Rising interest in credence qualities in agricultural products and the role for government

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Abstract

Consumers are increasingly interested in the impacts of agricultural production on the environment, animals, workers, health etc – all examples of credence attributes. While governments set and enforce minimum requirements regarding these attributes, roles for government in markets for products with additional levels of these attributes ('ecolabelled' products) are less clearly defined and understood. This presents a risk that government actions will create distortions in markets for ecolabelled and non-ecolabelled products. This is especially likely if policy is based on pursuing environmental and other outcomes through encouraging ecolabelling. There are some areas, it is argued, where government actions *could* increase the efficiency of markets for goods with additional credence qualities. This is because of the impacts of information asymmetries between producers and consumers. However, firms have developed many ways to signal the credibility of their claims, and any government intervention must be cognisant of this. The paper reports on a continuing body of work within the Victorian Department of Primary Industries aimed at identifying roles for government in ecolabelling, and progressing their implementation.

This is a clothing label from a small American company that sells their product in France. Here's the translation of the French part of the label.

- Wash with warm water.
- Use mild soap.
- Dry flat.
- Do not use bleach.
- Do not dry in the dryer.
- Do not iron.
- We are sorry that Our President is an idiot.
- We did not vote for him.

1 Introduction

> There are gains from trade, and people are relentless in finding ways to realise them. What do the founders of eBay have in common with flea market merchants? Each set up exchange mechanisms to generate gains from trade. Where markets are absent, mutual gains can be realised by establishing them. Where they are present, further gains are sometimes to be had by finding ways to make them work better (from Reinventing the Bazaar - A Natural History of Markets by John McMillan, 2002).

Interest in what happens before farm products get to markets is increasing in developed countries. It is affecting more and more consumer[1] purchasing decisions worldwide and impacting on the agricultural sector in a variety of ways. There are some quite dramatic examples. Consumers have resisted the introduction of genetically modified crops, and in October 2004 there was a widely publicised decision by a major US retailer to stop stocking Australian wool products due to pressure from the activist group People for the Ethical Treatment of Animal (PETA) about live animal exports and sheep mulesing. There are also emerging opportunities for some farmers to benefit if they can successfully differentiate their products to appeal to consumers. Farmers markets, where all produce is 'locally grown', number in their 1000s in the USA, and are spreading in Australia; products are being 'ecolabelled[2]' with innumerable attributes such as 'free-range'. 'organic', 'biodynamic', 'fair trade'; and there is a growing and competitive international 'industry' around certification and quality assurance schemes.

Obviously food choices now accomplish many functions for some people. In addition to traditional factors such as price, convenience and taste, consumers are increasingly influenced by social identity and lifestyle, and choices may be made on the basis of environmental, political, moral, religious, regional, or a host of other reasons (Parbery 2004). But perhaps not so obvious is that roles for government may be quite different when goods are sold on the basis of credence qualities 'above minimum requirements' than for goods sold without such claims but which are still required to meet established minimum environmental, food safety and other standards as part of the 'right to do business'. This, combined with a lack of understanding of the nature of the market failure their interventions in ecolabelling are attempting to 'fix' can lead to governments pursuing inefficient policies and policy instruments.

[1] In this paper 'consumer' refers not only to those who choose to pay premiums, but *also* to others, who may or may not reflect preferences through purchasing, but whose behaviour as concerned citizens can affect development of markets.

[2] The term ecolabel is used in this paper to mean a label describing any attribute 'above minimum requirements' related to environmental claims, social claims etc. We would include, for example, a claim on the label of US jeans sold overseas that the manufacturer did not vote for the US president.

For these reasons, DPI established, in 2002, research into the role for government in ecolabelling. The Department recognised that without effort in this area there were risks, including:

- Resources diverted into research and other activities not representing efficient use of public funds;
- Other distortionary impacts as expected when governments try to 'direct traffic' or 'pick winners';
- Impacts on government credibility if it is seen as having advocated or promoted a particular way of production or marketing;
- Foregone opportunities to increase agricultural productivity if new 'technologies' (eg GMs) are resisted by consumers and efforts are not made to understand and address consumer attitudes; and
- Loss of the right to do business due to changing consumer attitudes to traditional agricultural practices.

It is argued that efficient roles for government in ecolabelling are primarily based on asymmetric information as the potential source of market failure[3]. This is distinct from interventions based on the environment as a public good, that aim to increase consumption of ecolabelled products as a way of pursuing environmental outcomes. Pinpointing cost-effective roles for government more specifically depends on what the private sector is capable of achieving to overcome asymmetric information. This depends on numerous factors as yet not extensively researched for agriculture, including the viability of investing in reputation, that vary between industries.

DPI Victoria has made some progress in implementing roles for government. The aim now is to highlight areas where sustained and widespread effort from agricultural economists and other disciplines could lead to increased gains from trade for the benefit of the Australian economy.

2 Information asymmetry and market responses

2.1 Information asymmetry - its impacts on markets

Products and product attributes can be grouped into three categories according to the costs consumers would incur in gaining information (Nelson 1970, Darby and Karni 1973).

[3] Building on arguments in Cole and Harris (2003) and Harris and Cole (2003)

- **Search:** characteristics can be checked by looking at, feeling, smelling or otherwise searching the product before purchase. For an orange, this might be the required size and colour.
- **Experience:** characteristics can be checked after the good is consumed or 'experienced'. For an orange, this could be the taste.
- **Credence:** claims about characteristics can't reasonably be checked by consumers at all, even after the item has been used or consumed. For example, it is difficult (costly) to detect whether an orange has low pesticide residues, before or after purchase.

The key difference between these categories is the amount of information consumers have or can cheaply acquire compared with sellers. For credence attributes, 'the individual transaction costs of evaluating and ensuring the characteristics of the products … are prohibitive in relation to the marginal benefits of environmentally superior products for each individual or household' (Karl and Orwat, 2000). For example, orange growers know whether they have used pesticides, but consumers do not, and cannot discover this even after purchase, without incurring high costs. This is distinct from missing or incomplete information, discussed in Parbery 2004.

Because the information environments for these three types of attributes are so different, they pose very different issues for marketers and government (Caswell and Mojduska, 1996). The 'new' qualities consumers are demanding are very often credence attributes and governments need to understand the nature of the associated information issues for efficient policy making.

When markets operate efficiently, as they generally do for search attributes, government intervention is not required (Caswell and Mojduska, 1996). Consumer information is relatively plentiful and easily attained so consumers can protect themselves. Also consumer-purchasing patterns (such as frequent purchases in the case of food) provide direct incentives to producers to provide the range of search qualities consumers are willing to pay for. The extent of repeat purchase (or the extent of consumer brand loyalty, which can be based on reputation) is quite important. Firms hope that consumers will stick to the one brand, with known quality characteristics, instead of spending time searching for the qualities they require every time a purchase is made. Consumers have an incentive to follow this practice also, to reduce search costs, and knowing that the firm has something to lose (investments in attempting to provide consistent search qualities) if the expected quality is not delivered.

For experience attributes, consumers can overcome information asymmetry two ways. When the information problem is present at each repeated transaction, such as car repair quality, firms can make a promise that will turn out to be costly after sale if the claim of high quality is false. Warrantees and money-back guarantees are examples of these default-contingent

signals (Kirmani and Rao, 2000). Second, a consumer can learn about a firm's quality level through experience, and structure his subsequent purchases accordingly. In this case, the signal becomes the brand or investment in reputation. Government is unlikely to become heavily involved in requiring informational labelling of these attributes because with signalling and repeated purchases the market can satisfactorily self-correct (Caswell and Mojduska, 1996).

When it comes to credence attributes, information asymmetry means that markets simply do not function well. This was first recognised by George Akerlof (1970) in his famous article 'The Market for Lemons'. Akerlof (1970) showed that if producers cannot convince consumers prior to purchase that their products (such as used cars) are of higher quality, then higher-quality products will not be able to command a price premium because consumers will assume, to protect themselves, that all products are 'lemons' (a colloquial term for a persistently defective old car). The consequence is that only lemons will be produced—a loss to all consumers willing to pay for more, and for the economy. As will be discussed later, Akerlof's paper went on to show how high quality producers overcome this.

The same concept applies to credence attributes in food. That is, when consumers cannot distinguish between high quality and low quality products even after purchase, they may protect themselves by not paying a premium for *any* such claims, removing the incentive to produce high quality products. Akerlof observes, with regard to credence attributes, that 'dishonest dealings tend to drive honest dealings out of the market' (Akerlof, 1970). Taking this to its extreme, adverse selection can cause the market for superior attributes to collapse, leaving only low quality products—a case of 'market failure'. Society misses out on the value that would be created through mutually beneficial exchange (Stoneham, 2003). As discussed in the next section, however, all is not lost, as producers of high quality goods often find a way around this, thus mitigating market failure and perhaps the need for government intervention.

2.2 Private (non-government) signalling to reduce information asymmetry for credence attributes

Akerlof, Spence and Stiglitz were jointly awarded the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel in 2001 for recognising that many business approaches arise in response to asymmetric information in markets (http://www.nobel.se/economics/laureates). These include warranties, money-back guarantees, insurance excesses, product standardisation, investments in branding, advertising, sunk costs and third-party certification (Riley 2001). Thus, while information asymmetries can make markets unstable (because of the ever-present potential for adverse selection and moral hazard), competition and consumer demand for assurance provides incentives for

producers to market the credence attributes of their products at a price and credibility that is attractive to consumers.

Under certain conditions, signals will be an effective means of solving the adverse selection problem, so that all producers, regardless of the quality of their products, make honest claims about their separate types of goods in a free market situation (Spence, 1973). An example is the successful market differentiation of organic and conventional agricultural production, where the former is the credence attribute. Another is the egg market. As previously noted, the right to do business, in farming as elsewhere, requires minimum levels of socially acceptable practices be observed, and these change over time as definitions of 'acceptable' change. In the layer hen industry, adjustment is currently occurring towards a new requirement that minimum cage sizes will, by 1 January 2008, be required to provide a floor space of 550 sq cm per bird (ABARE 2004). However, consumers prepared to pay for 'extra' qualities above the minimum have a range to choose from such as 'barn laid' and 'free-range' backed up by private certifiers such as the RSPCA.

If high and low quality products are truthfully labelled and priced accordingly, a *separating equilibrium* is said to have been achieved. In a separating equilibrium, high quality producers 'have to pay a signaling cost for the problem to be transformed from one of adverse selection to one of symmetric information' (Macho-Stadler and Perez-Castrillo 1997, p 198). Whether or not a separating equilibrium will be achieved for any particular product depends on:

- the costs of signalling
- the additional cost of producing high versus low quality products
- the marginal benefit to consumers (the amount they are prepared to pay for high quality).

For each particular product, service or industry, there will be a different combination of the above variables and for some, the combination will be such that the information asymmetry cannot be resolved via private sector signalling. The onus is then on government to identify when these problems are costly for society, and the most cost-effective mechanisms to address them.

McClusky (2000) designs a mathematical model for establishing whether private signalling will be sufficient, by 'solving' for the level of monitoring (essentially equivalent to the probability of being caught making a fraudulent claim) required for firms to choose a truthful labelling strategy. She simulates the strategic behaviour of firms (whether they will cheat or not) in production and labelling decisions for the credence quality 'organic'. Results indicate that the level of monitoring required to prevent cheating needs to increase at the same time as:

- organic farming costs increase relative to conventional farming (to offset the large one-off cost-saving from cheating);

- the profit from organic farming decreases (a smaller future profit means there is less to lose by cheating); and
- the discount rate decreases (producers are more willing to trade future for current profits).

McClusky's approach is helpful in identifying industries where a separating equilibrium is more, or less, likely to occur (and therefore where government intervention will be more or less likely to be indicated), and it highlights the importance of monitoring as part of the equation. However, it does not incorporate investments in reputation, the importance of which is discussed next.

2.3 Signalling options

Firms can use different mechanisms to signal to consumers: investments in reputation, third party certification and ecolabelling, or relying on the reputations of retailers. These are discussed in turn.

2.3.1 Investments in reputation

"A scotch is what's called a 'credence good'. Which means how good a scotch is depends a lot on what other people say about it, and what that scotch says about you" (Robinson, 2002).

Producers are free to make self-declared claims on their own labels. Although the Trade Practices Act 1974 (Commonwealth) states these must not be misleading or deceptive, consumers do not generally assume all deceptive producers will be 'caught'. They generally require extra signals from producers that their claims can be believed and that they will get the quality they have paid for.

A producer can signal truthful claims through reputation. Repeated honest dealings with consumers are the usual way to signal that experience attribute claims are true. However, for credence attributes the feedback mechanisms to discipline producer behaviour are insufficient (that is, the consuemr does not discover quality after purchase) (Cason and Gangadharan 1999). For reputation to work as a signal for credence attributes, firms need to make conspicuous non-salvageable investments (also known as 'hostages') that would be lost if they were caught cheating. Williamson (1983) coined the term 'hostages' to refer to the costs of terminating a contract between a seller and a buyer. Any build-up of seller hostages raises the costs the seller has to pay for violating contractual terms by misrepresenting quality (Wills and Harris 1994). These investments must be non-salvageable ('sunk') but can be in production, or in advertising, sponsorship and the like, and will function as an effective signal if they are visible to consumers so that consumers know that the firm risks losing these fixed investments if they cheat. Firms seeking to make short-term profits by cheating are unlikely to make significant sunk investments. Rational consumers realise that firms will not be able to recover these costs from future sales if they are caught cheating. An example is Banrock Station's investment in its wine and wetland centre, located in outback Australia (see

http://www.banrockstation.com/regions.asp). However, for agricultural products, especially those generally sold as commodities, the scope for individual producers to signal quality though visible investments in reputation may be less than for many other industries.

Because the nature of credence attributes means consumers are unlikely to discover cheating for themselves, monitoring is still needed for the reputation approach to be successful. In some cases, monitoring by interested parties (such as lobby groups, media, interested individuals and competitors) may be sufficient to ensure investments in reputation are truthful signals. Activists may also influence reputation. For example, vegetarian and animal rights groups typically assist or coordinate legal challenges, such as that regarding claims that McDonalds fries were vegetarian, when in fact some beef flavouring was used (see http://www.all-creatures.org/aip/nl-23may2001-fries.html). Yet another is for firms to lobby for government monitoring (potentially to reduce their own costs

However, the amount of monitoring would be reduced by investment in hostages. It would be useful to extend McCluskey's model to incorporate investments in hostages as an additional variable. Alternatively, other approaches (eg Vickers 2003) may prove useful in the future in measuring the ability of different firms to signal quality via reputation. As previously mentioned, the importance of developing such approaches would be in predicting industries where calls for government intervention may be more likely, to understand the reasons why, and determine whether and in what form intervention should proceed.

2.3.2 Third-party certification

Another option is for a firm to explicitly join a third-party monitoring and/or certification scheme. Third party certification of an environmental label requires a number of stages to be undertaken: setting standards, testing, monitoring and enforcement (Golan et al). Each of these is costly, and each can potentially be done by the private sector or government. It is not necessary for all of the stages to be undertaken by one sector. For example a private ecolabelling company could potentially make use of measurement systems (eg a way of measuring salinity reduction) developed by government as part of their own standards and certification systems.

Competition in private ecolabel certification schemes is an important part of ensuring that user fees are not set too high. However, there is a trade-off between the benefits and the costs of such competition. Rametsteiner (2002) discusses this situation in the context of forest products, noting that 'competition … results in a propensity to reward initiative instead of a passive 'wait-and-see' attitude; it rewards those who are interested in achieving results, and it enables stalemate situations to be overcome...'. However, intense competition is likely to lead to adverse selection between certification programs: those that offer higher quality than the

other certifiers may not be able to signal this to their customers, and so the certification systems themselves may gradually descend to a minimum level of credence quality.

To counter this, Rametsteiner recommends governments play a role in communicating or influencing minimum standards of private schemes. This could include actions such as recommending the use standards set out by the International Standards Organisation (ISO) or other umbrella accreditation bodies.

Products with heterogeneous and variable characteristics make it more expensive to measure and verify higher quality. For example, it would be more cost-effective for a third-party certifier to measure and assess the environmental impacts of a standard manufacturing process (eg tyre production) than the impacts of environmental management actions across a variety of crops, locations and landscapes. This may be another reason (like inability to signal via reputation) to expect calls for government intervention to set standards or otherwise become involved in certification programs in primary industries.

2.3.3 Hybrid signalling and the role of retailers

For certain types of firms and industries, the difficulty of using visible sunk-cost investments to signal quality, and/or the difficulties in establishing third-party monitoring/certification schemes, is one reason large retailers such as supermarkets take on a reputation signalling role. Many consumers expect supermarkets to maintain quality standards for the products they sell, as well as to have verified any claims of higher quality. In other words, producers of high quality products can 'rent' a retailer's reputation instead of investing in their own (Chu and Chu 1994).

At each stage of food production, from primary producer to consumer, purchasers may have limited access to information about credence attributes, but retailers with huge investments in reputation have incentives to verify quality claims on products they sell, and customers know this. These claims can be product-specific or about all produce in the store (eg Whole Foods in the USA and Sainsbury's supermarkets in the UK). Retailers can vertically integrate with others in the supply chain to reduce information asymmetries, rely on third-party certification or the reputations of their suppliers, or certify quality for themselves. Third-party (eg audited environmental management systems (EMS) to ISO14000) and in-house environmental quality assurance schemes are increasingly required by retailers in Australia and internationally. In the UK, retailers such as Tesco and Sainsburys require all suppliers to achieve certain environmental and other standards, which are continually becoming more stringent. For example, Brooks (2004) describes the challenges and costs involved in achieving 'assured produce status' to supply soft fruits to UK supermarkets, including the latest 'ethical trading audit'. This is based on looking at contracts of employment, safe working practices and wage

levels. Private interviews are conducted with 10% of randomly chosen staff who are asked about how they feel about all aspects of employment in the business.

Reputable retailers often make conspicuous non-salvageable investments such as brand names and expensive premises. They have a lot more to lose from cheating than do low-cost operators who have not made such non-salvageable investments. A consumer who enters a reputable retail store knows that store-wide or product-specific high quality claims are more likely to be true, because the reputation of the company and its future are at stake. Conversely, when shopping at low-cost stores (such as a roadside stall with no advertising or expensive fixtures), consumers are less likely to believe claims of superior quality because they perceive the retailer does not stand to lose enough if caught cheating.

Thus, when environmentally superior foods are marketed through reputable retailers, markets generally use a mix of reputation and certification signals to consumers. Taken together, the incentive for retailers to monitor the truth of all quality claims (including credence claims) and the signal presented by a retailer's reputation, would act to reduce the level of additional third-party monitoring of credence claims needed to sustain truthful labelling.

The extent to which consumers in Australia use supermarkets for their 'guarantees' (implicit or explicit) in delivering credence qualities; the importance of this versus other reasons for shopping at supermarkets; and likely trends for the future (eg whether Australian supermarkets will introduce more and more stringent environmental and other requirements, like some overseas) would be a useful subject for future research.

3 Role of government in increasing efficiency of credence attribute markets

3.1 Transactions costs and imperfections that remain in credence attribute markets

We have shown that producers can use one or a combination of quality-signalling methods - investments in reputation, third party certification services and retailer reputations - to reduce adverse selection problems. Signalling needs to be costly, however, in order to generate the separating equilibrium in the first place (see section 2.2). There are also 'transaction costs' to consumers in understanding credence claims, comparing brands and measurement approaches, and interpreting signals. These are present in all purchase decisions but are much more complex for credence attributes. For example, consumers can be faced with multiple credence attributes, and varying degrees of attributes.

When transactions costs are high, consumers can choose not to purchase, or seek to reduce their information costs. The choice is influenced by the size of the transaction costs, consumer risk aversion and strength of desire to purchase certain attributes. Consumers often develop rules of thumb for reducing their costs. For example, Grolleau and Caswell (2002) suggest that consumers often believe that if claims of high quality 'search' and 'experience' attributes are verified, they assume that any credence claims are also true. Grolleau and Caswell also report that the reputation of the consumer's agent (government, third party or retailer) has more influence on consumers than precise knowledge of quality definition and monitoring.

Transaction costs can reduce the net benefits to consumers and, combined with asymmetric information and imperfect signalling, credence attribute markets may be unlikely to ever achieve the levels of efficiency evident in many other markets. A question for government then, is whether/when it could improve on the imperfections that remain in private markets for credence attributes. This section identifies roles governments can take that can enhance the operation of market for goods with credence attributes.

3.2 Research into systems of measurement

Systems of measurement, or 'metrics', are fundamental to substantiating ecolabel claims. However, there are currently very few available to measure and compare even the farm-based environmental impacts of primary production (let alone 'life-cycle analysis', becoming popular in other industries to measure the impact of a product throughout its entire life cycle from resource extraction, through production and use, to final waste treatment or disposal). There appears to be little incentive for the private sector to develop scientific metrics for the environment because the private benefits cannot be fully captured by the investor, so mechanisms to address such market failures usually involve governments providing or subsidising the research, or contributing to the definition of a particular attribute.

Investment in metrics is one of the most important roles for government in ecolabelling. It is also important for farmers who may not necessarily wish to market farm products as 'superior' but wish to counter negative impressions such as 'organic' being better for the environment than traditional agricultural practices. It may be that if all aspects of a farm's environmental performance were able to be measured, many 'traditional' farmers might make significant contributions in areas not covered by labels such as 'organic' (eg soil attributes such as erosion, salinity, acidity, and degradation, irrigation efficiency, water quality, management of odours and other nuisances, waste management and energy management). In an ideal world, producers would have access to metrics to enable them to demonstrate their credentials in any one or a number of areas related to their environmental performance.

At this stage, single criteria systems of measurement may be a challenging enough goal for primary production. Governments should identify where the lack of a metric or definition is

hindering producers ability to meet a market demand for ecolabelled products, and/or consumer confusion, and investigate priority options for creating and providing environmental metrics.

Government and the industries or third-party certifiers who would benefit could jointly fund the development of specific metrics for ecolabel applications. Also, metrics developed for other purposes could be provided to those seeking to use it to substantiate an ecolabel at marginal cost. An example is the biodiversity metrics ('habitat hectares') developed as part of The Victorian Government's BushTender Trial (Stoneham et al. 2003; Parkes et al. 2003).

A well as roles in developing metrics, government may also have a role in developing cheaper and more effective monitoring technologies to help verify claims. Global markets and lower-cost measurement and data management technologies make specialisation and differentiation in commodity attributes more profitable. An example relevant to credence attributes is the poultry industry's invention of a test that shows whether an egg has rested on cage wire, to identify caged bird eggs that have been falsely labelled as free range (*Weekly Times*, March 26 2003).

3.2 Information provision to assist consumer decision-making

The cost to a consumer of verifying producer claims is the underlying reason for asymmetric information between consumers and producers. Governments have a legitimate 'public good' role in providing information to assist consumers reduce these costs and, because provision of public good information is generally a relatively low-cost and non-distortionary policy instrument, governments should proceed as far as possible with this as a preferred policy instrument. Governments could do a great deal more to assist consumers overcome information asymmetries.

DPI Victoria is currently updating it's website to better meet the needs of consumers wanting information to help them make decisions about purchasing agricultural products. Information about minimum standards and their enforcement will be available, along with information about products sold above minimum requirements and how these can be verified. However, it is not considered appropriate for a government website to engage in evaluating and ranking the merits of different ecolabels for different products. It is hoped that this might emerge into the future with a website such as www.ecolabels.org developed by the US Consumers Union. We have stated the benefits of such an approach in an article titled 'Believing Environmental Labels' for the Australian Consumers' Association publication '*Consuming Interest*' (Cole and Harris 2004).

DPI website information would be objective, such as explaining that different types of ecolabels use different approaches to signalling information to consumers:

- Type I ecolabels, eco-seals or stamps, are only awarded to products that meet specific criteria, so quickly indicate to a consumer that these criteria have been met, without including information on how the criteria themselves were decided upon. Examples include the AELA's Earthmark and the Heart Foundation tick. Teisl et al. (2002) found that adding contact information to an eco-seal increases its credibility with consumers.
- Type II ecolabels are self-declarations such as Banrock Stations 'good earth fine wine' claim and Buloke Reserve's 'in harmony with nature'.
- Type III ecolabels are 'report-cards' and provide more information, but consumers need more time and knowledge to read labels (as they do with nutrition labels for example) and compare attributes between products. An example is Australia's Energy Rating system for whitegoods.

Although governments should confine themselves to providing objective information, so that they don't interfere with the development of competitive ecolabelling industries, they should also monitor the possibility of imperfect competition. If a certain label (probably a type I stamp) became so well known as to be virtually the only one in the market, pricing practices may need to be investigated. More generally, governments and others could usefully investigate whether ecolabels have natural monopoly characteristics and why.

In some cases, scientific *uncertainty* (as opposed to risk, which involves known probabilities of different outcomes arising) affects consumer preferences, as has been observed in debates about genetically modified (GM) foods, for example. There is a role for government in understanding more fully how consumers make decisions under conditions of scientific uncertainty (Parbery 2004). If consumer attitudes are not fully understood for particular issues (and this may involve in-depth sociological analysis, and different disciplines working together) then policy instruments are likely to be less than optimal. For example, in 2001 Australia introduced mandatory labelling of most foods and food ingredients derived from GM crops in the ingredient list. Many economists thought voluntary labels telling consumers products were GM-free would be sufficient to address consumer choice issues, because mandatory labelling is not costless and can cause side-effects such as reduced demand (Dosi and Moretto 2001). However, the strength of consumer resistance to GMs became the main driver of government actions (Parbery 2004).

Another concern is when consumer preferences are based on *inaccurate* information. Caswell and Mojduszka (1996) explain that 'if (consumer) perceptions of the quality attributes of foods are incorrect, consumers lose utility'. For example, if consumers derive satisfaction from improving hen welfare or biodiversity, then they need to know how to rank various claims in order to purchase according to their preferences. Consumers rely on many sources of information about credence attributes, including some that are independent and some (such

as producer groups or lobby groups) that may have a vested interest. Some of the producer-focussed research undertaken by Government Departments of Primary Industry and Agriculture could provide valuable information to assist consumers develop their preferences. This is an important role of government, and will be part of DPI Victoria's efforts to improve consumer information (on the website and elsewhere) as previously discussed.

3.4 Monitoring ecolabel claims

According to Ippolito (2003) 'we know surprisingly little about the economics of private standards and the forces that allow them to develop. And of course, establishing credible and valid standards raises quality issues of its own.' Private certification schemes can emerge from:

- Consumer associations
- specific interest lobby groups (eg international conservation organisations such as WWF)
- commercial certification scheme business ventures
- retailers
- groups of producers wanting to promote their products

Each of these groups has different incentives, levels of expertise and decision-making processes. Accordingly, ecolabel schemes vary in their independence, what they measure, their thresholds or standards, levels of enforcement and what the ecolabels convey.

Because private monitoring schemes are important in supporting efficient markets for credence claims, increased availability of information about the credibility of ecolabels would raise consumer confidence in them, and provide incentives for higher levels of quality. Government can undertake these activities and/or encourage interest groups to do so. The latter would potentially be freer to criticise poor performers, and could be more effective in communicating with relevant consumers. For example, Consumers Union in the US provides information about the quality of ecolabels on their website www.ecolabels.org.

Similarly, legislation protecting consumers against misleading and deceptive conduct needs to be carefully designed and implemented to build consumer confidence in markets for credence attributes. Governments have long recognised the hidden information problem and the *Trade Practices Act 1974* helps offset the consumer disadvantage that can result from unequal access to the information or bargaining power needed to deal equally with suppliers. Section 52 of the Act (and corresponding State legislation) prohibits behaviour that does (or is likely to) mislead or deceive consumers. However, according to Cole and Harris (2004) the traditional approach – waiting for consumer complaints to trigger investigations – may need to be supplemented for credence attributes. This is because, by definition, a consumer does not know even after purchase if he/she actually got the credence attribute paid for.

Consider for example a consumer suspicious about a pesticide-free label, perhaps thinking twice about making that purchase again. But would he feel cheated enough to complain to ACCC or their state/territory consumer affairs agency? It is likely that consumers usually drop such matters, lacking sufficient information to be specific about complaints. Reliance on complaints to trigger investigations could result in weaker enforcement of credence claims than other claims. To the extent that this leads to less trust by consumers, markets are weakened and economic benefits are foregone.

Regulators could usefully investigate the importance of this issue. Perhaps this could start with a sample of product labels to test the degree of false, misleading or deceptive claims on food. If this research confirms that consumer complaints are an inadequate trigger for investigations, then additional or alternative strategies should be considered – for example, ongoing active sampling of credence claims by regulators. Potentially it could include funding an evaluation of labels for consumers (and thereby encouraging greater compliance by producers).

3.5 Comments on government ecolabels and government regulation of credence attribute markets

Because some transaction costs will remain, ecolabel markets are unlikely to ever work as well as markets with complete information. This sometimes inspires people to suggest that governments should develop a multi-criteria ecolabel (ie broad environmental label) for Australia (eg Toyne et al, 2004; House of Representatives Standing Committee on Environment and Heritage 2003). Standardisation of metrics and label formats may reduce some transactions costs. However, consumers do not necessarily consider governments to be more credible than other independent organisations. A government ecolabel scheme (without profit incentives) might also be slower or less innovative in responding to consumer demands for new credence attributes, and slower to develop and amend standards. For example, the US Organics legislation took ten years to design and implement, by which time many firms were seeking to differentiate themselves with ‘organics plus’ or ‘biodynamic’ labels, which add extra attributes. New Zealand appears to have had a similar experience in their efforts to establish ‘standards’ for organic produce. This is not surprising when one considers that the motivation behind ecolabelling is to differentiate one’s product, not homogenise it.

A government ecolabel would compete with existing private ecolabels that are in their infancy. Similarly, government should not fund activities where all of the benefits accrue to identifiable industries or firms—as is likely to be the case with the creation and implementation of any location- or industry-specific ecolabel.

Given these reservations, and at this stage of market development, it is recommended that governments not seek to develop multi-criteria ecolabels for the purpose of reducing asymmetric information.

4 Public good provision: another perspective on ecolabels

Although the health of the environment is a public good, and externalities are associated with the environment, correcting market failures is costly and governments only allocate a certain proportion of their budgets to environmental care. Therefore choosing appropriate policy mechanisms to correct market failures should be based on the highest environmental good per dollar spent.

Even if consumers could verify all ecolabels at no cost (so there was no information asymmetry), this would not mean that ecolabels were capable of delivering all the environmental outcomes demanded by society. This is because relatively few consumers purchase ecolabelled products, their particular demands and issue would not necessarily mirror society's goals, and willingness to pay is unlikely to be as high as social benefit. Nevertheless, ecolabels may have a role in contributing to environmental outcomes along with other types of government intervention. Government initiatives in this area can be called 'disclosure strategies', and options include government labelling schemes, subsidies to private ecolabels, government information provision and other related activities.

There are some key factors to take into account, and previous experiences are informative, when considering using disclosure mechanisms as environmental policy instruments.

- One option for supporting increased private sector provision of public goods would be to establish and maintain a *voluntary* government ecolabelling scheme. Whether such a scheme would be an efficient mechanism for improving environmental outcomes would depend on program costs relative to alternative mechanisms and impacts on private sector markets for ecolabelling schemes and the ultimate environmental benefits. Particularly in the early stages of implementation, it can be difficult to evaluate the environmental impacts of labelling schemes or to isolate the effects of labels from other policies or programs or from broader changes in technology, community preferences and production decisions (Jones and Lansdell, 2000).
- Any payments (subsidies) to private ecolabels (as with all voluntary environmental initiatives) would need to be made in the context of the actual benefits achieved. Many current Australian ecolabels are specific to particular industries or geographic regions, each with its own standards or reporting criteria, objectives, product categories (if relevant) and monitoring approaches. Examples include GippsBeef, Enviroveg and red-tipped bananas. The attributes included will not necessarily be those that government

would choose on behalf of society. For this reason, the existence of a private ecolabel with voluntary targets does not in itself guarantee delivery of society's environmental goals.

- The Commonwealth Government trialled a national ecolabelling scheme from 1992 to 1994 called Environmental Choice – Australia. This was built on a Victorian Environment Protection Authority program that had been developed some years earlier. It appears to have been established on the basis of government verifying producer-selected environmental claims, rather than developing its own criteria which firms would then meet or not meet. This was one of the underlying sources of many problems that plagued the scheme and led to its discontinuance. This program and the lessons to be learned are discussed in Johnson and Lundie (2002).

- At this stage, as previously discussed, there are insufficient 'metrics' to allow agricultural producers to signal, comprehensively, many dimensions of environmental 'performance' relative to others. The importance of metrics in reducing asymmetric information has previously been highlighted, and the role is equally as important if ecolabelling is ever to achieve its optimum potential in achieving environmental goals. We are a long way from being close to anything like a 'star' system for farmers to signal their environmental credentials, even though some think the Australian Energy Rating program for whitegoods (Holt and Harrington, 2003) could be regarded as a model for a worthwhile long-term goal.

- An example of the impacts of inadequate metrics is that industries where metrics are available, may be capable of being 'sold' to those with general preferences for buying 'environmentally-friendly' alternatives whenever there is a choice. Victoria's local government already has a green purchasing program called ECO-Buy and http://www.mav.asn.au/ecobuy explains that 'the program works with Victorian Councils to increase their purchasing of recycled, greenhouse friendly and environmentally preferred products'. It is a joint initiative of the Municipal Association of Victoria, the peak body for Victorian Local Government; EcoRecycle Victoria, the state authority responsible for waste and litter management and the Victorian Greenhouse Strategy, Victoria's plan to reduce greenhouse emissions. Suppliers of food and beverages that are *organic* are listed as environmentally preferred, specifically:

  "you might find suppliers of tea or coffee which is either organic or traded equitably. Certified organic food and beverages have strict regulations determining how they are produced. The use of artificial agricultural inputs such as artificial fertilizers and pesticides is restricted. Organic methods aim to avoid the harmful build-up of chemicals in the environment often resulting from conventional agriculture."

  Obviously the term organic does not encompass the myriad of environmental impacts that

combine to determine the overall environmental performance of a farmer. Farmers who might rate their performance as superior in ways other than those related to chemical use (eg biodiversity conservation, soil conservation etc) could be disadvantaged (as could the environmental goals of society as a whole) if broader measures of the impacts of agriculture on the environment are not developed.

- Mandatory labelling does have some disadvantages that render it inappropriate for achieving many policy goals. If there is a risk of irreversible environmental damage, then information that facilitates consumer choice will not in itself remove this risk and it might be preferable to regulate to prohibit such environmental impacts. Another major drawback is the cost associated with enforcing compliance. Also, the very existence of mandatory labelling can lead to negative consumer perceptions. For example, the government decision to require all genetically engineered ingredients to be labelled might unintentionally lead some people to think they should fear these goods. Or, they may prompt doubts about products that don't need or don't have labels. Possibly the most serious drawback of mandatory labelling is that adding more and more information can eventually reduce the value of existing essential information such as warnings. This relates to the (transaction) costs incurred by consumers in acquiring ecolabel information and interpreting the signals to verify the claims as previously discussed.
- Golan et al. (2001) conclude that 'mandatory food-labelling requirements are best suited to alleviating problems of asymmetric information and are rarely effective in redressing environmental or other spillovers associated with food production and consumption'.
- Even government-operated *voluntary* ecolabelling schemes for achieving environmental goals may generate unanticipated effects. For instance, Mattoo and Singh (1994) show that labelling schemes can sometimes lead to increased prices and hence increased output of both environmentally friendly and not-so-environmentally-friendly products. If environmentally friendly production already exceeds demand at current prices, then the introduction of a labelling scheme could be detrimental. Dosi and Moretto (2001) suggest that if a firm's green activities and associated ecolabels are expected to project a positive image on the whole firm (including any polluting activities), then the firm may choose to expand its stock of polluting capital before applying for a label. These unanticipated negative effects are more likely to operate at the commencement of an ecolabelling scheme, but schemes can be designed to minimise such negative outcomes.
- The existence of ecolabels may potentially also *change* preferences to increase consumer demand for environmental attributes. Even if ecolabelled products are not purchased by the majority of consumers, the ecolabels themselves may be read by many more (Norton

et al. 1998). The Japanese and Singapore governments' ecolabel schemes explicitly take this approach to encouraging green consumerism (Environmental Protection Agency 1998).

5 Ecolabels to promote 'superior' attribute exports to overseas consumers

Most countries have minimum product specifications or other requirements that must be met by products entering that country, principally for disease or other science-based reasons. Governments are often involved in establishing systems or institutional arrangements to help exporters meet these basic standards. A firm would not use a label to convey that it meets basic standards because this is not a point of differentiation.

Governments are also sometimes asked to consider promoting exports as exceeding another country's basic standards in terms of environmental or animal welfare attributes. Some Victorian exporters seek to exceed basic standards in other countries, and would use labelling or marketing to convey this. They might target specific niche markets with a single attribute or a mix of attributes, where only the producers in question would benefit from finding purchasers who want those specific attributes. A firm would decide to exceed basic standards in the importing country only if it were expected to be profitable, and such firms would have a strong incentive to respond to changes in customer preferences.

A firm's claim of superior production in terms of environmental or animal welfare issues could be backed by investments in reputation or third-party certification in either the exporting or importing country. Firms or groups of firms can successfully undertake these activities, especially if underpinned by sound measurement tools. If a firm's ecolabel claim were found to be false, it would lose sales (see Wills and Harris, 1994). However, if the firm had still complied with the importing country's mandatory standards, its failed ecolabel claim would be less likely to adversely affect many Australian producers of other products. If false 'superior' claims have a smaller reputation spillover than failing to meet importing country mandatory requirements, then there is less reason for government to intervene.

In fact, some types of government intervention could actually cause problems. For example, linking the reputations of all Victorian producers could cause one false claim to implicate many other firms, thus causing a cascade of lost sales. In addition, government may be slower and less innovative in developing standards and marketing products because it does not have a profit incentive.

Although it may be better if governments do not focus on claiming that all exports deliver environmental or animal welfare benefits above basic standards in export markets, there are other ways to provide a strong foundation for Victorian (and Australian) exporters who want

to promote credence attributes such as 'clean and green'. These include developing metrics to facilitate quality substantiation, rigorously enforcing truth in labelling laws and encouraging monitoring of these labels by consumer and green groups.

5.1 Ecolabels as non-tariff barriers

Golan et al. (2001) suggest that each time a country's firms label their goods in a way that its trading partners do not, there is the potential for a trade dispute if the labels cause consumers to choose domestic over imported products. The World Trade Organisation (WTO) enforces a GATT (General Agreement on Tariffs and Trade) requirement that environmental actions by governments must not discriminate between domestic and foreign products, and should not be a disguised restriction on international trade (www.wto.org). Many ecolabel schemes have admitted products from a wide range of countries (e.g., the Blue Angel in Germany).

Notwithstanding this, there are sometimes concerns that ecolabels are being used as non-tariff barriers. Potential sources of discrimination noted by Vossenaar (1997) include ecolabels based on domestic environmental priorities and technologies; definition of product categories; criteria not relevant in other countries; environmental infrastructure differences (eg. waste-water treatment plants); and nomination of specific chemicals or other materials not used in some countries. For example, the Red Tractor (British Farm Standard) scheme in the UK could be interpreted as focussing on protecting local markets.

An obvious role for government is continuing diligence in monitoring and opposing the use of ecolabels as non-tariff barriers in international trade.

6 Conclusion

'Once the scientific base is established and the importance of the issues communicated to consumers, private forces can often incorporate this information into market goods' (Ippolito 2003).

This paper notes the main aspects of asymmetric information and how these are manifested in markets for credence attributes in food. It shows that market failures that impose costs on society must be identified before government intervention is considered, and describes a range of mechanisms that separately and together provides an array of options for government to consider for their cost-effectiveness and efficiency.

Although information asymmetry is a feature of many transactions between producers and consumers, producers have developed various ways to signal to consumers the veracity of their environmental, animal welfare, health and other credence claims. With targeted interventions, governments can help ecolabel markets to work so that consumers can more reliably purchase products with credence attributes and producers can be rewarded for providing such products. These interventions would include researching metrics; informing consumers about science; and also potentially improving enforcement of truth in labelling

legislation. More research is also required in certain areas including imperfect competition in ecolabelling markets; the role of reputation; the role of large retailers in providing reputations; consumer attitudes to science and risk; and the potential for ecolabels to be used as non-tariff barriers.

Ecolabel markets are still emerging in Australia, particularly for food, and it will take some years before outcomes can be fully realised. Multicriteria ecolabel schemes created and operated by governments are unlikely, in general, to be the most effective mechanism for achieving environmental goals. However, the likelihood of ecolabels making a significant contribution to environmental goals could be improved by developing suitable metrics (measurement systems) and supporting the emergence of recognised benchmarks or minimum standards associated with the use of these metrics. At this stage, 'behind the scenes' government development and support of metrics and complementary information appears to be a high priority area, and one where significant progress could be made in improving the operation and developments of markets for ecolabelled products.

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