. The company sells eggs and egg products to major grocery store chains, food service operations and large/bakery industrial customers throughout Canada" (Burnbrae Farms Limited website, 2008a).

[23] Burnbrae states that "**Naturegg Free Run** eggs are produced by hens that are free to roam in wide open concept barns equipped with nests and perches. Our hens are fed a multi-grain feed that is manufactured to our specifications and contains no medications or antibiotics. The eggs are laid in a clean nest, ensuring the cleanest possible product**. A monitoring system** is in place to ensure that only eggs produced by our free-run flocks are packed in free run cartons. **Naturegg Free Run** eggs are packed in 100% post-consumer recycled cartons that are recyclable where facilities exist" (Burnbrae Farms Limited website, 2008b).

[24] The old code for the raising of laying hens, released by AAFC in 1989, was the "Recommended code of practice for the care and handling of poultry from hatchery to processing plant". Its updated version released in 2003 under the auspices of Canadian Agri-Food Research Council and the initiative of the CEMA is called "Recommended Code of Practice for the Care and Handling of Pullets, Layers and Spent Fowl" (CEMA, 2002 Annual Report).

[25] The old code for raising pigs, released by AAFC in 1984, was the "Recommended code of practice for care and handling of pigs". Its revised and updated version, at the initiative of the CPC in 1993, is called "Recommended Code of Practice for the care and handling of farm animals: Pigs" (AAFC, 1993).

program for hog producers to evaluate and improve animal care practices on their farms and could be used as the basis for third party audits (Ontario Pork Council; CPC 2005b).

Even though the initial aim was for a voluntary program, the ACA program implemented by the CEMA became an industry norm for egg producers. For example, after the release of the 2002 code, the recommended housing space in a cage was increased from 64 to 67 square inches and from 70 to 75 square inches for white leghorn adult hens and brown birds, respectively. In addition, controlled moulting by methods involving deprivation of feed was to be phased out by 2005 (CEMA 2002). A recent development, in the direction of more stringent FAW standards for the egg industry is the decision by the CEMA Board of Directors in November 2007 to make compliance with cage density a requirement for a passing score on the Animal Care Program[26]. Second, the board approved a cage density policy that went into effect on April 1 2008 calling for producers with older cages to house white and brown leghorns at 64 and 70 square inches per hen respectively; for housing installed after 2003, white and brown leghorns must be housed at 67 and 75 square inches (CEMA 2008, p.25). As these examples show, in some cases an industry has been able to self-regulate changes to FAW practices.

The third choice for a livestock sector facing pressure from AROs and public opinion is that of actively seeking government oversight and regulation. Sometimes the government may choose not to act in verifying producers for their compliance with FAW standards and may leave this responsibility to the industry, as previously discussed. The extent to which government involvement in the verification process is needed may be addressed in public rounds of consultations with other stakeholders in the market. Regulatory oversight may be necessary in

[26] The board passed a motion to make 85% the passing grade for the ACP as of April 2008, and to increase it to 90% a year later. A passing score will depend on meeting the cage density requirements set out in the new policy (CEMA 2008 , p.25).

the case of low levels of trust by consumers in the ability of other stakeholders to deliver credible FAW assurances, and resulting market failures in the provision of optimal levels of FAW.

The fourth choice that individual producers and livestock associations have is third party certification and verification, which is discussed further in section 4.4. As an illustration, it is worth mentioning the cases of United Egg Producers (UEP) in the US and Aliments Breton Foods in Canada. The UEP, a trade association representing most US egg farmers, established animal welfare guidelines in 1999 and later introduced them as a voluntary program, i.e. the UEP Certified program, audited by third party organizations such as the USDA or Validus Services (see Appendix 1). Producers have several incentives to adhere to the relevant codes of practice established by an industry association, including protecting themselves against possible legislation breaches, making their production processes transparent for consumers, government and international markets, and minimizing the risk of disputes with welfare groups that affect producer income (DPIA, 2004). For example, the UEP and ISE America, a major New Jersey egg producer and one of the UEP's member companies, were recently sued by the animal rights group Compassion Over Killing (COK) regarding potential consumer fraud over the UEP's use of an old logo (UEP, 2008). However, the allegation by COK proved to be speculative since the UEP could offer as a defence its quality verification program audited by third parties.

DuBreton, a 64-year-old family-run Canadian business specialized in hog farming and pork processing and located in Quebec, is the largest natural pork marketer in Canada and a major supplier in the US. The company claims to be "the first pork producer in North America that received third party certifications - i.e. Quality Assurance International, Humane Farm

Animal Care, Agro-Com - for its natural and organic pork" (Aliments Breton Foods Canada, 2008)[27].

Clearly, producers can use a combination of these four alternatives in responding to pressure for products with FAW assurances. For example, Burnbrae Farms uses a combination of self and third party certifications in selling its free-run and organic eggs respectively (i.e., eggs that are laid by free run hens which are fed a organic multi-grain feed and contain no medications or antibiotics). Discerning the extent to which consumers trust producers' quality assurances under different forms of certification and verification needs to be established through consumer research.

The Role of Retailers, Restaurant Chains and Food Processors

Downstream food firms, i.e. major retailers, restaurant chains, food processors, have influenced the development of private FAW standards as an alternative to the mandate of FAW practices by regulators. These firms attempt to satisfy customers' needs as a means of increasing/protecting market share and revenues. With large scale, often global, operations these enterprises have been exposed to different trends in consumer attitudes, including campaigns by AROs. They have responded to increasing pressure from the public by advertising their policies on AW, setting up expert advisory bodies, and promoting adoption of higher standards by their suppliers of animal products. This approach characterizes the actions undertaken by some major restaurant chains (i.e. McDonald's), meat processors (i.e. Maple Leaf Foods), or major food retailers (i.e. Safeway) (see Appendixes 4-5-6).

[27] According the company, "Quality Assurance International provides independent, third party certification of organic food, from field to shelf. As well, DuBreton's products meet the Humane Farm Animal Care Program standards, which include nutritious diet without antibiotics, or hormones animals raised with shelter, resting areas, sufficient space and the ability to engage in natural behaviors. Agro-com, an independent organization, is responsible for monitoring the application of protocols for pork raised without antibiotics on a vegetable grain diet" (Aliments Breton Foods Canada, 2008).

Downstream food firms also tend to wield considerable market power with respect to the set of atomistic livestock producers that are their suppliers. This market power may be used to push producer groups to set voluntary industry standards incorporating stringent AW conditions (e.g. the ACP adopted by the egg industry in Canada)[28]. If standards are not met producers may be excluded from the market. The credibility of a retailer or processor's standard to guarantee specific FAW attributes depends on the process of enforcement and verification as well as on the overall reputation of the food retailer/processor with respect to other food quality attributes (e.g. food safety, quality consistency). These firms use a combination of self-inspection (e.g. Maple Leaf) and/or third party audits (e.g. Safeway, Aliments Breton Foods) to verify quality.

Blandford (2006) considers that the response of private food enterprises to perceived threats to their brand image is a key driver of change in the development of standards used in the handling of animals in North America. The fact that some of these firms sell food directly to consumers offers them the benefit of point-of-purchase communication with consumers. This is a two-fold benefit, which can either help them to understand consumer preferences related to FAW or to educate the public in this respect. At the same time, the use of the Internet as a source of supplemental information is a strategy that allows these firms to achieve these benefits while increasing consumers' confidence in their brand. Firms can communicate specific actions, such the establishment of private AW standards, monitoring of their suppliers, etc. For examples on the use of the Web as a source of supplemental information see Appendix 7.

[28] According to CEMA (2004) "The retail and restaurant sectors are encouraging producer groups to develop common verification systems, such as the egg industry's Animal Care Program. Otherwise, individual retailers and restaurateurs may develop their own animal welfare purchasing specifications, thereby forcing producers to abide by different criteria depending on who they are supplying. Science-based animal care specifications provide assurances to consumers, retailers, restaurants and producers that market competitiveness is not driving animal care programs." (p.24).

In other cases, downstream food firms may not publicly advertise the actions undertaken to guarantee specific FAW attributes (i.e. free-run attribute for eggs under Loblaws' "President Choice" Label). Instead, these firms rely upon a simple labelling claim to inform consumers[29]. This approach needs to be consistent with the minimum legislative labelling requirements; the Canadian Food and Drugs Act prohibits the labelling or advertising of any food in a manner that is false, misleading or deceptive to consumers (CFIA, 2008b)[30].

Returning to the credibility rules previously presented, we can assess the actions undertaken by these firms through the 'trust criteria'. In general, these private enterprises show transparency in the provision of FAW to the market (i.e., information on how standards were developed, reviewed and verified are available to the public on the Internet). As well, their actions are based on public input since multiple stakeholders have the opportunity to comment on the development and revision and program standards (i.e., in the case of Safeway in the US: scientific experts from Safeway's committee on AW and discussions with HSUS). Moreover, standards adopted by the private industry tend to be independently verified by a certifying organization. Finally, private industry standards vary but have the potential to be comprehensive, covering all aspects of animal care and handling from breeding to slaughter. This approach characterizes the hog farming programs adopted by pork processors – i.e., Aliments Breton Foods (see Appendix 7).

[29] For example, "These Canada Grade A eggs are exclusively from free run hens. These hens live in an open concept, weather-sheltered barn environment, where they are free to roam, feed, roost, nest and perch (President Choice Brand, Free-Run Eggs).

[30] Subsection 5(1) of the *Food and Drugs Act (FDA)* prohibits the labelling, packaging, treating, processing, selling or advertising of any food (at all levels of trade) in a manner that is false, misleading or deceptive to consumers or is likely to create an erroneous message regarding the character, value, quantity, composition, merit or safety of the product (CFIA, 2008b).

The two main challenges these enterprises face in playing an important role in the FAW issue are their lack of expertise with respect to farming methods and their reluctance to become involved directly in monitoring farms' activities. Downstream firms faced increased transaction costs if they must monitor their suppliers. Negative publicity arising from episodes of poor welfare at any stage of the production process can be extremely detrimental to a firm's image and accumulated good will. Thus, the extent to which these firms will become involved in establishing and enforcing private AW standards depends on the strength of the market incentives for them to do so.

The Role of Third Party Enterprises

In some cases farmer groups, retailers, restaurant chains and processors are able to obtain third party certification for their production practices — that is, a respected outside organization provides information that is believable to buyers. A third party offers certification and verification services (through an assessment and audit process) sometimes using industry standards as the basis for the certification process. There are some cases when these organizations provide a series of services including standard setting, e.g. defining industry practices that improve AW. The outside organization providing third party services can take many forms, including consumer groups, producer associations, specialized third party testing and certification organizations, national governments, and international organizations (MacDonald, 2005). In some countries, the government provides an accreditation program to lend credibility to private sector quality assurance programs; examples include the USDA Process Verification Program and USDA Quality System Assessment program. These are third party certification systems developed by the USDA to ensure compliance with specified production and processing protocols. Canada does not have a similar program offered by the

Federal government. In Canada, the third party certification services are offered by either private certification enterprises or by non-profit organizations. For instance, the SPCA Certified program, the WHS Certified program or the Certified Humane Raised&Handled are independent third party certification systems offered by the British Columbia Society for Protection of Cruelty to Animals (BC SPCA) and The Winnipeg Humane Society (WHS) from Canada, and Humane Farm Animal Care from the US, respectively (see Appendix 8).

There are a number of reasons why livestock producers pursue a third party certification and verification program in FAW (Dotson, 2007). First, the processor or retailer to which the livestock producers market their product requires compliance. Second, livestock producers may wish to capture additional margin or market share and to differentiate themselves in highly competitive markets. This strategy characterizes the actions undertaken by the egg producer Burnbrae Farms (i.e. organic eggs laid by free-run hens fed without antibiotics which are assured by the third party: Quality Assurance International) and the pork producer Aliments Breton Foods Canada. DuBreton differentiates its products by highlighting on the label certain credence features - i.e. pork chops that have been sourced from pigs feed with natural grains and without antibiotics (see Appendix 9). In addition, DuBreton emphasizes the fact that pork has been produced in a certified program by third party enterprises, i.e. Quality Assurance International, Humane Farm Animal Care, Agro-Com. Third, producers want to identify and correct any AW challenges before they become an issue of focus for AROs, i.e. the aforementioned legal suit filed by the COK against the UEP.

As Dotson (2007) notes, some retailers are beginning to require third party certification of their suppliers. Companies with this experience indicate they recognize value in five areas: developing and expanding market opportunities, building brand equity and reputation, the ability

to manage risks, and assurance that food meets their criteria for social responsibility. For example, Safeway's (U.S and Canada) overall commitment to animal welfare includes an audit program conducted by a rotating team of internal and independent auditors[31]. Applying the previous credibility rule to third party certification and verification, it appears to be measurable, verifiable, and defendable. As regards to the trust criteria, the nature of the independent audit performed by third party enterprises might enhance consumers' trust in a program. For example, in the US, those implementing quality programs on animal welfare can employ first, second, and third party audits[32]. Neither the first nor the second party audit qualifies as an independent audit, thus leading to a conflict of interest and a possible weakening of consumer trust.

The Role of Media

The media is likely to be instrumental in influencing public concern over perceived food safety risks, "unnatural" farming practices, AW questions and possible environmental dangers of agriculture practices. They are also beneficiaries, as problems in these areas are likely to be newsworthy (Whiting, 2005b). According to Meredith (2000), the role of the media is to provide their audience with informed comment and news on public issues as well as to increase the size of the audience. In the context of the FAW issue, the possible weaknesses of the media are the temptation to inflame conflicts or sensationalize issues related to AW and a lack of experience in

[31] Safeway publicly released the names the names of the third party audit firms approved for inspections of its suppliers (see Appendix 6)

[32] Swanson (2007) notes that the following types of audits are used in the U.S:

- First Party Audit: conducted by a designated employee or manager on site at a designated random frequency, recommended for identifying problems and areas for improvement: self study, preparation for a second or third party audit
- Second Party Audit: conducted by a paid consultant or affiliated industry organization - less frequent than the first party audit, provides outside expertise and evaluation preparation for third party audit
- Third Party Audit: uses evaluation instrument, independence from party to be audited, auditor does not participate in problem solving or education of the producer: they are there to audit.

understanding FAW issues. Despite these weaknesses the media still has an opportunity to provide a constructive forum for information provision and debate. The extent to which Canadian consumers have been (and continue to be) influenced by media representations of animal welfare issues could be established through consumer research.

The Role of Animal Rights Organizations

Animal rights organizations (AROs) no longer rely solely on traditional legislative means to achieve their objectives. Rather than primarily lobbying for better laws or stricter enforcement of existing laws, they have also focused on the marketing chain, either through affecting consumer choice directly or forcing food firms to be proactive for fear of a negative consumer reaction (Whiting, 2005a)[33].

Some AROs may not tolerate any level of suffering by an animal. They may disagree on principle with the use of animals for the production of meat, dairy, eggs and fibres. Other AROs accept the role of animals in production agriculture as long as they do not suffer unnecessarily (DPIA, 2004). Meredith (2000) considers that the main goal of activists is to improve the quality of life for farm animals, such as the Canadian Coalition for Farm Animals (CCFA)[34]. The strengths of AROs are a caring image, as well as a perception that they occupy the moral "high ground". The disadvantages of AROs can be their failure to take into consideration the economic

[33] For instance, PETA organized campaigns to maximize the domino effect in the form of a request to increase the minimum cage size for laying hens in McDonald's supply chain which reportedly later triggered slightly larger minimum cage sizes in Burger King's supply chain (Whiting, 2005a after Mealey, 2002). A campaign organized by PETA and HSUS in 2007 contributed to the phase out of gestation stalls by Smithfield on January 25 2008 followed by a similar movement by Maple Leaf on January 31 2008.

[34] According to its' website, the Canadian Coalition for Farm Animals (CCFA) is "dedicated to promoting the welfare of animals raised for food in Canada through public education, legislative change and consumer choice. CCFA supporters are animal-protection organizations across Canada representing over 120,000 Canadians". The CCFA (2008) states that its' goals to educate Canadians about "the realities of factory farming and its impact on animals, to promote more-humane consumer choices and to achieve a legislated ban on battery cages and sow stalls in Canada through provincial and/or federal legislation" (CCFA, 2008).

realities within which farm businesses operate and the subjective approach to FAW issues that may not be grounded in the scientific realities of animal behaviour and welfare. Nevertheless, AROs still represent a potentially important vehicle for communication and dialogue with respect to FAW issues.

The Role of Scientific Experts

Some commentators argue that the role of science as the pre-eminent underpinning of good public policy has been challenged by public opinion. Whiting (2005a), for example, argues that science, in its intended form, is a directed linear process designed as an objective search for truth, whereas public opinion is by nature subjective and temporary. Certainly, the level of public concern over new food technologies (e.g. genetically modified organisms) in some countries would lend credence to this view of a growing dichotomy between public opinion and science. In some cases, apparently conflicting scientific evidence can cause confusion or suspicion among consumers. From the perspective of informing debate around AW, the key strength of credible scientific experts is their objectivity, independence, and expertise. However, the AW debate cannot be solved by science alone, and the means by which scientific findings are communicated to the broader public is crucial. Meredith (2000) suggests that the opportunities scientists face are to foster objective understanding of the needs of livestock, and to devise economic and practical ways of meeting these needs. The extent to which scientists are (or could be) a trusted source of information on AW issues in Canada is a relevant question for future consumer research.

Overview of Stakeholder Incentives and Preferences

Given the potential for market failures in the context of AW outlined above, it is useful to review the incentives for each of the key stakeholders to contribute toward improving farm

animal welfare. An approach used by the Department of Primary Industries Australia is depicted in Figure I. It presents the incentives for key stakeholders and the roles that different mechanisms can play in achieving desirable outcomes in this area.

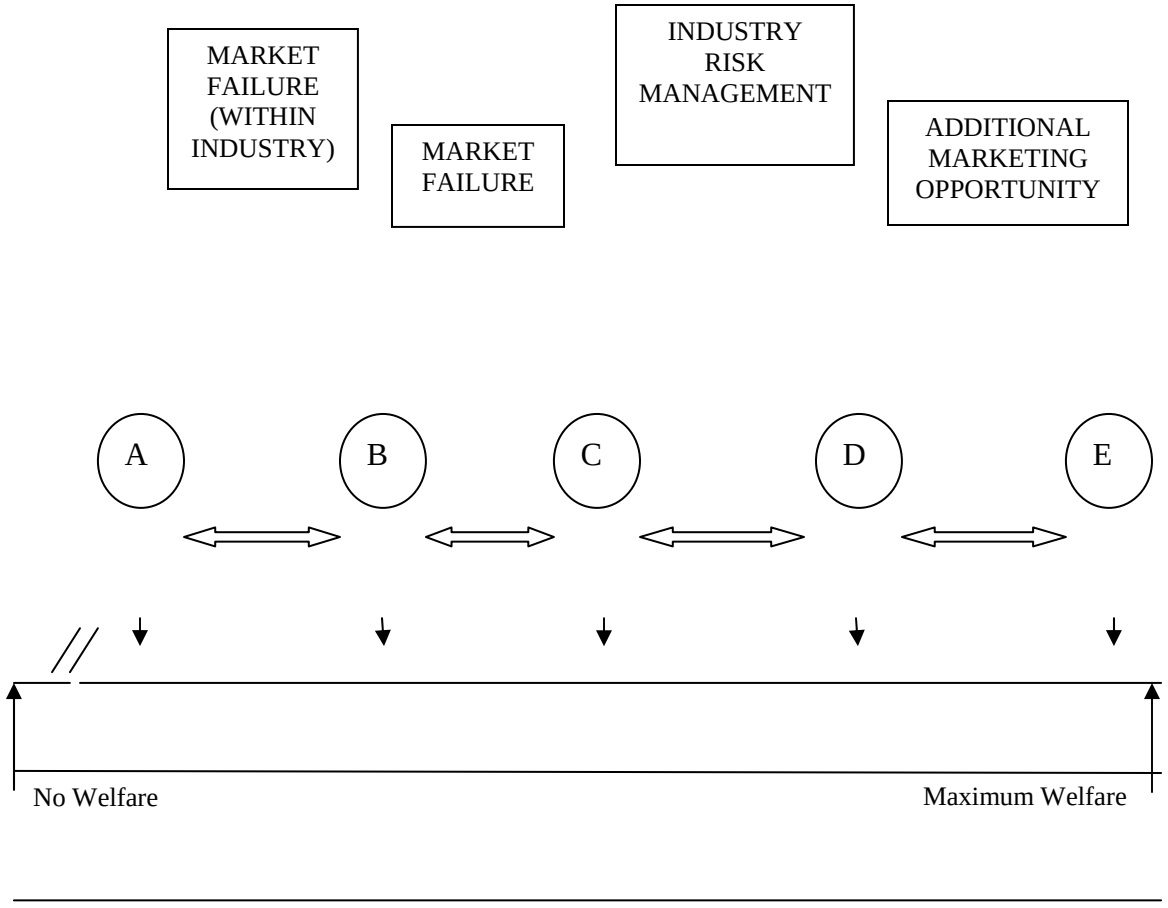

Figure I. Market failure and animal welfare.

Source: DPIA 2004 Animal Welfare Report , Biosecurity Victoria

It is assumed that the enterprises operating at the far left of the scale in the Figure I, i.e. low AW practices, will be unprofitable (as well as cruel) because animals that suffer are not productive. As an incremental improvement in AW (i.e. a shift to the right) will improve profits,

there are economic (as well as moral) incentives for producers to improve welfare beyond the 'low welfare' point. A shift along the scale has the following interpretation. At point A, one can find producers with a low level of AW standards or no concern for AW, but they must still comply with legal minimum standards/laws protecting animals against cruelty (DPIA, 2004).

Next, Point B is the most profitable level of AW, the point at which the productivity gain from improving AW no longer covers the cost of achieving the AW improvement. Then, it is further hypothesized that society expects a standard of FAW located at point C, higher than that represented by point B. If the public knew the conditions in which animals were raised, then point C could have been considered the minimum legislated AW standard. When a producer employs AW practices resulting in a lower level of AW, it can damage the image of the whole industry, hence, there is a reason for the industry collectively to challenge producers to meet certain AW standards that exceed the legislated minimum. These higher standards, defined through industry-specific AW codes, are meant to improve the perception of the industry among consumers, and are designed to support producers in defending themselves against legal action. When producers operate according to these codes (point D), they exceed the legislative requirements for AW (point C) (DPIA, 2004).

Some consumers are more concerned about AW standards and may be willing to pay a price premium for products with additional levels of AW. If there is significant number of AW conscious consumers, producers may be able to capture a premium by delivering a more stringent standard of AW which is located at point E. The producer's ability to get the premium also relies on an information mechanism, such as labelling, that can credibly communicate the

higher AW status to consumers. The hypothetical point of maximum AW lies somewhere beyond E but is a difficult concept to define (DPIA, 2004)[35].

Consumer Preferences and Quality Assurances for Credence Attributes: A Review of Key Literature

This section reviews a sampling of the literature on information asymmetry and the role of the private and public sectors in providing quality assurances for credence attributes such as food safety, animal welfare, and genetically modified organisms (GMOs). This literature informs the subsequent welfare analysis in Section 6.0.

There is a body of theoretical work that uses a game theoretic approach to characterize the relationships between players in the markets for credence goods. This research provides valuable insights into consumers' behaviour and the role of producers in providing quality assurances. Caswell (1998) outlines these market effects in the context of labelling foods that are produced with the use of biotechnology, organically grown, or use an animal welfare-friendly production process. She concludes that the market effects depend on consumer perceptions of credence attributes, the benefits and costs of labelling for companies, and the goals of government policy. McCluskey (2000) uses a game theoretic approach to analyze the relationships between producers/retailers and consumers and to highlight the information issues that are present in the market for quality differentiated products with asymmetric information (i.e., organic foods and AW). The author finds that repeated-purchase relationships and third party monitoring are required for high quality credence goods to be available in the market. The

[35] DPIA (2004) notes that :``an extreme definition would be that animals are no longer slaughtered for meat. However, this would probably be unacceptable to almost all members of society. Furthermore, without a market for meat products, the population of meat animals would need to be drastically cut, itself creating a major economic issue`` (p.15).

author also addresses the role of distributors and retailers in providing information on organic food to consumers.

Hobbs (2004) explores the role of food traceability systems in resolving information asymmetry related to food safety as well as food quality. She uses a model of ex-ante quality verification and ex-post traceability systems to demonstrate the different functions and incentives of a traceability system, and explores whether providing consumers with information about on-farm production methods enables them to make a more informed choice about the relative safety of a food product. Industry-wide quality assurance programs that incorporate animal welfare or environmentally friendly production guarantees are likely to be a more efficient means of reducing consumers' information asymmetry, assuming these schemes are credible.

Another body of theoretical work employs mathematical modelling with the aim of understanding consumers' behaviour, private sector incentives and the public sector's role in establishing quality standards for products with credence attributes. Carriquiry et al. (2003) model the optimal degree of assurance in a processor's quality control system over the procurement of agricultural output when there is uncertainty about quality. Their model predicts that the optimal degree of assurance depends on the likelihood that the sought-after attribute is discernable by consumers, the price premium paid for the attribute, the cost of quality control, and the damage caused by false certification. A number of privately-developed U.S. quality assurance standards, such as T.G.I Friday's, Angus Beef, Niman Ranch Farm, and those of fast-food chains are examined for the purpose of seeing how well the model's predictions are supported.

Carriquiry and Babcock (2007) develop a model of repeated purchases to explore how quality discoverability, market structure, the nature of reputations, market premiums, and

discount factors drive firm choice regarding the stringency of quality assurance systems designed to gain consumer trust. The authors find that the protection of reputation is a key incentive for firms to invest in high quality goods and quality assurance systems.

Similarly, Roe and Sheldon (2007) use a model of vertical product differentiation to analyze the labelling of credence goods (i.e., organically-produced food, dolphin-safe tuna, free-range poultry, and GMOs). More specifically, they focus on the manner by which quality is communicated. Their results clearly indicate that firms prefer private labelling options. In addition, firms may hire private certifiers and may pay for mandated government labels when the government's quality benchmark substantially deviates from firms' private quality choices. The authors' analysis suggests that the average consumer prefers a mandatory discrete label with a high-quality standard, while poor consumers prefer a mandatory discrete label with a low quality standard.

A final body of theoretical work uses a combination of mathematical modeling and graphical analysis to derive the equilibrium and welfare arising from markets for credence goods. Bureau et al. (1998) study a no-labelling and a mandatory-labelling regime in the context of the EU versus the US beef hormone dispute. They start from the assumption that hormone-free beef is the high-quality product, while hormone-treated beef is the low-quality product. The authors assume two groups of producers (hormone-free and hormone-treated) that are homogeneous within each group; consumers are assumed to be heterogeneous in their preferences toward hormone-treated beef. In the initial market scenario, the EU farmers are forbidden from producing hormone-treated beef, while later they are allowed to produce hormone-treated beef. The authors do not conclude that introducing hormone-treated beef may reduce total welfare.

Lence and Hayes (2005) develop a framework for examining price and welfare effects from the introduction of GM products. They introduce a method to model heterogeneity among producers and consumers in the short- and long-run, and evaluate the welfare impacts. In the short run, the non-GM good becomes another identity-preserved product but in the long-run some of the non-GM may become blended with the GM. The long-run results show that under reasonable circumstances (i.e., when the production cost-saving impact of the GM technology is high and consumers are not concerned about GM), consumer and producer welfare is larger after the introduction of the GM technology.

Anania and Nistico (2004) use a graphical analysis of the decisions that producers and consumers of credence goods (which are considered high quality) make in three institutional scenarios. In their first case a regulation provides consumers with a fully credible guarantee (i.e., if a product is sold as being of high quality it is indeed high quality). Their second scenario is the other extreme when there is no third party to provide consumers with a remedy for the lack of information and it is therefore impossible for trust to develop. All producers of low quality goods can offer their products to consumers on the high quality good market. The third case assumes that the regulation cannot be fully trusted by consumers, but now a market for the high quality good develops. The authors find that producers of high quality goods are better off when a fully credible regulation exists. As well, some of the producers of low quality goods benefit by cheating under a less than fully credible regulation.

Finally, Babcock et al. (2002) use a graphical analysis to measure the welfare effects of adopting animal welfare guidelines in the US egg industry. This decision creates a bifurcated market of high-cost shell eggs and low-cost eggs that are processed. The major finding of the paper is that the supply of graders would decrease in response to the increasing cost of welfare-

friendly technology and the market equilibrium price of the 'friendly' eggs would be higher. Consumers' benefit from egg consumption would decrease; any psychic benefit of consuming eggs from animal friendly production practices is not accounted for. The impact on producers' benefit from production remains ambiguous. Further, the restriction in the movement of low-cost eggs into the in-shell market in periods of peak demand increases the price of in-shell eggs and decreases the price of eggs destined for processing. The producers of in-shell eggs are the winners in this case.

The empirical literature on consumer trust in the institutions that provide them with quality assurances for different credence attributes is relatively rich. The most relevant works for the purposes of this study are reviewed below.

Frewer et al. (2005) elicit the perceptions of a sample of Dutch consumers on animal husbandry practices for farmed pigs and farmed fish. A particular issue addressed in their survey is consumers' perceptions of different institutions (i.e., government, farmers and retailers) with respect to how trustworthy, knowledgeable, and accountable these institutions are, as well as the perceived vested interest in developing animal husbandry systems. The authors find that farmers and the government are perceived to be equally accountable regarding their activities, unlike supermarkets, which are rated as being relatively less accountable. Farmers and the government are also rated as being more trustworthy and knowledgeable compared to retailers, particularly in the case of pigs. Farmers are rated as being more knowledgeable than the government. All of the food chain actors are perceived to be protecting their own vested interests with regard to how they handle AW issues.

Huffman et al. (2004) elicit the perception of US consumers on the trustworthiness of various institutions with respect to the provision of information on genetically modified foods.

The authors formulate and empirically test various hypotheses about the role that consumer characteristics (i.e., household income, personal and social capital, prior beliefs) play in the formation of trust in information sources. The results show that an individual's household income has no significant effect on relative trust, but an increase in his/her schooling lowers the probability of trusting information from government, private industry or organizations, environmental or consumer groups, or "other" sources relative to information from an independent third party source. People who claimed to be informed about genetic modification before the survey were more likely to trust the government than the third party sources. Relative levels of trust in government are likely to differ between countries given differences in the institutional, historical and cultural environments within those countries.

In a similar vein, Kjaernes and Larvik (2007) surveyed consumers in a number of European countries to elicit their perception on FAW and levels of trust. They find that there is a clear differentiation between various types of actors with respect to perceptions of truth-telling in the case of an animal welfare scandal. Specifically, they find that food experts, consumer organizations, animal protectionists, and food authorities generally were the most trusted to provide truthful information.

Christensen et al. (2004) used focus groups and street surveys in the US and the UK to determine consumer perceptions of the ability of different agencies, associations, and groups to certify beef products for quality, food safety, animal welfare, social responsibility, and environmental responsibility. They find that US consumers see the role of the Federal government primarily as assuring food safety, but desire the private sector to make other types of certifications. In contrast, consumers in the UK preferred the private sector to assure food safety. As regards animal welfare, the US consumers see the USDA, producers and special interest

groups as playing a critical role in assuring this attribute. Consumers surveyed in the UK preferred that the national government and interest groups certify AW.

Miller and Unnevehr (2001) conducted a telephone survey on a sample of 609 consumers living in Illinois and assessed their perceptions of food safety with respect to pork consumption. The authors asked questions about the frequency of fresh pork consumption, consumer concerns about pork products and their safety, consumers' willingness to pay for certified safer pork products, and consumers' confidence in certifying institutions. The major findings of the survey were that most consumers have some concerns about pork safety. Households with children, those with lower incomes, and older consumers tended to exhibit the strongest concerns. Consumers had more confidence in USDA certification of enhanced pork safety than in industry certification. As well, most of the consumers indicated that they were willing to pay a price premium for a certified safer product.

Finally, Coleman and Hay (2004) elicited public opinion in Australia regarding the purchase of livestock products, specifically pork, and egg products[36]. They examined the relationship between general (i.e. community behaviours) and behaviour-specific (i.e. individual consumer) attitudes toward animal welfare, health and environmental issues in the pork industry.They determine the consequences of these attitudes on people's consumption behaviour (e.g., buying pork) and other important outcomes, including membership of animal welfare groups, petitioning and lobbying politicians, processors and retailers. The authors find that attitude variables predicted around 10% of the variability in pork consumption but predicted 28% of the variability in people's activities in opposition to farming in general. They conclude that

[36] Coleman and Hay (2004) - The sample of consumers was surveyed using a generic "Farming and the Community" survey and an industry specific "Pork Farming and the Community". The total sample of 691 respondents comprised 481 females and 208 males. Of these, 464 also completed the questionnaires specific to the pork industry and of these 464, 125 were interviewed at the point of sale.

people's attitudes are more likely to translate into community behaviours which are duly responded to by the media and perhaps by politicians than they are to determine buying behaviour. Moreover, the authors suggest that community attitudes about animal welfare should be taken into account both in developing marketing strategies as well as in developing policies related to food quality issues.

Welfare Analysis of the Market for Animal Friendly Products: The Case of Pork Products in Canada

This section presents an economic welfare analysis of the implications of adopting 'animal-friendly' production standards for Canadian pork products. A graphical analysis for six potential situations is presented.

The analysis assumes that Canadian pork producers use one of two distinct production systems. The first group uses intensive production methods to obtain conventional pork (CP), while the second group uses production methods to obtain pork with animal-friendly attributes (FP). The FP methods are characterized by: no growth promotants or antibiotics, lower densities for animals in the barns, no use of gestation crates, access to the outdoors, and continuous access to feed and water. FP production typically takes place on operations with smaller animal numbers. The CP methods are the antithesis of these FP protocols. As a result, there are differences in productivity between the two methods, with those farms using CP methods having higher productivity. Thus, the CP producers have lower production costs than the FP producers. For the purpose of this analysis, both groups of producers are assumed to be price takers. FP producers are assumed to obtain the FP certification at no charge. Finally, it is assumed that FP producers never find it profitable to sell their products on the CP market.

In the model, consumers are also divided into two groups according to their preferences for pork. The first group (A) includes consumers who are indifferent between CP and FP, while the second group (B) includes individuals who prefer FP to CP. Consumers from both groups are assumed to know the relative cost structure of CP and FP. This assumption is supported by empirical evidence – i.e., consumers in the US are aware of the fact that FP producers have higher production costs than the CP producers and, therefore, need to charge higher prices for their products[37].

In the first instance, consumers are assumed to have full information on the regulation of FP voluntary labelling and the extent to which any CP producers cheat by falsely labelling their products as FP. This assumption is later relaxed. Finally, it is assumed that the B group of consumers perceive FP as being of higher quality than CP, therefore, are willing to pay a higher price for the FP than for the CP. That is, vertical product differentiation between the two categories of pork products is assumed. Our last assumption is based on the results of a number of consumer surveys (see Appendix 10 for a summary). These surveys concluded that consumers in various countries perceive products incorporating animal-friendly attributes as being of higher quality than those produced using conventional methods. As well, these studies concluded that some consumers are willing to pay a premium for the former relative to the latter products.

Six potential market situations are analyzed with respect to the total welfare that is generated in the market. In the first scenario, only CP is produced and consumed in Canada. In the second scenario, voluntary standards for FP production are developed and production of FP starts. In addition, some consumers develop a preference for and express a higher willingness to

[37] Norwood et al. (2007), in a national survey eliciting the opinion of US consumers about farm animal welfare, included several questions to ascertain whether individuals associated improvements in farm animal welfare with higher meat prices, and if so, whether they were willing to accept such price rises. The majority of consumers (i.e., 74%) believed that improvements in animal well-being would lead to higher meat prices.

pay for pork produced to FP standards. In order to allow these consumers to distinguish between CP and FP, the FP producers voluntarily decide to label their products. This scenario depicts the case when regulation is such that no CP producer cheats by falsely labelling his products as FP and, therefore, the voluntary label is fully credible.

In the third market outcome we relax the perfect information assumption. Consumers have little or no trust in the voluntary label because regulation (or lack of) is such that all CP producers can mislabel their products as FP; this case is equivalent to that when there is no labelling of FP. The relaxation of the perfect information assumption is still maintained in the fourth scenario. This time, however, consumers find the FP label relatively credible as stronger regulation of FP labelling is such that only a very small number of CP producers mislabel their products as FP.

In the fifth market outcome, a mandatory standard is imposed by the government, so that only FP can be produced and consumed. In this scenario it is assumed that Canada bans imports of foreign CP. This assumption is relaxed in the sixth scenario when the Canadian government implements and manages an official quality label that signals the animal-friendly attribute of the FP produced domestically. In this case consumers trust that the label accurately portrays the product.

For convenience, it is assumed that the Canadian pork sector is as competitive as the average foreign pork sector, so that Canada does not take part in international trade in any of the first five cases. The analysis of cases 2, 3 and 4 draws upon the work by Anania and Nistico (2004) and Hoehn and Deaton (2004).

Anania and Nistico (2004) present an analysis of producers' and consumers' decisions with respect to credence goods in three institutional scenarios that reflect different levels of credibility of the relevant regulation and, therefore, different levels of trust placed by consumers in the quality of the product. The situation of vertical product differentiation between FP and CP that we consider in our analysis – i.e., different slopes and intercepts for the CP and the FP demand curves – is grounded in Anania and Nistico's assumption that "consumers are willing to buy products of both qualities (i.e., FP and CP), although they prefer the high quality to the low quality and are ready to pay a higher price for it" (Anania and Nistico, 2004). Similarly, Hoehn and Deaton (2004) examine the case of certified labelling for credence attributes using the concepts of pooled and separating equilibria. In this analysis, they consider a high credence good called the credence product and a low credence good called the conventional product. The demands for these products differ by a constant, representing consumers' WTP for the credence characteristic, but the demand curves have the same slope. In a similar fashion to the work by Anania and Nistico (2004), third party certified labelling vertically differentiates the two products and two separate markets replace a single pooled market.

Case 1

Initially, only CP is produced and consumed in Canada. Consumers are assumed to have homogeneous preferences – no consumers with a preference for FP yet exist. Supply is given by S, while demand is given by D in Figure 1. The equilibrium price and quantity that prevail in the market are P_e and Q_e, respectively. The total welfare that is generated (i.e., area AEB) equals area AEP_e (i.e., consumer surplus) plus area P_eEB (i.e., producer surplus).

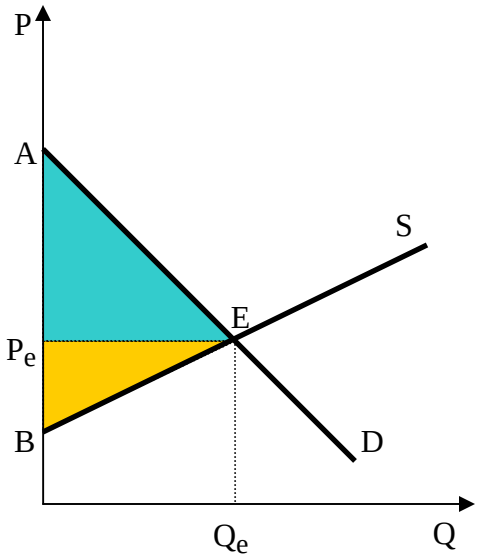

Figure 1: Market equilibrium when only CP is produced and consumed

Case 2

Some consumers are assumed to have developed a preference for and express a higher willingness to pay for pork produced to FP standards. The two groups of consumers are thus formed. As well, some pork producers voluntarily switch their production method from CP to FP. The FP is produced according to voluntary standards, such as the Animal Care Assessment program implemented by the Canadian Pork Council, the SPCA Certified standard of BC SPCA or the WHS Certified standard of the Winnipeg Humane Society. The higher costs associated with FP production are reflected by S_f in Figure 2. Assuming that FP production is not significant enough to cause an increase in the price of inputs for CP, the supply of CP is still given by S.

The FP producers voluntarily decide to label their products to allow the B consumers to identify which production method has been used. In this scenario, it is assumed that regulation is such that no CP producer cheats by falsely labelling his products as FP. Risking their reputation in the eyes of consumers is a primary reason that the CP producers refrain from falsely advertising their products as being FP. As a result, the B consumers fully trust the FP label and therefore reveal their maximum willingness to pay for FP. Their demand is given by D_f in Figure 2. Demand for CP rotates inwards from D to D_c, as a result of some consumers switching from CP to FP.

In this case the CP and the FP can be treated as being two different goods with well separated markets. The equilibria in the two markets are depicted in Figure 2. The equilibrium price and quantity in the CP market – i.e., P_{c0} and Q_{c0}, decrease compared to their levels in the first scenario. This is the result of the decrease in demand for CP, as some consumers switch from CP to FP. The FP market clears at P_{f0} and Q_{f0}. The price premium for the FP is given by $P_{f0} - P_{c0}$.

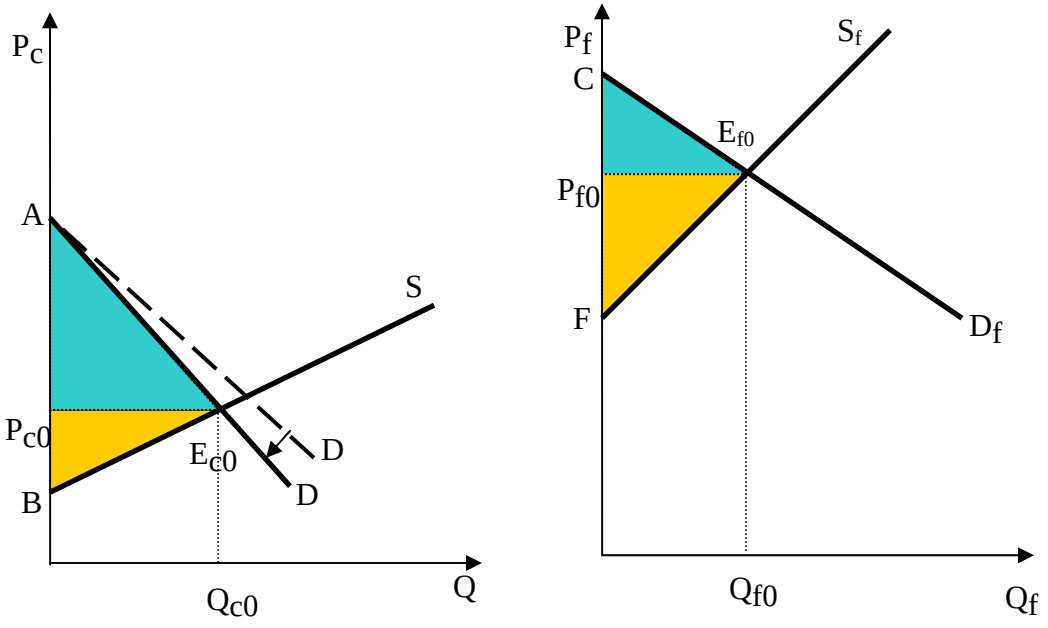

Figure 2: Market equilibria under voluntary labelling that is fully credible

The total welfare in this scenario is given by the sum of the welfare that is generated in each of the two markets. Specifically, the welfare that is generated in the CP market (i.e., area $AE_{c0}B$) equals the A consumers' surplus (i.e., area $AE_{c0}P_{c0}$) plus the CP producers' surplus (i.e., area $P_{c0}E_{c0}B$). The welfare that is generated in the FP market (i.e., area $CE_{f0}F$) equals the B consumers' surplus (i.e., area $CE_{f0}P_{f0}$) plus the FP producers' surplus (i.e., area $P_{f0}E_{f0}F$).

Case 3

This scenario is the antithesis of the previous one – i.e., consumers have little or no trust in the voluntary label applied by the FP producers; this case is equivalent to that when there is no

labelling of FP. The reason for the lack of trust is that all CP producers can, without legally abrogating a regulation, sell their CP products on the FP market. Risking their reputation in the eyes of consumers is no longer a sufficient deterrent for the CP producers to not mislead consumers. For this case we relax our initial assumption of perfect information so that consumers are no longer assumed to have full information on the regulation of FP voluntary labelling and the extent to which CP producers cheat by falsely labelling their products as FP. Uncertainty over quality exists. Following Anania and Nistico (2004), the supply in the FP market for prices below F coincides with that in the CP market when the voluntary label is fully credible, as no FP producer finds it profitable to produce, and the FP market is supplied by CP producers only. When the price exceeds F, both the FP and the CP producers are offering their products on the FP market. As a result, the supply of FP is given by the horizontal summation of S and S_f, and is denoted by S_f' in Figure 3.

It is assumed that consumers are still willing to pay a premium for pork offered on the FP market as long as the price that is charged is greater than F, as they face a positive probability of buying FP. However, their willingness to pay is much lower than in the case when they fully trust the label. This is captured by the clockwise inward rotation in the demand for FP - labelled pork from D_f to D_f'. Moreover, consumers are not willing to buy any product offered on the FP market at prices below F, as they know that F is the minimum price that FP producers require to start producing FP, therefore, a product offered at a price below F can only be CP.

The outcomes on the two markets are represented in Figure 3. Competition between the FP and the CP producers on the FP market will make the CP producers offer their product at a price just below F, which is the minimum entry price for the FP producers. At this price,

consumers will not buy any product they are offered as FP, since they know that at that price the product can only be CP. As a result, the FP market collapses and the CP producers have to sell their products on the CP market. In this case, the supply of CP is equal to the supply of CP under voluntary labelling that is fully credible – i.e., S in Figure 3. It is assumed that at least some of the B consumers (those who only weakly prefer FP and are now unable to buy FP at a higher price) join the A consumers, making the demand for CP expand with respect to that in the previous scenario – i.e., $D_{C'}$ in Figure 3.

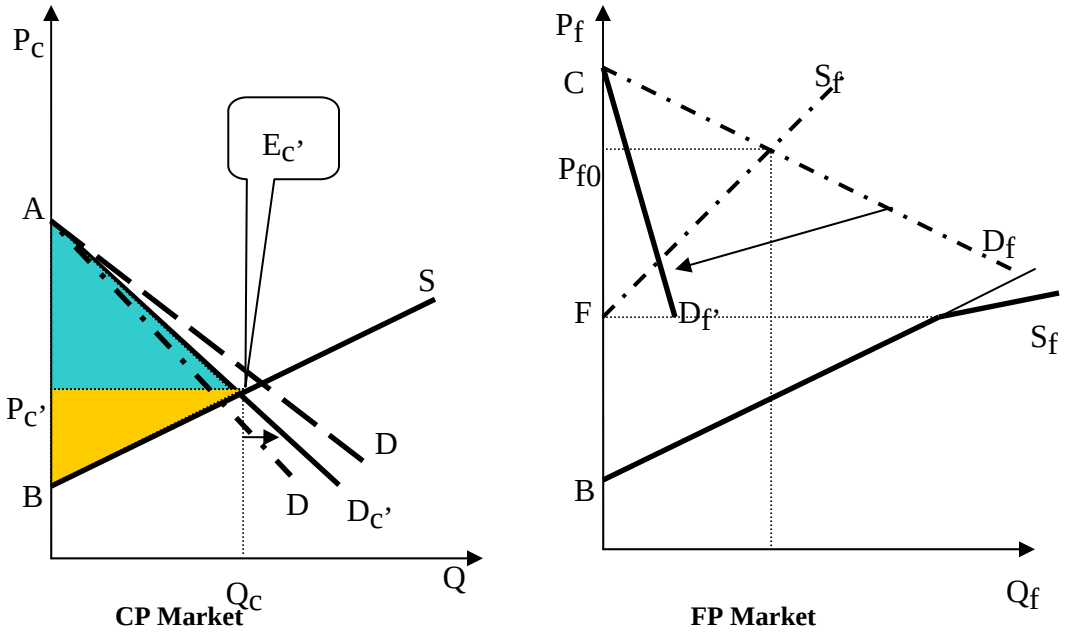

Figure 3: Market equilibria when there is no labelling, or when consumers have little or no trust in the voluntary label

The CP price and the quantity of CP that is marketed exceed those that emerge on the market when labelling of FP is fully credible because now no FP production can take place and CP is substituted for FP by some of the B consumers.

The surplus that is earned by both the A and B consumers is given by area $AE_{C'}P_{C'}$ in Figure 3. The B consumers, unable to buy FP at a higher price, are not getting any surplus. They are worse off as the FP market collapses. The total consumer surplus in case 3 is lower than that enjoyed by the consumers (both A and B) in case 2. The CP producers earn surplus equal to area $P_{C'}E_{C'}B$ and are better off compared to the case of fully credible FP labelling. Conversely, the FP producers are worse off, as they have to exit the FP market. The total welfare that is generated in the remaining CP market is given by area $AE_{C'}B$.

Case 4

In this scenario, it is assumed that regulation of FP labelling is such that only a very small number of CP producers mislabel their products as FP, so that consumers find the FP label relatively credible. The initial assumption of perfect information is again relaxed. Following Anania and Nistico (2004), the supply of CP (i.e., $S_{C''}$ in Figure 4) decreases with the quantity of CP that is offered on the FP market. The total quantity of product that is offered on the FP market by both the FP and the CP producers is given by $S_{f''}$ in Figure 4. The large probability of buying a "true" FP on the FP market allows for a higher willingness to pay for the FP, represented by $D_{f''}$ in Figure 4. The number of those consumers willing to buy FP at a higher

price that switch to the CP market due to concerns over the credibility of FP labelling is smaller than was the case in the previous scenario, so that demand for CP is given by $D_{c"}$.

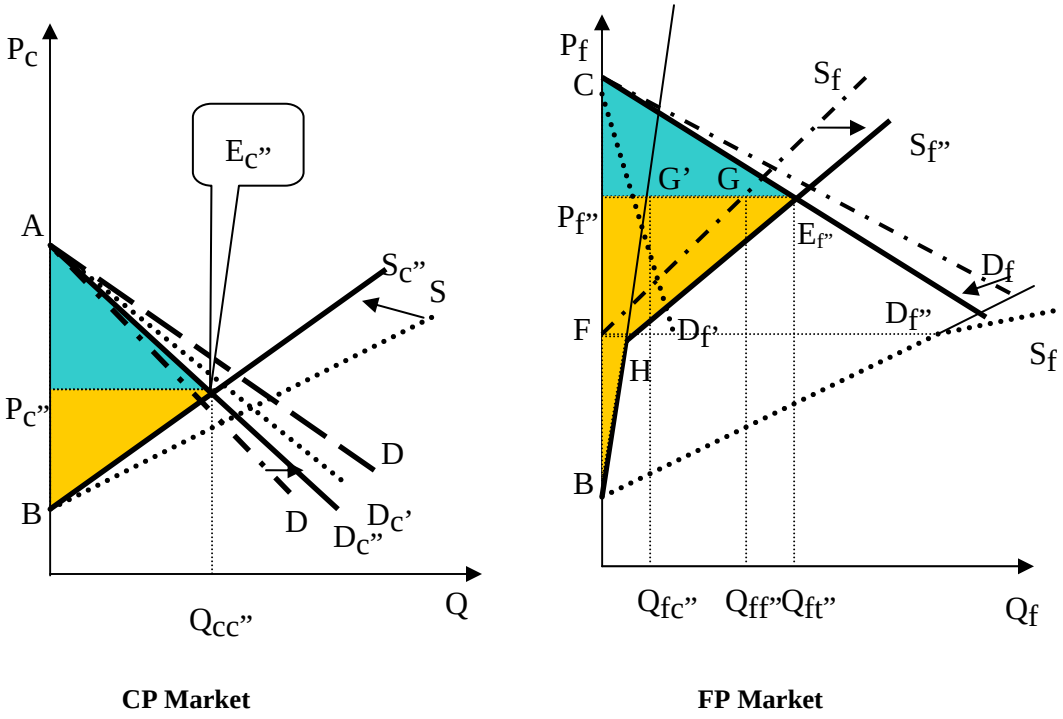

Figure 4: Market equilibria under voluntary labelling that is relatively credible

The equilibrium price that emerges in the FP market is $P_{f"}$ (this price is lower than the equilibrium price of FP when the label is fully credible). At this price, the B consumers buy $Q_{ft"}$ units of FP-labelled pork, of which: $Q_{ff"}$ units are FP and $Q_{fc"}$ units are CP. Their surplus equals area $CE_{f"}P_{f"}$. The FP producers enjoy surplus equal to area $P_{f"}GF$ – they are worse off compared to the case of a fully credible voluntary label, but better off compared to the case of no

or little consumer trust in the content of the label. The price that clears the CP market is $P_{C"}$ and the quantity of CP that is exchanged on the CP market at this price is $Q_{CC"}$. The surplus that consumers get from buying CP is equal to area $AE_{C"}P_{C"}$. CP producers earn surplus equal to area $P_{C"}E_{C"}B$ from sales of CP to the CP market and area $GE_{f"}HBF$ from sales of CP to the FP market. This scenario is the most advantageous (of the four scenarios considered so far) to CP producers.

Case 5

This scenario depicts a situation in which *all* domestic pork producers adopt friendly production methods (i.e., intensive production methods are banned in Canada – such as the phased-in policy developed by the CEMA for the egg industry in Canada since 2003). There is a unique standard that domestic pork producers have to comply with. It is assumed that this mandatory standard is more stringent than the voluntary standards that FP producers use to assess the animal-friendliness of their production methods in scenarios 2-4. As a result, the FP production costs increase under the mandatory standard – i.e., the supply of FP shifts from S_f to $S_{fm'}$ in Figure 5.

While some of the CP producers are expected to exit the market, most of them are assumed to switch to producing FP according to the mandatory standard. As a result, the domestic FP production increases (i.e., supply of FP rotates from $S_{fm'}$ to S_{fm} in Figure 5). In this scenario, it is assumed that imports of CP are not allowed. On the demand side, the A consumers

are willing to buy FP when its price falls below A. Thus, the aggregate demand for FP, D_{fm}, is the horizontal summation of D_c and D_f.

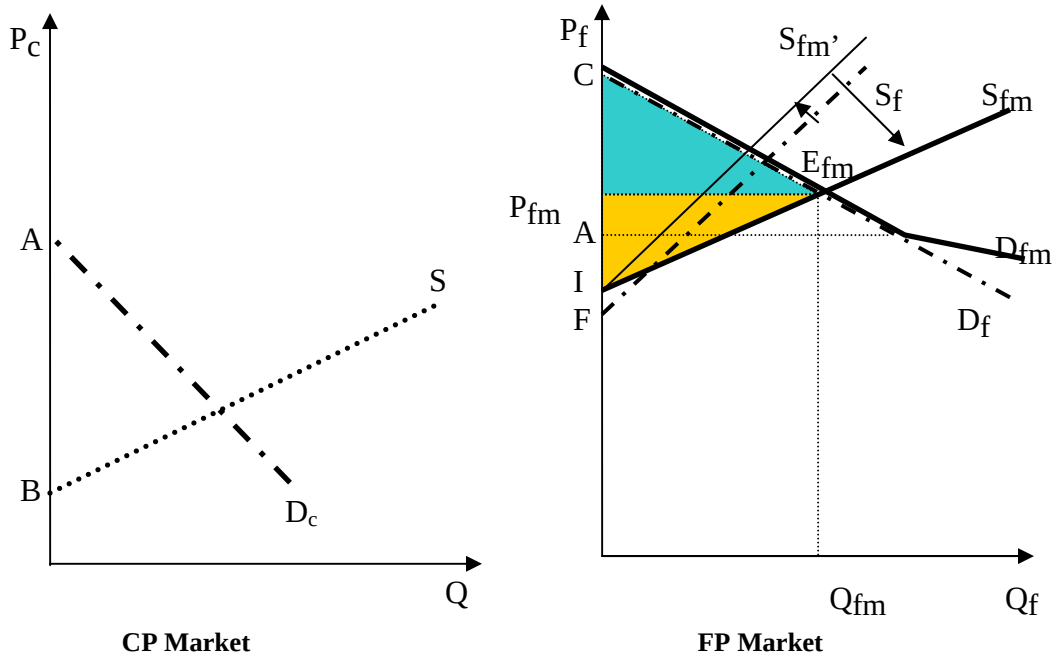

Figure 5: Market equilibrium under mandatory FP standard and autarky

The equilibrium price of FP under the mandatory standard, P_{fm}, lies below the price of FP under voluntary labelling (both when the label is fully credible and when it is relatively credible). However, it is not low enough to allow the A consumers (who are indifferent between CP and FP) to substitute the CP for FP, so that the equilibrium quantity of FP that is marketed, Q_{fm}, goes only to the B consumers.

Under this scenario, the B consumers enjoy surplus equal to area $CE_{fm}P_{fm}$. The economic surplus that accrues to the FP producers is given by area $P_{fm}E_{fm}I$. Thus, the total welfare that is generated in the pork market under the mandatory FP standard and no imports of CP is given by area $CE_{fm}I$ and is smaller than the total welfare under voluntary labelling (both when the label is fully credible and when it is relatively credible). The main reason for this outcome is the welfare loss suffered by the group A consumers and by CP producers. The group A consumers suffer from the absence of choice between the FP and the cheaper CP. As well, the CP producers lose as a result of this mandatory FP standard, as some of them have to incur additional costs to comply with the FP standard while others have to exit the market.

If a cheaper substitute for the FP were available, the group A consumers would prefer to switch to that substitute. One source of substitute would be imported CP. The assumption of autarky will be relaxed in the next section. Moreover, in order to allow the group B consumers to distinguish between the domestic FP and the imported CP, and to ensure fair competition between domestic FP producers and foreign CP producers, the government is assumed to implement and manage an official quality label, which signals the animal-friendly attribute of the FP produced domestically. Implementing this label involves a cost, C, of management, enforcement and advertisement. This situation is analysed in Case 6.

Case 6

For simplicity, we assume that foreign CP producers incur the same production costs as would Canadian CP producers in the previous scenarios (i.e., foreign supply of CP is given by S in Figure 6). Again, the supply of domestic FP is given by S_{fm}. Since domestic consumers can

distinguish between the domestic FP and the foreign CP, we are faced with two separate demands. Assuming that elasticity of demand for imported CP is equal to the elasticity of demand for domestic CP (i.e., if domestic CP was allowed), we have D_f and D_c defining the domestic demand for domestic FP and the domestic demand for foreign CP, respectively. The equilibrium prices are P_{fm} for the FP market and P_{c0} for the (imported) CP market. The quantity of FP that is produced domestically is given by Q_{fm}, while the quantity of CP that is imported is given by Q_{c0}.

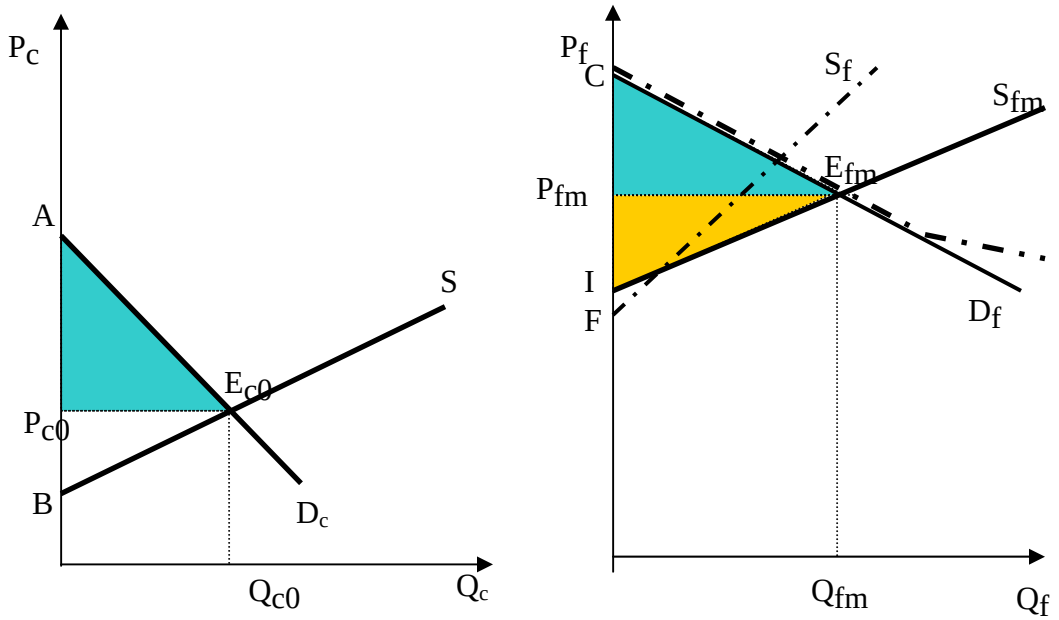

Figure 6: Market equilibria under mandatory FP standard, trade and quality signalling

The total Canadian welfare equals the B consumers' surplus (i.e., area $CE_{fm}P_{fm}$) plus the A consumers' surplus (i.e., area $AE_{c0}P_{c0}$) plus the surplus of domestic FP producers (i.e., area $P_{fm}E_{fm}I$) minus the cost of implementing and managing a label (i.e., C). The cost of the label is critical to determining whether this scenario is more favourable than the autarky case.

Table 1 summarizes the total welfare that is generated in the Canadian pork market in the six scenarios that have been analyzed and compares the welfare outcomes in each case to Case 2 (fully credible voluntary labelling). To recap, these findings were based on several assumptions. First, producers have been divided according to the production method used on the farm into two groups: CP and FP. Second, it was assumed that the CP producers have lower production costs than the FP producers. Third, both groups of producers were assumed to be price takers. Fourth, FP producers were assumed to obtain the FP certification at no charge. Fifth, it was assumed that FP producers never find it profitable to sell their products on the CP market. Sixth, autarky (i.e., Canada functioning as a closed economy) was assumed for the first five cases of the analysis but was relaxed in the sixth case.

Consumers were divided into two groups according to their preferences for pork. A first group, A, included consumers who are indifferent between the CP and the FP, while a second group B included individuals who prefer FP to CP. First, it was assumed that consumers from both groups know the relative cost structure of the CP and the FP. Second, in the first instance consumers were hypothesized to have full information on the regulation of FP voluntary labelling and the extent to which any CP producers cheat by falsely labelling their products as FP. In the second instance, this assumption was relaxed. Third, it was considered that the B consumers perceive the FP as being of higher quality than CP and, therefore, are willing to pay a

higher price for the FP than for the CP. Finally, the regulator's labelling and enforcement costs for FP were not present in the analysis except for case 6.

Based on these assumptions the analysis predicts that a situation of voluntary labelling that is relatively credible will maximize the welfare that accrues to all players on the Canadian pork market. In addition, this scenario allows heterogeneous consumers to choose between different combinations of price and quality according to their preferences. Finally, provided that the label is credible, the government does not have to incur the costs associated with perfect enforcement of voluntary FP labelling or with implementation and management of an official label that signals the animal-friendly attribute of the FP produced domestically under a mandatory FP standard. Understanding that factors that enhance or constrain the credibility of a voluntary quality label is critical to this welfare outcome and a key topic for further research.

Table 1: The distribution of total welfare that is generated on the pork market under different scenarios

	Case 1 Only CP is produced and consumed	**Case 2 Voluntary label that is fully credible (base scenario)**	**Case 3 Voluntary label in which consumers have little or no trust/ No labelling**	**Case 4 Voluntary label that is relatively credible**	**Case 5 Mandatory FP standard and autarky**	**Case 6 Mandatory FP standard, trade, and quality signalling**
Producers of conventional pork (CP)	P_eEB (>>)	$P_{c0}E_{c0}B$	P_c,E_c,B (>)	P_c"E_c"B + GE_f"HBF (>>>)	**0** (< - loss in **S*** to some of the CP producers)	-
Producers of friendly pork (FP)	**0** (<< loss in **S*** to FP producers since they do not produce FP pork)	$P_{f0}E_{f0}F$	**0** (<< loss in **S*** to FP producers since they do not produce FP pork	P_f"GF (>)	$P_{fm}E_{fm}I$ (<)	$P_{fm}E_{fm}I$
The A consumers (indifferent between CP and FP)	AEP_e(< compared to the **S*** by A and B consumers in case 2)	$AE_{c0}P_{c0}$	AE_c,P_c, (<< compared to the **S*** by A and B consumers in case 2	CE_f"P_f" + AE_c"P_c" (> compared to the **S*** by A and B consumers in case 2	**0** (<<< - loss in **S*** to some of the A consumers)	$AE_{c0}P_{c0}$
The B consumers (prefer FP to CP)		$CE_{f0}P_{f0}$			$CE_{fm}P_{fm}$ (>> compared to the **S*** by B consumers in case 2 and 4 but either < or << compared to the total **CS*** in case 2)	$CE_{fm}P_{fm}$
Total Canadian surplus	AEB (<)	$AE_{c0}B$ + $CE_{f0}F$	AE_c,B (<<)	AE_c"B + CE_f"HB (>)	$CE_{fm}I$ (either < or <<)	$CE_{fm}I$ + $AE_{c0}P_{c0} - C$ (either < or >, depends on C)

Note1: S*/CS* = surplus/consumer surplus; Surplus evaluation scale compared to the base scenario : **<<, <, base, >, >>, >>>;**

Note2: Government and enforcement labelling costs are present only in case 6

Conclusions

This study aimed to identify the main mechanisms – i.e., legislation, codes of practice and labelling – that can address market deficiencies for FAW products, as well as the role of different stakeholders – i.e. government, farmer industry groups, retailers and processors, third party organizations, and animal rights groups. All of these mechanisms are aimed at providing appropriate levels of FAW in the Canadian market place and helping consumers to make informed choices about the quality of the food they buy.

Governments can legislate minimum farm animal welfare standards. Legislation tries to reflect government's assessment of society's demands for minimum standards of FAW. Examples of legislation in Canada are the Health of Animals Regulations (i.e. Part XII defines conditions for the humane transportation of all animals in Canada by all modes of transport) and the Meat Inspection Regulations (i.e. sets standards for the humane handling and slaughter of food animals in federally inspected slaughter facilities). Apart from these two legislative acts, the Federal government has not taken any major steps toward setting minimum legislative requirements related to farm animal welfare as has been the case in other countries, such as the EU (e.g. phasing out gestation stalls or prohibiting the use of sub-therapeutic antibiotics in pork production) The lack of more proactive regulatory involvement may simply reflect the absence of a strong demand for FAW legislation by Canadians given satisfactory industry FAW strategies, or may reflect a latent demand for legislative change among consumers that will emerge more gradually. A fruitful area for further research will be to investigate Canadian consumer perceptions of the current status of FAW in Canada and the appropriate role for public sector regulation and enforcement of FAW standards.

Rather than legislative minimum standards, codes of practice (i.e., recommended codes of practice for all major farm species developed and released by the AAFC in the 1980s) are often a basis for the FAW strategies of livestock and poultry industries in Canada (i.e. the Animal Care Assessment implemented by the Canadian Pork Council and the Animal Care Program developed by CEMA) and provide information for the other interested stakeholders. In parallel, private enterprises – processors, retailers, restaurant chains and third party organizations (i.e. the BC SPCA or the WHS) – have their own FAW industry codes of practice which are, in general, more stringent than the AAFC/producer groups codes of practice. In the absence of public standards and enforcement, the private sector needs to bear responsibility for setting and enforcing standards if there is a genuine demand for FAW products from consumers. The phasing in by CEMA of higher welfare standards for egg producers (i.e., voluntary adoption of increased space per hen in battery cages starting April 1st, 2008) suggests that there may be an ongoing shift in responsibility for FAW from the public to the private sector in Canada. The economic analysis presented in section 6.0 predicts that a voluntary standard that is credible would yield the highest social welfare. The key element here is credibility: welfare gains dissipate in the absence of credibility. As also noted in section 6.0, voluntary standards allow heterogeneous consumers to choose between different combinations of price and quality according to their preferences.

Labels are a final mechanism the agri-food industry and governments use to help consumers make informed choices. Canada does not currently have a government-sanctioned quality label or quality assurance process that would verify assurances to consumers that livestock and poultry products have been sourced from animals raised on farms using enhancing AW production methods. Is public accreditation of a quality label necessary? This study notes

several incidences of firms who already use labels and third party verification to achieve market premiums – e.g., The Aliment Breton Foods in the case of pork production or Burnbrae Farms in the case of egg production. Clearly there exists a sub-set of consumers who are willing to pay for FAW products. What remains unclear at present is the extent to which other Canadian consumers would readily switch to this market given increased availability of FAW products at different prices.

In addition to setting standards, certification and verification of these practices through an independent assessment and audit process is also important. Credible standard setting and product labelling also require the effective implementation of a supply chain monitoring system for FAW oriented products, independent of whether this is imposed voluntarily or through statutory requirement. Which type of certification would best deliver credible assurances – i.e., whether this has to be government or self-producer or third party certification – should be further probed through direct consumer research. The dimensions of trust identified by Frewer et al (2005) provide a useful basis for this type of analysis. Specifically, consumers' confidence in these stakeholders depends upon the extent to which they trust different organizations for *accurate information* about the FAW (i.e., welfare of pigs), think that these organizations are *knowledgeable*, think that these organizations are *transparent* (open) *and accountable*, and think that these organizations *act according to consumers' best interests* when providing information about the welfare of pigs. Further research explicitly examining the nature of Canadian consumers trust in stakeholders on the basis of these criteria is warranted[38].

[38] Indeed, consumer surveys examining these questions are currently underway. Further information about this research is available from the authors upon request.

The welfare analysis presented in section 6.0 suggested that regulatory minimum standards for animal welfare (i.e., a ban on the use of gestation stalls or the use of antibiotics) will result in a lower level of social welfare if the industry must incur higher production costs to comply, and if consumers (only some of have strong preferences regarding FAW) have to pay substantially higher prices for food. These conclusions are supported by several empirical studies undertaken in other countries with a longer experience than Canada with respect to regulation of FAW. For example, Liljenstolpe (2008a) analyzed the economic effects of the "Swedish model" in a structural equation model. She found that the Animal Welfare Act of 1998, a ban on using growth promoters and increased space requirements for nursing sows, has negatively affected the supply of pigs[39]. If these AW measures had not been put in place, Liljenstople (2008a) finds that total production would have had a steady growth and the retail price of pork would have been lower. Furthermore, Tonsor et al (2008) examine US consumer preferences for alternative pork production techniques (gestation stalls). The authors investigate the extent of consumer preference heterogeneity influencing opinions about gestation stalls, finding no economic support for a blanket ban on the use of gestation crates that would impact all consumers. Their results suggest that consumer surplus loss is higher in the scenario in which pork is produced under a ban on the use of gestation crates versus when pork is labelled as being sourced from producers voluntarily selecting not to use gestation crates (see Appendix 10 for a more detailed summary).

There is a need for similar consumer preference research in a Canadian context, specifically, identifying the extent to which Canadians comprise the 'Group A' and 'Group B' consumers in section 6.0, and the strength of preferences of each group. If the majority of

[39] "The "Swedish Model" refers to the animal welfare promoting regulation and voluntary certification schemes that was adopted in Swedish pig production from the 1980s and onwards" (Liljenstolpe, 2008a, abstract).

consumers are indifferent between conventionally produced and ‘animal friendly’ pork, but policy is responsive to lobbyist pressure from a sub-set of consumers with strong preferences, there is a risk of ‘over-regulating’ the provision of AW. On the other hand, if the more vocal consumer minority in fact represent a latent preference for higher AW standards and more credible labelling, then the market may be under-providing this quality attribute. Future consumer research should account for heterogeneity in preferences among Canadian consumers.

Other areas for further research include whether Canadian consumers associate improvements in farm animal welfare with higher meat prices, and if so, are they willing to accept such price increases, taking into account the heterogeneity highlighted above. From a policy and an industry marketing perspective it would be instructive to know which alternative pork production techniques (i.e., gestation stalls, the use of antibiotics, indoor Vs outdoor housing) Canadians perceive as being the most important for delivering higher levels of AW, and whether consumer perceptions are consistent with those of scientific experts in animal welfare. Moreover, insights into consumers’ valuation of alternative methods of quality verification (i.e. by government, by agricultural producers, producer associations, downstream food firms, or a third party enterprise) are valuable, as is whether declared trust in the verifying organization relates to willingness to pay for these FAW attributes. It is hoped that this study provides a comprehensive basis for further analysis of animal welfare quality verification in Canada and the appropriate role for both public policy and private standards in delivering credible quality assurances to consumers.

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Appendix 1: Examples of Codes of Practice and Certification – USA

United Egg Producers Certified Program –

Egg Industry Establishes Welfare Guidelines

Recognizing the public interest for animal welfare, United Egg Producers (UEP) called for a review of the scientific literature on specific topics relevant to the well-being of egg laying hens.

The effort started in 1999 with the formation of an independent scientific advisory committee charged with reviewing all scientific literature on animal well-being for egg-laying hens, and to recommend further research if necessary. The committee, composed of leading animal welfare scientific experts in the U.S. including USDA officials, academicians, scientists and humane association members, completed this mission and made recommendations to the United Egg Producers and the industry.

From these scientific recommendations, UEP wrote a set of industry guidelines titled "Animal Husbandry Guidelines for U.S. Egg Laying Flocks." These guidelines were first introduced as a voluntary program in 2002 for the industry to implement when requested by their customers, since then they have evolved into a committed program called "*United Egg Producers Certified*."

The *United Egg Producers Certified* program standards are the strictest in the industry

and are part of our ongoing commitment to providing American consumers the safest, best quality and most economical eggs in the world. Our farmers commit to these strict guidelines and are audited by the USDA and Validus for compliance on 100 percent of their farms before they are allowed to place the *United Egg Producers Certified* seal of approval on their egg packaging.

The *UEP Certified* program for cage production provides assurance that hens receive adequate space, nutritious food, clean water, proper lighting, and fresh air daily as well as improves the flock's liveability and egg production rates.

The U.S. Department of Agriculture, the Food and Drug Administration and the Federal Trade Commission have approved the *UEP Certified* logo and the International Egg Commission has recognized the program as a model from which to create animal welfare programs in other member countries throughout the world. In addition, the Food Marketing Institute and the National Council of Chain Restaurants also endorsed these guidelines.

Source: United Egg Producers (2008), "United Egg Producers Certified Program - Egg Industry Establishes Welfare Guidelines", available at: http://www.uepcertified.com/abouttheprogram.html

Appendix 2: Examples of Codes of Practice and Certification —Canada

The Canadian Egg Marketing Agency - Animal Care Assessment (ACA)

"Recognizing its leadership role in promoting humane treatment of farm animals, the Agency agreed to serve as secretariat for the development of a Recommended Code of Practice for the care and handling of pullets, layers and spent fowl. Under the auspices of the Canadian Agri-Food Research Council, CEMA organized two meetings with representatives of the Canadian Federation of Humane Societies, the Canadian Veterinary Medical Association, the Canadian Food Inspection Agency and other credible organizations in the animal care field to reach consensus on guidelines for the humane treatment of animals used in the egg laying industry" (CEMA 2001, p.28). This action finalized in 2002 with the release of a new code which was substantially different from the one of 1989 in that it only addresses guidelines specific to the care and handling of birds in the egg sector (CEMA 2002, p.15). In addition to the increase in the recommended housing space and the phase out of the controlled moulting, other major differences in the guidelines from the 1989 Code to the new one are:

- There is now a specific recommendation that beak trimming should ideally take place prior to 14 days of age. Beak trimming is not recommended after eight weeks of age.
- There is a recommendation to provide an electrolyte solution containing vitamins, particularly vitamin K.
- There are now special sections to address the specific welfare concerns associated with free-range and free-run operations.
- There is a recommendation to have generators available in the event of electrical failure.

- There are new building and yard design considerations for transportation. Specific suggestions are made for moving birds from one laying operation to another.

"The Code is the most authoritative welfare text on laying operations in Canada. It is science-based and was developed by consensus among several groups, including welfare advocates. The egg industry is demonstrating to egg customers that it is serious when it comes to animal welfare. Several provincial boards have worked together to develop measurable welfare criteria, based on the recommendations in the Code, for egg farms. CEMA participated in numerous meetings that resulted in a preliminary rating system that is to be field tested in 2003" (CEMA 2002 p.15). "The Animal Care Program was developed to be credible and realistic, the main tool for conveying to producers the major guidelines found in the Code. Farms are inspected against 14 criteria pertaining to density, water and feed, beak trimming, house temperature, lighting, air quality, moulting, generators and layer condition" (CEMA 2004, p.25).

"While it is obvious to egg farmers that welfare is a critical consideration in laying operations, this is not as clear to some egg users who have considered putting welfare criteria in their purchasing specifications. By developing a rating system based on the Code, the industry will have consistent, generally accepted practices based on what is good for layers, rather than what may allow one or another company to temporarily secure a greater share of the market" (CEMA 2002, p.15).

Appendix 3: The Canadian Pork Council - Animal Care Assessment (ACA)

The objectives of this program would be to:	**The program itself must:**
• Promote sound animal care practices on Canadian hog farms; • Provide a mechanism to demonstrate that these practices are being followed; • Build confidence throughout the supply chain and consumers.	• Have set minimum requirements; • Be repeatable, valid and reliable; • Use measurable tools (minimize subjectivity); • Be educational and enhance awareness; • Have a validation tool that moves beyond education; • Be a blend of both evaluation of the pig and the process; • Be clear, cost effective, simple and transparent; • Build on the existing food safety program, CQA, to prevent duplication.

The materials that had been developed by the working group were reviewed by the Canadian Meat Council, the Canadian Federation of Humane Societies, the Canadian Veterinary Medical Association and the Canadian Council of Grocery Distributors in 2004. These stakeholders supported the implementation of the ACA tool based upon this review. In 2005, this voluntary program was launched as an advance version to raise awareness and generate interest.

The materials are currently available in hard-copy through CQA provincial delivery agents and on the web site (www.cqa-aqc.com).

ACA Requirements – The ACA includes mandatory questions in the following areas:

• To have copies of or access to the recommended codes of practice; • Non-slip flooring on loading ramps and in walkways; • Pathways and ramps must be free of sharp edges that might cause scratches or injury; • A documented standard operating procedure for the identification, care and humane; • Treatment of sick or injured pigs; • Space where animals needing special attention can be isolated and treated;	• A euthanasia plan for animals in different production stages; • Emergency plans to deal with power failures; • Pigs must have access to water; • Pigs must be fed daily to meet their requirements; • Equipment that may cause scratches or wounds must be promptly repaired or replaced; • Minimum space requirements; • Standard operating procedure for handling pigs with social behaviour problems.

As well, the assessment tool includes a number of non-required questions including the training and assessment of stockpersons, angle of loading ramps, pig handling and devices used for moving pigs, air quality, transportation and body condition scoring.

Implementation of ACA: The delivery of the ACA tool will build upon the existing CQA infrastructure. The program will be delivered by the CQA delivery agency in each province, producers will be required to be on the CQA program in order to join ACA. Individuals must be trained CQA validators in order to become an ACA validator.

"The ACA tool is currently available to producers on a voluntary basis. To our knowledge, there are no conditions of sale requiring participation in or recognition of the ACA program. Our focus at this time is to promote the implementation of the program. Our customers are looking for animal care assurances. During these early days of implementation of the ACA tool, the evaluation of program implementation will continue to ensure that the tool is a useful one for producers to use to demonstrate their on-farm animal care practices".

Sources: Lawrence, D (2007); CPC 2005a

Appendix 4 Example of Animal Welfare Policies of A Major Restaurant Chain

McDonald's - Animal Welfare Guiding Principles

1. **Safety:** *First and foremost, McDonald's will provide its customers with safe food products. Food safety is McDonald's number one priority.*

Food safety at McDonald's Canada is central to company operations and supply chain management. To this end, food safety is integrated into all facets of our business from raw material production to our customer service operations.

2. **Quality:** *McDonald's believes treating animals with care and respect is an integral part of an overall quality systems program that makes good business sense.*

Quality is a cornerstone at McDonald's. Quality defines our process "From Farm to Customer", with animal welfare a critical component of our quality strategy.

3. **Animal Treatment:** *At McDonald's Canada, we support that animals should be free from cruelty, abuse and neglect while embracing the proper treatment of animals and addressing animal welfare issues.*

McDonald's believes in the ethical treatment of animals, and that animals should be raised, transported and slaughtered in an environment free from cruelty, abuse and neglect.

4. **Partnership:** *McDonald's works continuously with our suppliers to audit animal welfare practices, ensuring ongoing compliance and continuous improvement.*

Outside experts have helped McDonald's develop systems to measure the effectiveness of our animal welfare practices. To that end, McDonald's is committed to implementing an auditing system with our suppliers that ensures animal welfare compliance and sharing "Best Practices" for continuous improvement. We also encourage all our suppliers to conduct self-audits with independent third party bodies on an ongoing basis.

5. **Leadership:** *McDonald's leads our industry, working with our suppliers and industry experts to advance animal welfare practices and technology.*

We will continually educate ourselves and our suppliers relative to animal welfare issues, ensuring that our programs are based on the best science available. This will include working with industry experts and scientists to develop training programs and material that will be used to ensure continuous improvements in the area of animal welfare.

6. **Performance Measurement:** *McDonald's sets annual performance objectives to measure our improvement and will ensure our purchasing strategy is aligned with our commitment to animal welfare issues.*

We will continue to dedicate resources to monitor and coordinate activities associated with improving animal welfare, and will incorporate animal welfare objectives into our annual business strategy. McDonald's recognizes our responsibility as a major purchaser of animal products and the need to establish animal welfare standards and measurements ensuring alignment with our purchasing strategy.

7. **Communication:** *McDonald's will communicate our process, programs, plans and progress surrounding animal welfare.*

McDonald's is committed to sharing our progress with our customers and shareholders, while sharing best practices with our competitors.

Source: McDonald's Canada Inc (2008), “Animal Welfare Guiding Principles”, available at: http://www.mcdonalds.ca/en/community/animal_principles.aspx

Appendix 5: Example of Animal Welfare Policies of A Major Meat Processor

Maple Leaf Inc. - Animal Welfare Statement

As a leading food processor, Maple Leaf Foods is responsible for ensuring the safe and humane treatment of all animals within our care.

A healthy respect for the well-being, proper handling and humane slaughter of all animals within our care is a social and ethical responsibility that maintains an important balance between respecting the needs of animals and providing consumers with high quality, wholesome and affordable food. This responsibility is shared between Maple Leaf Foods and our suppliers, as we all depend on these animals for our products and our livelihood. Everyone involved in the raising and processing of animals and poultry, from producers and transport workers to all of our employees, are required to adhere to good animal handling practices in accordance with industry guidelines, serving as stewards of the animals entrusted to their care.

Maple Leaf retains humane handling experts to inspect our hog and poultry primary processing facilities on an ongoing basis. All our meat processing operations are federally inspected by on-site inspectors and veterinarians employed by the Canadian Food Inspection Agency, who continuously review and audit our animal handling practices.

Maple Leaf Foods and its operating companies support this commitment by:

- Adhering to policies and procedures across all our primary processing facilities

and growing operations that assure the respectful and humane treatment of animals in accordance with industry codes of practice for animal well-being.

- Providing our employees with the knowledge and skills required to ensure proper animal handling and welfare practices in their related work areas to ensure they perform their jobs in accordance with best practices.
- Enforcing a ZERO tolerance for employee abuse of animals within our care and taking appropriate disciplinary action including termination of employment when these standards are violated.
- Routinely auditing our primary processing plants to test the effectiveness of our animal welfare practices and procedures based on established and quantifiable animal well-being guidelines.
- Working with producers who share our commitment to upholding high standards of animal welfare.
- Contracting only with specialty agricultural transportation companies that provide safe and comfortable transportation of livestock and poultry in accordance with industry codes of practice.
- Taking appropriate disciplinary action against any producers or third party suppliers who violate animal welfare practices, which may include the termination of contracts.
- Regularly consult with leading industry experts and animal psychologists on welfare and handling practices.

Continuously improving our animal welfare practices and supporting the development of

new industry standards and codes through active participation on advisory councils, including a leadership role in the National Farm Animal Care Council and support for ongoing research.

Source: Maple Leaf Inc (2008), “Animal Welfare Statement”, available at: http://www.mapleleaf.com/AboutUs/AnimalWelfareStatement.aspx

Appendix 6: Example of Animal Welfare Policies of A Major Food Retailer

Safeway Inc. - Animal Welfare Policy

Introduction

Safeway is a retail grocery industry leader in animal welfare. The company understands that its responsibility as a purchaser of food products must include working with its vendors to ensure that animals in the food production system are being treated humanely. The company has developed a comprehensive animal welfare program to ensure that both its national brand and private label suppliers have programs in place standard for the humane treatment of animals in all aspects of animal husbandry, shipment, and handling during the harvest process.

Scope: All Safeway meat, pork, poultry, egg, dairy and seafood suppliers are required to meet a set of designated animal treatment guidelines. In addition to national brands, all suppliers of Safeway branded products will be required to meet the same standards. Secondary Safeway-branded processors must demonstrate that they require their raw material suppliers to meet Safeway's animal welfare standards. Compliance with the Safeway brand produce guidelines will be the responsibility of the Meat Quality Assurance Group and the Supply Operations Quality Assurance Group.

Audits

Safeway's overall commitment to animal welfare includes an audit program conducted by a rotating team of internal and independent auditors. The company has established a set of procedures and standards designed to ensure humane treatment of animals. Audits are conducted and scheduled under the guidance of Virginia Littlefield, Safeway's Manager, Meat Laboratory and Animal Welfare. Ms. Littlefield is a member of the company's Animal Welfare Advisory Council.

Audit results are reviewed by Safeway's Animal Welfare Council and with vendors.

The third party audit firms approved for inspections are:

• Silliker Labs

• Food Safety Net Services

• NSF-Cook & Thurber

• Process Management Consulting

Safeway's Animal Welfare Advisory Council

Since 2001 Safeway has maintained a professional association with a number of well-recognized experts in animal welfare. The company recently decided to establish a more formal and fully functioning Animal Welfare Council composed of both company and independent animal welfare members. The Council's broad mandate is to provide guidance and counsel to the company on matters relating to the humane treatment of animals in the food production system. The members of the advisory council are: **Temple Grandin, Ph.D** (Dr. Grandin is an Associate Professor of Animal Science at Colorado State University), **Sara Shields, Ph.D** (Dr. Shields is an animal welfare

scientist at the University of Nebraska, Lincoln, where she teaches in the Animal Science department), **Janice Swanson, Ph.D.** (In April 1992, Dr. Swanson joined the faculty in the Department of Animal Sciences and Industry at Kansas State University. In 2002, Dr. Swanson achieved the rank of full professor and has been serving as the interim department head since January 2005. She is a member of the KSU graduate school faculty.), **Jim Sheeran**, Vice President, Corporate Meat Merchandising, Safeway Inc. **Virginia Littlefield**, Manager, Meat Laboratory/Animal Welfare, Safeway Inc. **Brian Dowling**, Vice President, Public Affairs. Safeway Inc.

Our Commitment

Safeway remains committed to ensuring that its suppliers are engaged in a process of continuous animal welfare improvement. We will work collaboratively with our vendors and the animal science community toward further ensuring that the company's national brand and private label brands are sourced from suppliers who meet this standard.

Source: Safeway Inc (2008), "Animal Welfare Policy", available at: http://shop.safeway.com/corporate/safeway/animal_welfare.asp

Appendix7: Example of the Internet as a source of information for consumers - Aliments Foods DuBreton Canada

Our Hog Farming Programs

Our hog farming standards correspond to the needs of our clientele and are clearly indicated in official program specifications. Here is a comparative summary of our main programs:

Features	DuBreton Certified Organic Pork	DuBreton Certified Humane Pork	DuBreton Pork Raised Without Antibiotics, Vegetable Grain-Fed	Natural USDA	Conventional
Organic feed, GMO free	X	-	-	-	-
Outdoor access for animals	X	-	-	-	-
Loose sow housing	X	X	-	-	-
Controlled animal welfare (farms, transportation, and processing plant)	X	X	X	-	-
Rendered animal by-products in feed	Never ever	Never ever	Never ever	X	X
Subtherapeutic antibiotics	Never ever	Never ever	Never ever	X	X
Therapeutic antibiotics	Never ever	Never ever	Never ever	X	X
Monitoring for antibiotic residues	X	X	X	-	-
Third party certification	X	X	X	-	-
Minimal processing	X	X	X	X	Yes and no
No preservatives	X	X	X	X	Yes and no

Source: Aliments Breton Foods Canada (2008), “Farming and Processing - Our Hog Faming Programs”, available at http://www.dubreton.com/en/production/standards

Appendix.8 Example of AW Certification Program offered by a Third party

British Columbia Society for Protection of Cruelty to Animals **Certified Adherence to BC SPCA Farm Animal Welfare Standards**	**The Winnipeg Humane Society** **Certified Adherence to WHS Farm Animal Welfare Standards**
The ***SPCA Certified*** program is an independent third party certification system. It is a certified assurance to consumers that food products bearing the program label comply with the farm animal welfare standards developed by the BC SPCA. SPCA CERTIFIED www.spca.bc.ca/farm	A first for Canada, meat and eggs certified by The Winnipeg Humane Society is now available in Winnipeg. WHS CERTIFIED meat and eggs raised with our approval
Participating farms pay for their certification, and this provides a guarantee	The new label marks the first time Canadian consumers will be able to

that they have met the BC SPCA's standards for the raising and handling of farm animals. The BC SPCA standards differ from the national code of practices published by the Canadian Agri-Food Research Council in farm animal husbandry practices, including space per animal and transportation times. **SPCA Certified program goals:** The goals of the SPCA Certified Program are: - Facilitate and support changes to farm animal welfare standards; - Provide voluntary third party certification services to those involved in the animal agricultural industry; - Support scientific research and development in farm animal welfare.	choose meat from animals raised according to standards approved by an animal-welfare organization. Our standards include: no animal caging; minimum space requirements; no hormones or unnecessary antibiotics; and mandatory barn inspections by independent professionals. The label represents an exciting new partnership between Manitoba farmers and The Winnipeg Humane Society. "It's the right thing to do because it works for me and it works for the animals," says Bruce Daum, a hog farmer near Brandon, Manitoba who raises humane-certified pork. "The partnership lets consumers choose humane-labelled products while supporting Manitoba farmers."

Sources:

British Columbia Society for Protection of Cruelty to Animals (2008), “Certified Adherence to BC SPCA Farm Animal Welfare Standards, available at: http://www.spca.bc.ca/farm/default.asp

Winnipeg Humane Society (2008), “Issues&News: WHS Certified, available at: http://www.winnipeghumanesociety.ca/animal_Issues_And_News/index.php

Appendix 9: Example of Point of Sale Material used by a private firm to advertise AW features and the certification program for livestock and poultry products.

Source : Aliments Breton Foods Canada

Appendix 10: Summary of additional consumer research on perceptions of Farm Animal Welfare

Studies with empirical evidence that consumers assess FP as having a superior taste relative to CP

The assumption made in Section 6.0 that some consumers may perceive FP as being of higher quality than the CP is based on the results of a number of consumer surveys. Studies in various countries have concluded that consumers perceive products incorporating animal-friendly attributes as being of higher quality than those produced using conventional methods. For instance, in Ireland focus group discussions revealed that “free range” eggs and “free range” chickens were perceived to taste better than their conventional counterparts (Cowan et al., 1998). Moreover, the majority of the Irish consumers surveyed (i.e., 77%) regard "free range" as a positive indicator of food safety. Similarly, Miele and Parisi (1998) found that 73% of the customers surveyed at an Italian supermarket offering “free range” eggs thought that these eggs are better than the conventional ones; 47% considered them better with respect to quality, while 21% did so with respect to freshness.

In an Australian study, Rolfe (1999) found that consumers were willing to pay a premium for “free range” eggs. Additionally, he found that forty percent of the respondents consume “free range” eggs because they believe these eggs are more natural and healthier than regular eggs.

In the United Kingdom, Harper and Makatouni (2002) investigate consumers’ attitudes and behaviour in relation to two food trends - organic food and animal welfare. The authors find that consumers perceive products incorporating animal-friendly attributes as superior in the

health benefits they provide relative to conventional products. In a study eliciting the opinion of Swiss consumers on the superiority of meat (i.e., sausages) with animal-friendly attributes, Badertscher (1997) found a strong agreement – i.e., 73% of consumers agreed with the statement that meat coming from animal-friendly production systems is of higher quality[40].

Norwood et al. (2007) also examined at how US consumers see the relationship between animal welfare and meat quality. In particular, they wanted to see if consumers perceive whether farms with higher standards of animal care will also produce safer meat. That is, people may indicate that they are concerned about animal welfare, not for the sake of the animal per se, but because they like better tasting, safer meat and perceive that farms with higher standards of animal care are more likely to produce meat with these qualities. This appears to have been the case as 53% of respondents strongly agreed and 25% agreed with the statement "animals raised under higher standards of care will produce safer and better tasting meat."

Ophuis (1994) conducted sensory evaluation tests of "free range" and "regular" pork in the Netherlands. He concludes that consumers perceive pork identified as incorporating the "free range" attribute as having a better taste than "regular" pork. For example, the biggest differences between "free range" and "regular" pork occurred in the group of consumers that had prior experience with "free range" pork and participated in sensory tests under labelled conditions. This category of consumers assessed "free range" pork in comparison to "regular" pork as significantly more juicy, less bland and tough, more savoury and tender, less fat and dry, and more pleasant.

[40] Statement: Products from animal-friendly production systems are of higher quality. N = 645. Scale with seven levels: 1 = I do not agree at all, 7 = I agree completely. Rejection = levels 1–3; neutral = level 4; agreement = levels 5–7. Source: Phan-Huy, A. S. and F. R. Badertscher Fawaz (2003) after Badertscher (1997), p. 123.

Finally, Armah and Kennedy (2000) elicited the preference of consumers living in Arkansas for pasture-raised pork. They found that 65% of those consumers would prefer pasture-raised pork over conventional-produced pork. More specifically, 67% of the respondents considered pasture-raised pork leaner than conventional-produced pork, while 62% of them believed it to be healthier.

Studies with empirical evidence of consumers' willingness to pay a price premium for FP relative to CP

The assumption in Section 6.0 that consumers are willing to pay a higher price for FP pork compared to CP pork is based on the results of a number of consumer surveys in various countries that showed a clear willingness to pay for FP. These are summarized below.

In Canada, Goddard et al (2007) evaluated the interest of consumers from Alberta and Ontario in different types of eggs, including Omega-3, organic, free run/range, vitamin enhanced and vegetarian. They made use of stated preference data from two surveys undertaken in two consecutive years (i.e., 2005 and 2006) and revealed preference data from an AC Nielson Homescan@ panel data set. Results suggested that consumers in Alberta are not willing to pay more for specialty eggs, and in fact had a negative willingness to pay (i.e., at the mean of all variables) of $-1.76/per egg for free-range eggs relative to normal eggs in the frequency model (i.e. how often across a three year period households purchased each type of egg) and a positive but small WTP of $0.23/ per egg for free-range eggs relative to normal eggs in the choice model. By contrast, consumers in Ontario showed a significant WTP for free-range eggs in both models, namely: $0.99/ per egg for free-range eggs relative to normal eggs in the frequency model and $1.63/ per egg for free-range eggs relative to normal eggs in the choice model.

In Sweden, Carlson et al (2004) employed stated preferences (i.e., a choice experiment) to obtain consumers' preferences and WTP for quality attributes (i.e. animal welfare) of food products (i.e., chicken, beef, pork, eggs). They found that consumers were willing to pay a 67% premium for pork sourced from pigs raised outdoors over pork sourced from pigs raised indoors. As well, consumers were willing to pay an 8% premium for pork sourced from pigs slaughtered in mobile abattoirs over pork sourced from pigs slaughtered in a slaughter house (Carlson et al, 2004). Similarly, Liljenstople (2008b) investigated the demand for AW attributes among a sample of Swedish consumers when buying pork. She found a 32 % premium for pork sourced from pigs raised outdoors and a 19% premium for pork sourced from pigs slaughtered in mobile abattoirs.

Lusk et al (2006) estimated the WTP of US consumers for pork produced without subtherapeutic antibiotics. The authors conducted valuation experiments near the meat counter of a grocery store in Oklahoma. Results of the experiment suggested that consumers place substantial price premiums on pork produced without antibiotics (i.e. authors found a 76% premium for pork raised without antibiotics over pork raised with antibiotics).

Nilsson et al (2006) also characterized the demand and the market potential of a credence certification program for fresh pork cuts in the US. They derived consumers' WTP for conventional pork and pork certified for environment, animal welfare and antibiotic use. The authors found that WTP for AW certification varied from 7.5 % to 52% premium, and that WTP for the no antibiotic use certification varied from 5.6% to 72% premium for the category of price conscious and the category of concerned shoppers respectively.

Estimates of consumers' WTP and Surplus Loss Under a Ban versus a Voluntary Labelling Scenario

Tonsor et al (2008) conducted a survey on a sample of 205 consumers in Michigan. They used stated preferences (i.e. choice experiments) aiming to: "1) estimate consumer WTP for alternative pork production practice attributes including use of gestation crates; 2) examine if these preferences are related to preferences for farm size and country-of-origin attributes; 3) evaluate if banning use of gestation crates may be justified on grounds of economic welfare enhancement; and 4) identify the distribution of welfare impacts of gestation crate bans across consumers" (Tonsor et al., 2008). Regression analysis was used to determine whether consumers were willing to pay more for pork labelled as being sourced from producers voluntarily selecting not to use gestation crates or as being produced under a gestation crate ban.

The authors found significant WTP estimates for pork produced without the use of gestation stalls. In a homogeneous consumers model, the representative consumers have a significant preference for pork from operations that voluntarily choose to not use gestation crates (mean WTP of $1.13/lb) and a negative preference (mean WTP of -$0.32) for pork produced under a gestation crate ban relative to typical pork chops. Tonsor et al (2008) reject the hypothesis that a ban on gestation crates would improve consumer welfare.

The authors capture consumer heterogeneity by dividing the sample into four different groups according their attitudes: "*Pork Enjoyers"* (32% of the sample population), "*Attribute Conscious"* (32%), "*Price Conscious*" (14%), and "*Ban Preferring*" (32% of the sample population) (Tonsor et al, 2008). They find that the first two groups (combined approximately two-thirds of the sample) placed a significant premium on pork from producers voluntarily selecting not to use gestation crates (mean WTP of $0.84/lb and $1.86/lb, respectively), while

only a subset (approximately 20%) of the total sample have pork preferences that could justify a ban on gestation crates.