



Reconsidering the political economy of farm animal welfare: An anatomy of market failure

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ABSTRACT

Animal welfare is often cited as a classic *public good*, which implies market failure and, thus, that government intervention is required. However, the current literature does not provide an accessible account of how governed markets are supposed to cope with the issues of animal welfare. This paper seeks to fill this gap by re-considering the political economy of animal welfare. Conceptual analysis shows that the major cause of market failure in the case of farm animal welfare is a problem of *consumption externalities*. It is the specific regulation of animal welfare conditions which is a public good (or bad). Two important conclusions follow from this analysis, which are largely unexplored in the literature on animal welfare. First, measurement of potential market failure, through identifying actual willingness to pay (WTP) for animal welfare friendly products, is potentially misleading. The difference between citizen votes and consumer WTP for animal welfare is not *prima facie* evidence for either market failure or a gap in the market. Second, conventional arguments in favour of subsidies and assistance to producers for better animal welfare are misconceived and potentially counterproductive. A more rational policy is to subsidise the consumption of animal welfare friendly products.

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Introduction

The European Commission has recently published its strategy for the protection and welfare of animals for the period 2012–2015 (European Commission, 2011). It notes that between 2000 and 2008 “the Union has dedicated on average nearly €70 million per year to support animal welfare, of which 71% is directed to farmers as animal welfare payments” (p. 3). Meanwhile, in June 2010, DG Sanco launched the first of its biannual animal welfare newsletters: *Action and Understanding*. The tag line chosen to symbolise the Commission’s approach is interesting – “everyone is responsible”. This is in rather distinct contrast to the traditional view that government is ultimately responsible for animal welfare. For instance, the late UK Farm Animal Welfare Council (FAWC) identified the first condition for ethical consumerism and improved farm animal welfare as: “The Government to act as the guardian of farm animal welfare” (FAWC, 2009). It is also somewhat contrary to a conventional economic view, that animal welfare is a ‘*classic public good*’, ‘susceptible to a number of inter-related types of market failures’ (Lusk and Norwood, 2011, p. 12).

As participants in one of the several research studies commissioned by the European Commission to support the development

of European animal welfare strategy (EconWelfare¹), we found it necessary to reconsider the political economy of animal welfare, including the potential for market failures to prevent socially progressive improvements in animal welfare, and the implications for government intervention. This is particularly important as the achievement of high(er) farm animal welfare through imposed legislation and regulations remains highly controversial. Until very recently, there was a distinct lack of substantial yet concise explanation of the political economy of animal welfare in the literature. Lusk and Norwood (2011) (and, more extensively, Norwood and Lusk, 2011) provide much more on economists’ contributions to the problems of ensuring adequate and acceptable animal welfare in modern mixed economies. However, even these experienced and knowledgeable authors do not provide a readily accessible account of how the governed market system affects animal welfare. Notwithstanding the Lusk and Norwood major contributions, it remains difficult for the non-expert to comprehend the major interacting socio-economic factors on which the costs and benefits of improved animal welfare depend. The first contribution of this paper is to provide a framework for the general understanding of legislative and market responses to animal welfare.

As an account of the political economy of animal welfare, we frame our analysis in terms of the provision of animal welfare by

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¹ FP7 programme: “good animal welfare in a socio-economic context: project to promote insight on the impact for the animal, the production chain and European society of upgrading animal welfare standards.”

farmers and their marketing chains (the supply side) in interaction with the consumer and citizen demands and requirements for improved animal welfare (the 'demand' for improved animal welfare). We begin with the supply (provision) side of the governed market place (Section 'The supply side of animal welfare'). Section 'The social determination of animal welfare' considers the social determination of the supply chain's animal welfare practices against this provision framework. Section 'Market failures and consumers' willingness to pay for improved animal welfare' deals with the potential for market failure, i.e. the incapacity of free markets to deliver the levels of animal welfare which society demands and requires. This leads to the second contribution of this paper (Section 'WTP and actual spending on animal welfare: a thought experiment') which considers the extent to which consumers' willingness to pay (WTP) for improved animal welfare products can indicate the extent of market failure. In particular, we conduct a novel 'thought experiment' concerning the character of estimates of peoples' willingness to pay (for animal welfare, in this case), and identify, at least conceptually, the appropriate measure of market failure as the 'free rider deficit', while also providing an anatomy of potential market failure. Section 'Summary and implications' summarises, draws out the implications for policy and concludes.

The supply side of animal welfare

Socio-economic evolution of markets and associated government and governance (including R&D) has progressively explored the possibilities of increasing animal productivity and, more lately, of improving animal welfare. The current set of best possible practices for animal productivity (reflected in the full costs of providing animal products) and the welfare of the animals involved can be defined conceptually as a production (supply) possibility frontier. This is shown in Fig. 1 as the black curve including points O, A and Y. Although a simple diagram cannot portray the complexity of farming or marketing chain reality, this economic framework is logical, robust and well accepted, at least amongst economists (McInerney, 1991). As the curve illustrates, domestication and subsequent cultivation of wild animals has resulted in improvement in both animal productivity and animal welfare (top left hand segment of the frontier). Similarly, as not infrequently illustrated,

over-intensification can result in reductions in both productivity and welfare (bottom right hand segment of the frontier).

The wide variety of production systems within the EU livestock sector can be distributed across a range of points on the frontier. Intensive systems are closer to point Y, extensive systems further up the curve and organic livestock production (including higher animal welfare standards) perhaps approaching O. Similarly, different types of livestock enterprise will be arrayed along the curve. Broilers and caged egg production are considered as located at, and (for battery cages in the EU) now beyond, the legal limit of welfare acceptability, with modern high yielding dairy cow husbandry perhaps only slightly higher up the curve. One might then consider that the production of housed beef, outdoor pigs, free range poultry, suckler beef and lowland sheep, and finally hill cattle and sheep located at successively higher points on the frontier away from Y and towards O.

Alternatively, rather than considering the possibility frontier as representing the whole of animal agriculture throughout the EU (or the world), it can also be considered as representing the possibilities for any given species, country or region. In any event, the frontier is conceived as representing the most effective use of resources possible, given current knowledge, skills and availability of resources (land, labour, capital and management). Since these conditions differ between regions, (especially the availability and hence costs of capital, land and labour), any particular frontier will be different for different regions and countries, particularly when measured in economic terms. This is the only way in which different aspects of both welfare and productivity can be aggregated into single indices and considered in commensurate terms, as implied by this representation.

The real world is always in the process of adapting and adjusting to changing conditions and circumstances. As farms change ownership, or generation, for instance, they frequently also change their production practices and mixes, as well as their investment in plant and equipment. This process of adaptation and adjustment, including the incorporation of R&D results and innovations, continually shifts the possibility frontier outwards, reflecting both improved productivity and better animal welfare. As a result, there will always be operations (firms and businesses) which are not on the frontier but inside it (such as point X in Fig. 1). With existing

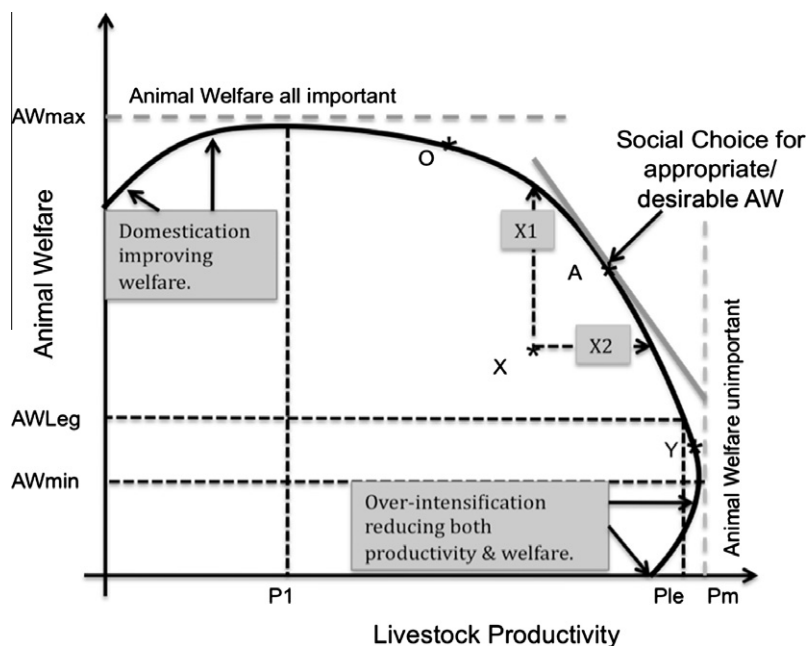


Fig. 1. Animal welfare possibility frontier. Source: adapted from McInerney, 1991.

knowledge and techniques, these businesses could be both more productive and more animal friendly than they currently are. Hence, both R&D and training and extension activities in the chain can improve both animal productivity and welfare. There will always be instances of win–win possibilities, where both animal welfare and productivity can be improved, indicating that current practices are not always the best (as defined on the frontier). While training and extension might seem obvious routes to both animal welfare improvement and improved productivity, the reasons for apparently ‘laggard’ behaviours are complex, not easily changed or even well understood. Management skills, in particular, are not easily reproduced or improved in the short term. Those who appear to be in most need to training and extension are frequently those who are least likely to seek these services and recognise their value.

However, market competition, as firms and businesses continually strive to prosper and succeed, tends to encourage businesses to become more efficient – to move closer to the frontier and, in so doing, to adopt, adapt and innovate so as to shift the frontier outwards. Other things being equal, competitive markets tend to encourage firms towards the frontier – to be efficient. In competitive markets, neither indolence nor ignorance are rewarded, and competitive pressures encourage the adoption of best practices throughout the industry, though this process takes time and effort. The implication of this perspective is that, for a competitive and efficient industry, *there is always a trade-off between better animal welfare and productivity – improved animal welfare generally increases costs*. Lusk and Norwood (2011, p.1) put this point another way, providing detailed analysis to demonstrate that: “production economics reveals that producers will not maximise animal welfare, even if animal well-being is highly correlated with output”, especially with intensive systems.

Attempts to implement the frontier concept as an empirical tool have to take account of the variation and heterogeneity of the factors of production (land, labour, capital and management). In other contexts, this is usually done by recognising that empirical observations will include the less efficient as well as the most efficient, and estimate an envelope curve (or multidimensional surface) consisting of only the most demonstrably efficient operations. Such estimation then identifies the extent to which the whole population of firms is or is not efficient, and the specific conditions that predispose some businesses to be more (or less) efficient. The statistical reliability of such estimates of agricultural production frontiers is usually sufficiently large that most of modern European agriculture can be considered as being efficient – especially when proper account is taken of the constraints of heterogeneous resources. However, implementation of the frontier concept as an empirical tool to investigate animal welfare is presently frustrated by the lack of a commonly accepted measure of animal welfare, as well as by the lack of data relating to both animal welfare and productivity.

The social determination of animal welfare

Against these production/welfare possibilities (Fig. 1), society signals its preferences for the appropriate mixture of animal welfare and livestock productivity in two major ways. First, social concerns for animal welfare are reflected in laws and regulations about minimum levels of animal welfare, setting the minimum level required (although not always enforced) at AWleg (Fig. 1). Introducing and enforcing a new high(er) level standard will imply reduced economic productivity according to the frontier perspective, with higher costs of production. As illustrated here, battery cages for laying hens are now outlawed (at point Y), and the productivity of laying hens has been reduced from Pm to Ple, with welfare

raised from AWmin to AWleg (provided all producers comply with the new legislation).

Increased enforced standards will, however, encourage adaptation and innovations to improve productivity given this new minimum standard, so that over time and other things being equal, the system will tend towards Pm/AWmin in Fig. 1, where AWmin represents the legal minimum standard. As a consequence, the frontier of welfare/productivity combinations will tend to adjust to this minimum standard, but only so long as consumer demand confirms that society is prepared to enforce the minimum standard and, as a result, pay any necessary premiums to enable the chain to comply effectively.

This simple logic suggests that a sensible route towards improved animal welfare is therefore to continually improve the minimum legislative standard. However, there are two major problems with this approach. First, unless consumers are committed to the continually improving standards by actually preferring and buying the higher standard products, the supply chains cannot be expected to adapt and adjust. Instead, businesses will exit, and their people will find something else to do. The sector will contract, and the domestic production possibility frontier will shrink. Consumers will either find alternative, lower standard sources, or switch their consumption away from animal products entirely. Ultimately, consumers have to back up their decision as citizens (delegated to government) not only by requiring higher standards, but also by supporting improved welfare through their actual purchases. Delegation of responsibility for animal welfare by citizens to their governments (through tighter regulation) does not and cannot absolve citizens of responsibility for the consequences – *delegation does not mean abdication of responsibility* – as implicit in European Commission’s tag line, above. Unless citizens, as consumers, are willing to back up their governments’ decisions about appropriate animal welfare standards by supporting (and purchasing from) their own local (EU) producers and supply chains in favour of alternative supplies, then their regulations will fail to improve animal welfare (especially of those animals involved in imported supplies).

The second problem with the regulation approach is that the appropriate minimum required level of animal welfare is inherently contestable, continually re-negotiated through democratic deliberative processes (Mann, 2005). There is no objective determination formula or logic, even in principle, through which peoples’ manifestly very diverse values and valuations of animal welfare levels can be aggregated. Whatever the causes or underlying factors of this wide variation (which include, *inter alia*, ethical stance, interest, awareness, susceptibility to propaganda, information sources, religious affiliation, sentiment, ignorance, imagination, income and experience), there is an inevitable range of preferred animal welfare states within any given society (let alone a collection of societies such as the EU). In democracies, proposals to introduce new regulations involve more or less extensive discussion and debate between the proponents (arguing the benefits of the new legislation) and the opponents (arguing the costs and disadvantages of the new regulation). Furthermore, the debate tends to be preoccupied with ethological issues rather than economic consequences (which tend to be treated as either peripheral or clear indications of vested interests).

In political economy terms, this ongoing debate acts as a surrogate for an explicit social cost/benefit analysis (e.g. Tonsor and Wolf, 2011). The ‘exact’ enumeration of the value of the benefit to each individual in society versus the value of the cost (disadvantage) for each member of society is typically regarded as far too difficult and time consuming to be attempted, if not completely irrelevant. This is especially so since the costs and benefits of proposed legislation are necessarily hypothetical, and hence subject to considerable debate and controversy. On the one hand, producers and the chain will emphasise the additional costs associated with

the proposed legislation. On the other hand, proponents will stress the anticipated benefits (enjoyed by society as a whole, including the animals), and difficult, if not impossible, to estimate uncontentionously.² Our political processes, however, do exhibit a clear tendency to improve animal welfare through successive increases in legal minimum welfare requirements, of which the recent ban on battery cages is an example.

The second way in which society signals its preferences for animal welfare is through consumers' willingness to pay for more animal friendly products in the market place. As societies become richer, better educated and more able and willing to take care of their environments and activities, so they tend to be more willing to pay for improved animal welfare (Keeling et al., 2012), as well as enact stricter legal requirements. The signals are transmitted as the 'price' of animal welfare relative to the price of animal products (i.e. the premium paid for more animal friendly products, where the price is indicated by the slope of the social choice line in Fig. 1 – a flatter line indicating society's willingness to pay a higher price for better animal welfare). The rising share of free-range eggs (and chicken) at the expense of cage eggs is an obvious example. In societies where animal welfare is of no importance at all, animal production systems tend to be driven towards maximum productivity and minimum animal welfare (for any given species and for the sector as a whole). This is characterised by Napolitano et al. (2010) as the *vicious circle of animal welfare degradation*. At the other extreme, a society which considers animal welfare to be all-important would tend to drive its production system towards the maximum level of animal welfare (and consequently a relative minimum level of animal productivity – with associated higher relative prices for animal products), described (*ibid*) as the *virtuous circle (or cycle) of animal welfare*.

The appropriate role of welfare standards

Codron et al. (2005) analyse the well-established proposition that the introduction and imposition of industry-wide 'minimum quality standards' (MQSs) in an already differentiated and segmented market does not necessarily improve average quality (animal welfare) or social welfare (as measured, for instance, by willingness to pay). They show that differentiation strategies depend on the qualitative level of the MQS, and also on the additional costs associated with the required production processes and monitoring, the price premia paid by the consumers, the marketing alternatives of the suppliers and retailers, and the contracting mechanisms to fix prices and quantities. In particular, successively higher imposed MQS can 'crowd out' private (voluntary) premium initiatives, not only directly but also indirectly as firms adapt their competitive strategies.

Codron et al. (2005) neatly summarise the conflicting incentives facing retailers for the appropriate level of the public MQS. On the one hand, retailers would like the standard to be set as high as possible, to avoid their own costs associated with differentiating their own products and segmenting their own markets – in effect, passing responsibility for the quality and safety of their products to the public sector (and the suppliers). On the other hand, the confidence, trust and loyalty of consumers is of vital importance, and they cannot afford to either betray this confidence to a public sector which may not be up to the job, or relinquish market share to

competitors who may be able to obtain lower quality products with less provenance from other (overseas) sources. They also benefit from the differentiation in the market for varying welfare standards, and the associated scope for market segmentation, which higher MQS would reduce.

In particular, they show that overall social welfare (the sum of the interests of producers, consumers and taxpayers) is higher under a combination of mandatory public MQS at a relatively basic level coupled with differentiation and segmentation of private labels and standards. Social welfare is reduced if the public MQS is set too high, particularly since the incentives to cheat and avoid the standards (and consequent diminishing trust by consumers in the imposition and meaning of the standard) are greater the higher the level of the MQS. In essence, since peoples' preferences for improved animal welfare are highly differentiated and heterogeneous, imposition of a single and uniform set of animal welfare conditions for everyone (presuming that such a level can even be unambiguously defined) cannot possibly generate as much social benefit as allowing for and encouraging expression of the differentiated preferences through the market place.

Market failures and consumers' willingness to pay for improved animal welfare

Competitive (intelligent, responsive and differentiated) markets may still fail to deliver socially optimal outcomes of animal welfare. Surely decent animal welfare is a *public good* – which, once provided for one person, is also provided for everyone (*non-rival in consumption*) and no one can be prevented from enjoying the benefits of improved animal welfare (*non-excludable*). However, the public good argument needs substantial clarification in the case of animal welfare (Mann, 2005).

It is clear that cruelty to animals is a *public bad*, at least as far as most modern societies are concerned. Many people are discomforted by the knowledge that animals are being cruelly treated in their society, and take steps to ensure that this does not happen, usually through persuading their governments to outlaw the practices which discomfort them, and to take the necessary enforcement measures to ensure compliance with the prevention of cruelty law. Absence of cruelty (enforced regulation) is a clear 'public good' – once provided for one, it is provided for all. However, the regulation can only be judged to be 'good' if society as a whole judges the gains resulting from the regulation to more than offset any associated costs and disadvantages. Taking the decision to introduce the regulation implies at least an implicit social cost/benefit calculation in favour of the regulation, otherwise, how does government judge the net benefit on society's behalf? Since there is no (defensible) cost to outlawing cruelty – once a common definition of cruelty can be agreed – it is clearly in the social interest to outlaw cruelty. The difficulties arise over whether particular current practices (e.g. fox hunting, bull fighting, and battery cages) are commonly agreed to be cruel. Clearly those who pursue and support the practices disagree that they are unnecessarily cruel, and will experience a loss as and when they are outlawed. The 'majority', however, will experience the public good benefit of knowing that the practices are no longer pursued.

However, as Mann (2005) notes, at least some people experience considerable discomfort knowing that animal welfare standards are not as high or good as they should be, over and above outlawed unnecessary cruelty, regardless of their own consumption (or not) of animal products. The essence of the 'public good' argument in the case of animal welfare is that some peoples' own value of animal welfare is affected by what other people do and what they consume. In economic terms, this discomfort is a 'consumption externality' – an effect on an individual wellbeing

² We do not pursue the problems of including the animals' own judgments of their own welfare (as opposed to peoples' judgments on their behalf). These are explored, for example, by Lusk and Norwood (2011) and, more extensively, by Norwood and Lusk (2011), who conclude that one (and perhaps the only practical) way of avoiding the problem of actually measuring (and properly accounting for) animals' own valuations of their own welfare is to rely on human altruism and judgements of animal welfare.

generated by another's individual consumption. Since overall animal welfare depends on both the welfare of each animal and the number of animals, and as farm animals are kept to meet consumer and market demands, actual animal welfare (as an aggregate or average level of animal welfare over the whole farmed animal population) depends on the demand for animal products. These animal products (hence, the welfare they imply) are clearly excludable and rival (*private*) goods. Nevertheless, the consumption externality is a form of market failure. Does willingness to pay adequately reflect this externality, or is government intervention required?

Citizens versus Consumers – the attitude-behaviour gap

It is frequently observed that people behave differently as citizens than as consumers (e.g. [McVittie et al., 2006](#); [Blandford et al., 2002](#) and [Harper and Henson, 2001](#)), and often “stated concern over animal welfare does not necessarily translate into purchase decisions” ([Toma et al., 2011, p.263](#)). [Vanhonacker et al. \(2007, p.86\)](#) label this as the “consumer-citizen duality”. The public pressure for legislation, improved standards and related government action on animal welfare is typically supposed to come from citizens rather than consumers (albeit that they are the same people). However, within the EU, there are few mechanisms through which constituents (citizens) can vote directly for government action on animal welfare, in contrast to, e.g., California or Switzerland. Rather, constituent pressure for government action on animal welfare comes from public attitude surveys ([EuroBarometer, 2007](#) is the archetypical example, showing that animal welfare is a significant issue for 64% of the EU population) and from indirect pressure on political representatives and assemblies from individual concerned citizens and advocacy groups (NGOs) seeking better animal standards (e.g. Compassion in World Farming). Clearly, some citizens are much more concerned than others, with those seriously enough concerned to devote time and resources to campaigning for typically in the minority. However, attitude and opinion surveys frequently record very substantial agreement with statements about improving animal welfare ([Eurobarometer, 2007](#)).

There are criticisms that such surveys do not account for framing bias (the tendency for people to agree with statements reflecting perceived social norms, e.g. [Vanhonacker et al., 2007](#)), scaling bias (associated with the length of scale offered to respondents), and the lack of any relativity or assessment of salience when asking about importance (relative to other perhaps more important personal, social and public issues). Nevertheless, it is apparent that people as citizens do say they support animal welfare, and also assert that more could and should be done to improve animal welfare conditions, reflecting society's moral and ethical values (e.g. [Ben-nett and Blaney, 2002](#)). Are people willing to pay for such improvements?

WTP and actual spending on animal welfare: a thought experiment

Willingness to pay (WTP)

There is a substantial literature reporting estimates of WTP for animal welfare and other attributes of animal products. [Cicia and Colantuoni \(2010\)](#) report a meta-analysis of 23 studies which estimate a total of 88 WTP measures of traceable meat attributes, including animal welfare. Their analysis shows that Europeans are more willing to pay for traceable meat attributes in general than the base (world average). Europeans' marginal willingness to pay (the extra money for an additional attribute for the average meat product) is a highly significant 15% above the base. Further-

more, on average over the whole sample of estimates, Cicia and Colantuoni find a marginal willingness to pay for an animal welfare attribute of +14%. The strong implication is that there is, in fact, a substantial market for animal welfare friendly products, especially in Europe.

[Lagerkvist and Hess \(2011\)](#) report an even more recent and more specific meta-analysis of WTP, based on 24 studies and 106 estimates focused specifically on farm animal welfare. The estimates analysed in this paper do not overlap substantially with those of [Cicia and Colantuoni \(2010\)](#) who focus on meat attributes more generally. Only one study ([Lusk et al., 2003](#)) with 8 estimates, is common between the two meta-analyses. Furthermore, [Lagerkvist and Hess \(2011\)](#) focus more extensively on European studies, with only 6 of their 23 papers dealing with non-European countries (5 for the USA and one for Australia), generating 14 of their total of 106 WTP estimates. Interestingly, these authors do not emphasise the average WTP estimated for animal welfare friendly products across their meta sample, possibly because their estimation results do not appear to demonstrate consistent (statistically significant) consensus about this basic measure. However, taken at face value, their results suggest that the WTP for animal welfare friendly products represents a premium of between 50% and 150% of the base price used in each of their studies, which (if true) is remarkable, especially since these estimates control for the major explanatory variables. Of these variables, higher income proved the strongest and most significant explanation of greater WTP for animal welfare.

In spite of this apparently strong willingness to pay, the market for improved animal welfare products is regarded as niche rather than mainstream. People, as citizens, profess substantial concern about animal welfare but do not ‘put their money where their mouths are’ when it comes to doing something about it. If more people were prepared to spend more money on improved animal welfare products, the market would be encouraged to respond by providing them, with the premium necessary to cover any additional costs. There is a growing literature on the difference between ‘voting intentions’ or attitudes and purchasing intentions and behaviour regarding animal welfare. [Verbeke \(2009, p.325\)](#) notes: “Although the importance that citizens claim to attach to animal welfare seems relatively strong, consumers' interest in information about animal welfare is only moderate compared to other product attributes, and the market shares of products with a distinct animal welfare identity remain small”. However, there is only a limited literature on why these differences exist and their implications for market failure (e.g. [Vanhonacker et al., 2007](#); [Harper and Henson, 2001](#), and also [Hamilton et al., 2003](#), with reference to pesticides).

A thought experiment on willingness to pay versus actual purchases for animal welfare

Suppose that we could obtain reliable panel data on: peoples' stated concerns about animal welfare (their votes in favour of improved animal welfare); their stated WTP for improved animal welfare products; their actual spending on these products. By reliable data, we mean that these data would be very closely replicated in repeat surveys and observations, implying that they are collected from appropriate samples of the population, appropriately controlled and corrected for known biases, and appropriately analysed to correct for confounding factors. Would we expect these three sets of data to say the same thing? More importantly, what would we expect these same people to say as and when we confront them with the apparent disparities between their voting and WTP responses and their actual purchasing behaviour? The difficulties of conducting such an experiment in practice need not detain us here (though [Andersen, 2011](#), reports part of such a

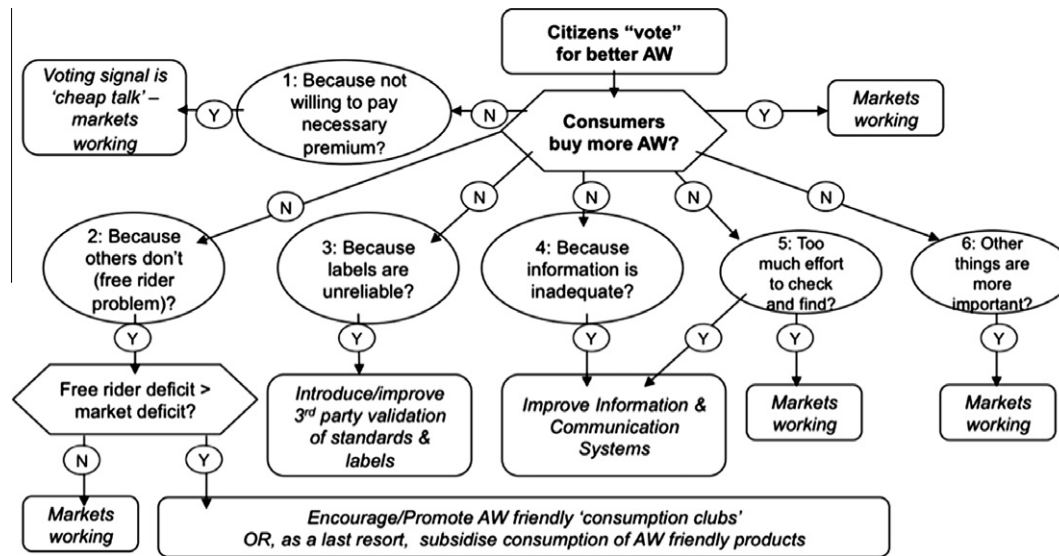


Fig. 2. Citizens versus consumers: anatomy of market failure for improved animal welfare.

study, examining WTP and purchase behaviour). Both common sense and economics suggest that we should try to identify what, if anything, we would learn from such an experiment before committing valuable resources and effort to overcoming the very substantial difficulties in implementing the experiment in practice.

The potential reasons for discrepancies between a person's vote and their expressed WTP (elicited in a well-designed choice experiment), and between their expressed WTP and their actual purchase behaviour, are closely analogous. Both the vote and the WTP are 'hypothetical' - expressions of personal (individual) judgement and intention - while the purchase behaviour is the exhibition of each person's (household's) actual spending on improved animal welfare.³ Carson and Groves (2007, p.206) recommend that researchers avoid "the use of the word *hypothetical* in discussing preference questions, in favour of *consequential* and *inconsequential* to emphasise the conditions requisite for the application of economic theory". Their strong point is that it is only possible to make logical conjectures about (and inferences from) peoples' responses to consequential questions. As these same authors (Carson and Groves, 2011) point out: "For a question to be consequential, survey respondents need to believe, at least probabilistically, that their responses to the survey may influence some decision they care about. For consequential survey questions, economic theory is relevant in terms of the incentives respondents face in answering the question. . . . For inconsequential decisions, any response is as good as any other response in terms of its influence on the respondent's utility level" (p. 301). So, in order to persuade respondents to provide some economically meaningful response, our WTP survey needs to be seen as consequential, in order for their responses to be 'incentive compatible'. In other words, our respondents have every incentive to respond strategically, if this appears sensible to them. They (we) can be expected to at least 'disguise' or be 'economical with' the truth - whatever that is - in our responses, if doing so promotes our chances of being better off as a result. Poe and Vossler, 2011, provide some further empirical evidence and discussion of consequentiality and contingent values (WTP).

We now consider the potential reasons that might be offered by our conceptual respondents for the differences between their votes

and their WTP, or their WTP and their actual spending. To structure the explanation of our thought experiment, we present the summary of the results, as an anatomy of market failure for animal welfare, in Fig. 2. Given that our illustrative respondents have already indicated that they are in favour of improved animal welfare ('voted' for it), how might we expect them to respond to a subsequent question about how much they are willing to pay (or how much improved animal welfare they actually purchase)?

The first possible answer (Figs. 2.1) is 'nothing at all'. In other words, the response to the vote question, assuming it is treated as consequential, is intended to persuade others, or the authorities, to improve animal welfare, and to show support for such socially beneficial progress. This vote does not signal, however, that we are willing to or think we need to pay anything for this. A reason might well be that 'it is the government's job to safeguard animal welfare, not mine'. Alternatively, it might be argued that the market counts Euros (or dollars) rather than votes, so cannot measure ethical issues properly, which is our government's job. Or our respondents might well object strongly to anybody consuming animal products and thus contributing to animal ill-fare, while certainly not being willing to pay anything for any animal product. Lusk (2011), for example, considers these arguments and suggests that developing a separate market in 'animal wellbeing units', where producers could respond directly to citizens' willingness to pay for improved animal welfare might be a route through which, for instance, vegans and vegetarians could exert their influence. This is an ingenious economic suggestion to internalise an otherwise missing market, but would have very considerable implementation and operational costs. It would also doubtless meet indignant objection from deontological ethicists (as Lusk notes), who believe it is completely unethical to trade animal well-being in any market. At least in a democracy, the only course open to ethicists is to convert as many others as possible to their moral values, thereby reducing consumption of animal products, and the associated abuse of their innate rights. Otherwise, these particular values can only be imposed throughout society through legislation, based on majority vote.

However, this perfectly reasonable response implies the conclusion that regulation is the best, if not the only way of maintaining and improving animal welfare. This in turn has to solve the serious problem of how to make social decisions on the appropriate levels of animal welfare in the face of widely differing and diverse views and judgements about the appropriate levels (as noted above).

³ Again, we abstract from the considerable technical and practical difficulties of identifying exactly the spending specifically in favour of animal welfare (as opposed to other attributes of the products), and simply assume that we can do and have done this already.

Whatever our underlying reasons for this lack of WTP, which are doubtless extremely complex, it is 'cheap talk' to vote for something for which one is not prepared to pay (Andersen, 2011). Carson and Groves (2011, p.304) note, importantly, that the term 'cheap talk' originated in the game theory literature, which "shows that talk is not 'cheap' when it can influence the actions of others. What was thought of initially as a costless way of signalling ... turns out to be quite consequential in the right circumstances". If citizens do not exhibit or express any WTP for animal welfare friendly products, markets cannot be expected to work, although 'cheap talk' may be influential in the ways they work, if listened to and accepted by others. In any event, the facts that markets do not respond to attitudes or votes without the necessary inducement of payment, or that the market's many participants do not subscribe to your (or my) particular moral codes, cannot be described usefully as 'market failure'.

An alternative answer to the WTP question is, a lot, without necessarily being truthful, on the grounds that greater willingness to pay signals might bring forth an increased supply of animal welfare friendly products. We might expect WTP approximations (at least for those expressed above zero) to generally over-estimate actual WTP as revealed by purchase behaviour (Andersen, 2011), so long as the survey or choice experiment questions are treated as consequential. As Carson and Groves (2007, p.188), put it: "As long as there is any positive probability of wanting the new good at the stated price, the respondent should say "Yes—would purchase."" The respondent's logic is that such an answer will encourage the chain to produce the good, with the respondent able to decide later whether or not to purchase. Since increasing the respondent's choices in a desirable way increases utility (and hence social welfare), the optimal response is "yes."⁴ In this case, our thought experiment (as illustrated in Fig. 2) now reverts to comparison between the large positive WTP and associated actual purchases of animal welfare friendly products.

There are five major classes of substantive reasons that can be offered to explain the difference between votes and WTP, and subsequently between WTP and actual purchase behaviour.

The first of these (Fig. 2.2) is that (some) people would be willing to pay the premium if only they could be sure that their contribution to improved animal welfare would actually make a difference to animal welfare, and/or if they could be sure that other people, too, were willing to support improved animal welfare. My consumption of products from poor animal welfare production systems helps to perpetuate these poor systems, and adversely affects others who value animal welfare more highly than I do.⁵ If I can be persuaded not to consume these products, others will feel better off, and I might well feel better simply as a consequence of their improved well-being. Thus, I might be more prepared to switch my consumption towards more animal welfare friendly products (even if at higher cost) if I could be sure that other people would also do so. But if not, there is a strong temptation to consider that my own efforts in favour of better animal welfare are too small to make any substantial difference, and hence not worth my effort and spending. These consequences are aspects of the "free-rider" problem, the root cause of potential market failure in the case of animal

welfare. Hamilton et al., 2003, note that, in the case of pesticide use in California, "personal consumption choices do not influence the level of public goods since an individual has a miniscule effect in the market. However, a public policy to ban pesticide use will influence environmental quality, and if the individual cares enough about this public good, then she may support the pesticide ban even if her WTP for pesticide-free food is less than the actual price difference between conventional and organic produce. Thus, WTP and referendum choices are not the same, and individuals' market and political behavior may differ depending on their personal characteristics" (p. 816). On the other hand, Carlsson et al., 2007, explore Swedish consumers preferences for GM free foods, and find no significant difference between their willingness to pay for products labeled as GM free and their WTP for a complete ban on GM content. In this case, there is no 'free-rider deficit'.

In total (summed over the relevant population) the shortfall between peoples' willingness to pay on their own account, and the amounts they would be willing to pay if they were convinced that their spending was also matched by others, can be termed the 'free-rider deficit'. In principle, if this deficit is greater than the amount necessary to encourage the supply or marketing chain to deliver the associated improvement in animal welfare (the 'market deficit'), then society would be better off if the free-rider problem could be solved. If the free-rider deficit is not greater than the market deficit, then although there is a potential free rider problem, it does not result in any market failure – society would not be better off by 'solving' the problem – the costs of doing so would outweigh the benefits, at least as measured by WTP backed up with actual spending.⁶

In practice, it is observed (e.g. Verbeke, 2009, p.327) that some people do appreciate the social pressures and norms which encourage them to spend their own money on improving animal welfare – hence both implicitly recognising and dealing with the free-rider problem. In effect, these people consider themselves part of a club or society in which the social pressures and norms are sufficient to persuade them to conform in spite of, rather than because of, their own self-interests. As societies spend more time and effort for improving animal welfare, so people become more aware of the issues and more likely to respond to these growing social pressures. This 'involvement' of consumers with the products and their provenance, either directly or indirectly through social norms, can be improved, for some segments of the market, by improved communication and information. This effectively encourages people to join the 'virtual' clubs of those concerned about animal welfare. In short, simple economics, which assumes everyone is purely self-interested and rational, suggests that the free-rider problem could be substantial. In the real world, in which very few are simple *homo economicus*, and many are responsive to their peers and social norms, the free-rider problem may not be as significant. Social norms and values can be cultivated and encouraged through active debate and provision of objective, disinterested information and validation services, which need to be provided through collective and collaborative action (governance), if not at public expense. In this context, the tag line used by DG Sanco on its animal welfare newsletter – 'everyone is responsible' – exactly hits the target.

Actually measuring the free-rider deficit is fraught with serious, if not overwhelming, difficulty. It involves reliable measurement of

⁴ In technical terms, the ubiquitous assumption of independence of irrelevant alternatives, necessary for the estimation of WTP, is almost bound to be violated in practice. In effect, the assumption is analogous to the *ceteris paribus* assumption invoked so as to be able to employ partial equilibrium analysis of a complex general disequilibrium system. As Carson and Groves (2011) point out, (p.311), rational (and reasonable) responses to consequential questions practically guarantee 'non-truthful' answers, in the sense that responses are likely to deviate systematically from actual behaviour (the 'truth').

⁵ We might also note that the consumption externalities which clearly exist for animal welfare, also exist for many other goods and services – such as alcohol, pornography, energy inefficient cars and so forth.

⁶ Some might object that WTP and actual spending use both ability and willingness to pay as the appropriate weight to attach to individual preferences for animal welfare. To adopt any other weight, however, implies that we should treat animal welfare not as a public good, but as a merit good – to be supplied to all free at the point of use, regardless of peoples' willingness or ability to pay. Extension of this argument implies some sort of deliberative social planning and management of animal production. The relative costs and benefits of this alternative are beyond the bounds of this paper, though (see below) the observation does have implications for the appropriate policy response.

willingness to pay as a pre-condition, and subsequently identification of the differences between this estimate with and without the condition that others are also both willing to and actually do pay their 'share'. Since the questions eliciting peoples' WTP are hypothetical, the answers are always subject to a sort of hypothetical bias, even if both consequential and incentive compatible. People do not actually do what they say they will do, because 'other things are not (and never are) equal'. Some analysts have gone so far as to argue that this hypothetical bias is sufficiently strong as to render all such 'contingent valuation' exercises effectively meaningless (e.g. Diamond and Hausman, 1994). Others, e.g. Blaney et al., 1995, argue that people express different preferences for public (or club) goods (such as improved animal welfare) than for private (normal) goods. Further, these two sorts of preferences (and the associated decisions) are conceptually distinct and non-commensurate – termed the 'citizen hypothesis'. However, Curtis and McConnell (2002) using data involving preferences for deer culling programmes in the US, demonstrate that the citizen hypothesis is observationally equivalent to the 'standard' self-interested hypothesis augmented to include altruism. As Curtis and McConnell (2002) note: *"The citizen hypothesis is not empirically testable. It is a maintained hypothesis because the citizen hypothesis concerns the individuals' underlying motives and these motives are never conclusively revealed in actual behaviour or survey responses"* (p.72). They conclude (p.82) *"At least in the case we have studied, there is no difference in the WTP for respondents who could be reasonably classified as citizens and consumers"*.

There are, however, four other substantive reasons for discrepancy between votes, wtp and actual spending, other than 'cheap talk' and 'free-rider'. A third reason (Fig. 2-3) is that the labelling of animal welfare friendly products is not sufficiently obvious or reliable to attract consumers or convince them that their additional spending will encourage improved welfare. A fourth reason (Fig. 2-4) is closely related, i.e. the information available to consumers about animal welfare and the improved standards used in producing some products is insufficient (or too contradictory or confusing) for them to make an informed choice. The appropriate remedies for each condition are obvious: improve the provision of disinterested (objective) information; use (disinterested) third party validation against proven standards; develop better and more reliable labelling, information and communication procedures. However, as Keeling et al. (2012) find, governments are not always considered the most reliable or credible sources of disinterested information, or the most effective communicators, so there is a clear role for third parties (including NGOs) in improving information and communication about animal welfare conditions and concerns. In addition, *"consumers may use mistrust in information as an excuse of their unwillingness to change their purchasing behaviour in line with their alleged concerns"* (Toma et al., 2011, p. 263), which is, effectively, another version of the 'cheap talk' reason above.

However, improved communications, information and more reliable animal welfare labels, while obvious and useful, may not necessarily narrow the gap between attitudes and actions substantially. The fifth and sixth reasons (Fig. 2-5 and 6) for the disparity between reported attitudes/stated preferences and actual behaviour are probably more important (e.g. Verbeke, 2009). If consumers have to spend valuable time and energy searching for animal welfare friendly products, then the effective price of improved animal welfare rises and the demand falls. Similarly, if other things (taste, quality, safety, convenience) are more important than the welfare provenance, then consumers will ration their time, effort and money in favour of these more important attributes, and not bother to seek out specific animal welfare friendly products. Moreover, consumers (and citizens) are not only concerned about their food. They have plenty of other things to be interested in, worried

and concerned about, and on which to spend their time, effort and money (Fig. 2-6). They will, in other words, tend to be 'rationally ignorant' – not bothering to spend time and effort trying to find out about, or to find, animal welfare friendly products in the face of all their competing interests and (pre-) occupations. The benefits they would get from the effort are simply not worth it to them, though their responses in surveys may often be revealed as 'being unable to find welfare friendly products' and is often ascribed to be due to a 'lack of availability'. It is also likely that at least some people would prefer not to be reminded about animal welfare at all when shopping for food. As a consequence, *"Improved farm animal welfare is more likely be realised and valued by consumers when it is integrated within a broader concept of quality, such as quality assurance or sustainability schemes"* (Verbeke et al., 2010).

Both attitude surveys and typical WTP studies, being focused on the specific issue of animal welfare, in isolation from the pressures and distractions of the real world, do not include these last two real world constraints and considerations. As a consequence they are necessarily biased in favour of the focussed issue, and in this sense remain subject to 'hypothetical bias' despite every effort possible to ensure consequentiality and incentive compatibility. Isolated 'artificial' attitudes are not likely to be reliable indicators of purchase intentions or actions, as is frequently found in the literature, and as is well recognised by marketers, who almost never use WTP estimates when trying to establish the likely market for new products.

Summary and implications

Fig. 2 summarises the results of this thought experiment, as an anatomy of potential market failure for improved animal welfare. Considering all the potential reasons why consumers' behaviour might well differ from their stated attitudes ('votes') in favour of animal welfare as citizens, it comes as little surprise that there are gaps between attitudes, expressed WTP and purchasing behaviour. Indeed, what is perhaps more surprising is that the gaps are not larger than they appear to be. However, apparent gaps between votes, WTPs and purchases do not necessarily indicate market failure or justify specific public intervention to bridge the gaps. In most circumstances, the gaps simply reflect the inherent difficulties of identifying consumer/citizen preferences and associated responsible behaviour in isolation from their everyday lives. Our political processes are responding to constituent pressures for (and against) further regulations. Everyday market processes are, in effect, continually testing the question of whether the social costs of new products and services are outweighed by the social benefits. The complexity of the market processes, as continual negotiations and re-negotiations of contracts between buyers and sellers, indicate the difficulties of replicating these processes and demonstrate the practical effectiveness of the market versus a command and control economy.

The market for free-range eggs, for example, has developed strongly over the recent past. In the UK, for instance, free-range eggs accounted for 32% of total fresh egg sales in 2002, but had reached 80% of the market by 2010/11⁷. While there have been stories about how the marketing chain participants can attempt to pass off cage eggs at the retail level as if they were free-range, most participants are very well aware that exposure of such fraud would ruin reputations which take years to build, and would be catastrophic for their businesses. Exposure and consequent embarrassment does not have to rely on official inspections. Animal welfare activists, concerned citizens, competitors and journalists can all be expected to 'police' claims, especially if they are thought likely to be false.

⁷ Source: Centre for Value Chain Research, Kent University Business School.

Markets and market behaviours are becoming ever-more sophisticated and self-referential as a consequence. Similarly, the growth of brands such as Freedom Foods and Organic, and of business-to-business standards such as Globalgap, clearly shows that at least certain market segments are more than willing to pay the necessary premiums to ensure that at least their own consumption of animal products is encouraging and rewarding better animal welfare. Most people (60%) also think that animal welfare has improved over the last 10 years, albeit that they also, apparently, think it could and should be even better (EuroBarometer, 2007).

Our thought experiment analysis, and associated stylised evidence from the development and differentiation of the market to include more animal welfare friendly products, does not suggest that there are any substantial grounds on which to argue that markets are failing to reflect the considered and reflective values of citizens about the relative importance of animal welfare. To be sure, markets need public support, to provide assistance of R&D and extension of best practice to the supply chain, and to provide relevant and disinterested information and evaluation of welfare claims to the consumer and concerned citizen and to ensure their probity. All of these activities have strong elements of public good and positive externalities, suggesting that public provision and or support from general tax revenues will be socially beneficial, and not just for animal welfare.

It is also obviously in the public interest to outlaw commonly agreed cruel practice. The (regulated) market will judge whether or not such legislation is of net benefit or not, at least in terms of society's willingness to pay for the improved animal welfare. New legislation will generally increase the costs of providing more animal friendly products (as in the case of the ban on battery cages), at least in the short run. Eggs and broilers in the EU will now be in competition with less friendly and cheaper alternatives and with other consumer goods and activities. (If the new legislation does not increase costs of production and delivery for EU products, then it raises the question of why the legislation is actually necessary). Society may recognise the more animal friendly products, and appreciate their contribution to improved animal welfare, and be willing to pay the necessary premium for the EU products. Other things being equal, in the event that the total expenditure on, and hence revenues earned by, the sale of the more animal welfare friendly products is at least equal to the spending on the similar but less animal welfare friendly products prior to the introduction of the regulations, then it would be clear that society does actually judge the regulation to be a public good.⁸

Animal welfare itself is not, strictly, a public good, though regulation of animal welfare is a public good. However, animal welfare does suffer potential free-rider difficulties associated with consumption externalities. Measurement of the extent of this problem in practice is fraught with exceptional difficulty. But, even if it is reliably established that the free-rider problem is causing substantive market failure, the appropriate remedy is not to subsidise producers for their welfare friendly production. Although simple economic analysis suggests that the application of subsidies (either to consumers or to producers) does not affect the incidence (who actually benefits and who pays), in practice the incentives provided by subsidies are very likely to differ as the effects are transmitted through the chain. If consumer spending on animal friendly

products is subject to a *pro-rata* subsidy, based on reliable estimates of the free-rider deficit (which can only be made at the retail level, if at all), then the incentives are for the retailers to seek out and encourage the necessary supplies, in competition with each other. Such a subsidy would be self-policing. Only if there is a free-rider problem (the free-rider deficit, covered by the subsidy, is greater than the market deficit) will the subsidy result in a greater consumption of the welfare friendly products and an improved level of welfare of the animals. If there is no substantive free-rider problem, then the existence of the subsidy will not generate any additional spending, and there will be no subsidy expenditure. Producer fears that the subsidy might simply be retained by powerful retailers can be countered by the fact that retailers would be unable to claim the subsidy unless they continued to sell the products, and would therefore be obliged to ensure their suppliers continued to supply them. The supplies will only be forthcoming if producers (and chain actors) are sufficiently recompensed for their production and animal care activities.

In addition, the implementation of a consumption subsidy would be substantially easier than a production subsidy. A consumption subsidy can be applied to any private or voluntary brand or label or product outlet which adheres to verifiable welfare standards. The level of the eligible standard (over and above the statutory minima) would be determined by the authorities, with third party verification of the standards a necessary condition for receipt of the subsidy. The subsidy would thus be entirely compatible with existing and new private and independent standards and would not require any separate bureaucracy. Indeed, it would encourage third party verification and transparency of private standards. Not only that, but a consumer subsidy would also be perfectly compatible with existing international trade agreements and commitments, since the subsidy would apply to any welfare superior product, regardless of origin, so long as the authenticity of the improved welfare conditions can be substantiated. Finally, and potentially importantly, a consumer subsidy would overcome the objection that market determination of appropriate levels of animal welfare depends on willingness and ability to pay, and therefore discriminates against the less well off. There is, however, a significant problem with such a subsidy. It will simply replace or crowd-out what consumers would have spent anyway, as their involvement with animal welfare continues to improve. Hence, it should be considered only as a finite and explicitly time-limited promotion, rather than a permanent feature of future policy.

Subsidising production (the focus of current policy), on the other hand, requires the separate registration of each producer and verification that they are eligible by the subsidising authority, and does not serve to encourage the further development of existing market-based welfare friendly products, or the chain capacity to deliver and market these subsidised products. Not only are producer subsidies substantially 'incentive incompatible', but also the provision of additional production assistance can damage the interests of existing welfare friendly producers, since (if effective) this assistance must increase the supplies of welfare friendly products, and hence reduce their market price. Such an over-supply condition has reportedly already affected the free-range egg producers (at least in the UK), where investment assistance to producer to help adjustment to the 2012 ban on battery cages for laying hens has resulted in a significant increase in free-range and barn eggs, undermining the existing market, at least in the short run. It can hardly be judged equitable that existing welfare friendly producers are harmed by efforts to persuade less welfare friendly producers to adjust their practices.

Such apparently adverse effects raise the question of why the policy system appears so predisposed towards producer subsidies. At least a major part of the answer lies in the historic evolutionary path of agricultural policy, especially in the EU, and the policy,

⁸ Strictly, real expenditure should increase to reflect the value of the public good of the new regulation, over and above the costs of monitoring and enforcement. However, such a test is practically impossible to carry out, since many other factors contribute to changes in consumer spending and domestic production (other things are never equal). These other factors are practically impossible to control for accurately in any statistical testing for the legislative effects in isolation. It is clear, however, that the market will judge the new legislation to be a public bad, rather than a public good, if the consequence is that substantial parts of the European poultry industry 'emigrate' to less regulated parts of the world.

programme and support dependencies that this history has generated (Harvey, 2004).

Finally, it is worth noting that our analysis of market failure potential for animal welfare has substantial application and implications for very similar problems and issues in the case of environmental conservation and stewardship. Although the principal symptoms of potential market failure perhaps present in a slightly different form in the case of the environment, the principles of the anatomy of market failure developed here also apply to the public good/externality nexus for the environment (Harvey, 2003).

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