Australian Consumers' Concerns and Preferences for Food Policy Alternatives

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Abstract

Results from a 2007 Australian consumer survey conducted at a large farmers market are used to explore the hypothesis that consumers who are more concerned about certain types of food labeling information, particularly information related to food production attributes, are more likely to support policies which help develop farmers markets and support mandatory labeling policies. Product information and attributes such as Country-of-Origin, No Growth Hormones Used, Free Range and Animals Treated Humanely and Environmentally-friendly appear to be very important to consumers. It appears that respondents want increased government involvement in developing consistent food labelling standards for these attributes and support mandatory food labelling policies, however, respondents are split between whether third-parties or the Australian government should oversee regulation of the program. Some respondents appear to view a mandatory labelling policy as a method to improve competitiveness and sustainability of small food producers who want to use labelling to differentiate themselves. Respondents also tended to support the government subsidizing the development of farmers markets. Respondents viewed FM as an opportunity to gain additional information or purchase foods that have credence attributes such as pesticide-free. Thus, policies supporting FM may help alleviate market failures related to asymmetric information and lack of choice.

Key words: market failure, consumers, farmers markets, labelling

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Introduction

Currently Australia faces one of the most concentrated food retailing sectors in the world. The Australian Department of Agriculture, Fisheries and Forestry (DAFF) estimated the total value of Australian food and liquor retail to be AU$88.7 billion, almost half of total retail trade; 62 percent of this, or AU$55.1 billion, was accounted for by supermarkets and grocery stores (Jacenko and Gunaskera, 2005). In 1999 the Australia Competition and Consumer Commission found that Woolworths, Coles, and Franklins accounted for almost 80 percent of the food retail market share, up from 40 percent in 1975 (Parliament 1999). Since then, third-party player Franklins exited the market, leaving Woolworths and Coles to further increase their individual market shares.

There is continual interest and concern over whether the high level of concentration by two retailers (Woolworths and Coles) is impacting consumers negatively. One strategy for increasing food retail competition implemented by the Australian government in 2008 involved relaxing land development restrictions in an effort to encourage foreign supermarkets to enter the Australian market (ABC News, 2008). Interestingly, previous government investigations into Australian supermarket concentration have found that existing retailers are highly competitive, and consumers have not suffered in terms of food prices (Round, 2006; Smith, 2006; Jacenko and Gunaskera 2005). However, as Smith (2006) points out, consumers may be disadvantaged in other ways if retailer concentration leads to fewer product choices, lower quality and less innovation. Thus, concentration can lead to market failures if private markets are “socially inefficient”, meaning private interests lead to an inefficient use or a non-optimal allocation of resources.

Potential market failures may exist if consumers' choices are limited and if access to innovative products (such as organic, GMO-free etc.) is not available, or if information about product attributes such as production methods is not transparent. It has been argued that efficient larger retail outlets are unable to provide the same level of customer service or knowledgeable staff that may be found at smaller outlets. Information which may have otherwise been provided to the customer is now missing or incorrect, possibly resulting in asymmetric information and inefficient purchasing decisions (Jacenko and Gunaskera 2005). To deal with potential market failures, some consumer groups have asked the government to introduce policies which could reduce supermarket concentration. Yet, others have suggested a need for mandatory food labelling policies and increased government support of farmer direct marketing programs such as farmers' markets (FM) to deal with the issue of asymmetric information by providing market alternatives which allow customers to build a relationship directly with producers of their food.

The primary objectives of this research are 1) to examine what food-related issues Australian consumers view as major concerns and 2) examine consumers' knowledge and preferences for various food policies and 3) determine the characteristics of consumers who are most likely to desire specific policies and government intervention. This information will help to determine consumers' perceptions and the extent of market failures in the Australian food system. Limited dependent variable models are developed and estimated to determine the characteristics (e.g. current food purchasing behaviour, interest in production-related food attributes, support of local farmers and concerns about market threats) of consumers who are relatively more likely to support specific food labelling policies and policies which support farmers and FM. The results of these models should shed light on whether or not additional government intervention and policies would benefit consumers and efficiently reduce certain market failures

Previous Literature on Food Labelling Policy and Farmers Market

Consumers in many countries are increasingly interested in the quality and freshness of their food. Guthrie et al. (2006) refers to this as a "real food revolution" where consumers are shifting away from artificial and processed foods and demanding food with unusual or artisan attributes. Additionally, food safety and environmental issues as well as ethical motivations have caused some consumers to be more concerned about the production processes used to produce their food.

Consumers' perceptions of food quality are formed using a combination of search, experience and credence attributes. *Search* attributes such as colour, shape, brand and even freshness can usually be determined prior to consumption and at the point of purchase. Taste, juiciness and food safety can only be determined during or after consuming the product, thus they are *experience* attributes. Process and production attributes are *credence* attributes, because even though they may be present, their existence cannot be determined before, during or after consumption. Demand for food products labelled or certified to contain *credence* attributes such as "organic," "free-range," "certified humane," "environmentally friendly," and "local" is growing (Codron et al., 2006; Umberger, 2007).

Labelling of credence attributes that are of value to consumers can be economically effective in reducing search time and correcting asymmetric information that may exist between the consumer and supplier (Hobbs and Plunkett, 1999; Golan, et al., 2000). However, verification of these credence attributes is complex as it requires tracing the product through various stages of the production chain, and in the case of "organic" it may even require tracing the production of inputs. Consequently, marketing of credence attributes entails additional producer and third-party involvement in the marketing channel to verify the attributes of value. To maintain the integrity of the labelling claim and to avoid free-riders, standardization and

credible certification systems are needed. Otherwise, labelling of the attribute can potentially lead to market failures such as asymmetric information. For example, if private benefits from labelling exist (e.g. products labelled as organic bring a premium in the market) but the costs of producing products with these attributes are high, there is an incentive for some producers to cheat or sell lower quality organic products. Additionally, it is likely that consumers can not afford to verify the truthfulness of claims without certification and standards (Caswell; 2000; Caswell and Mojduszda, 1996; Umberger, 2004).

There are several ways to regulate labelling of products. All have their advantages and disadvantages, perceived benefits and costs. Regulation of labelling can be voluntary or mandatory and can be overseen by the individual firm, a third-party, or the government. Voluntary programs with third-party involvement are more complex than self-regulated programs as they have established standards, and may involve testing and certification which are monitored and enforced by third-parties. As discussed by Golan et al. (2000) standards strengthen product quality claims related to credence attributes, and testing and certification ensure the accuracy of the marketing information. Dimitri and Oberholtzer (2006) asserted that certification creates an enforcement system that encourages honesty and reduces opportunistic behaviour, such as false claims by firms.

The certified organic program in Australia is an example of a voluntary labelling program with third-party regulation. The National Standard for Organic and Biodynamic Produce (hereby known as National Standard) provides guidelines for the labelling of organic products including pest and disease control methods, animal health, soil management etc. Under the Export Control (Organic Produce Certification) Orders every individual who produces organic product for export must be certified (Australian 2005). The certification process is undertaken by the producer who applies to any one of the seven certifying agencies throughout Australia. Each of

these individual bodies has established their own process by which to become a certified organic producer. Certification generally takes three years with the time after the first year classified as, "in transition". During this time the producer is audited with production methods and inputs investigated at every step of the production process.

The Australian Quarantine and Inspection Service (AQIS) is the controlling body for organic certification. AQIS is responsible for conducting surveys and audits of the seven certifying bodies ensuring their compliance with the National Standard. However, the National Standard applies only to exports, which means that while it is illegal to export a product labelled as organic without proper certification, domestically there is no such regulation or control. Thus, in Australia, products labelled as organic may or may not have been produced in line with the National Standard or be "certified" organic; there are no regulated standards regarding products that are labelled or sold as organic on the domestic market.

In addition to organic, in Australia there are no established definitions of terms such as natural, free-range, hormone-free, etc. For example, there is no standard definition for the term 'free-range' above those baseline animal welfare requirements determined by the state. Some producer groups such as the Free Range Egg and Poultry Association have established their own certification process for free-range products; however, these do not involve government regulation. Common quality descriptors such as fresh, pure, homemade etc are also undefined and unregulated. Consumer groups in Australia have found that individuals look at these marketing slogans as truth and the product as thus distinctly different from comparable alternatives (CHOICE, 2004). Such misconceptions may result in inefficient purchasing decisions.

Benefits of voluntary labelling programs which utilize third-party services include decreased labelling costs for the industry, bolstered credibility for voluntary labelling schemes,

and economically efficient market transactions (Golan et al., 2000). Costs generally include the creation and implementation of the establishment standards, testing services, certification process, and enforcement measures.

In contrast to voluntary labelling, mandatory policy is regulated by the federal and/or state government with firms forced to comply with a uniform set of standards. Various papers have commented on the potential benefits of a mandatory labelling scheme. For example Chang (2005) noted increased fraud prevention and Golan et al. (2000) reported societal benefits such as established advertising restrictions and increased consumer confidence. Also, mandatory regulations would result in improved conduct on behalf of the firms (Aldrich, 1999; Golan et al., 2000; Teisl et al., 2002). There are a variety of costs associated with such a policy. Initial costs include program development, implementation, and administration as well as maintenance and enforcement. Firms will generally pass compliance costs onto customers. However, it has been suggested that the market price of the goods may not be enough to compensate small firms for the additional costs, effectively putting them at a competitive disadvantage (Golan et al., 2000).

Many factors should be considered when evaluating whether or not a mandatory labelling policy would solve existing market failures. The benefits relative to the costs of government intervention in food labelling must be considered – the potential impacts of implementing such a policy involves issues such as economic efficiency, consumer and producer welfare, public opinions etc. (Golan et al. 2000). Although the Australian organic industry and various consumer groups have called for more government intervention in related food labelling policies, the Australian government has resisted involvement and focused on deregulation particularly in the agricultural sector. According to Chang (2005) the Australian government usually only regulates when it is necessary to protect the public's health and safety, or when it is clear that a market failure broadly affects society.

From an economic standpoint, government intervention is only necessary when the potential government failure will not exceed the existing market failure – the presence of which we will investigate in this paper. The type of mandatory labelling policy evaluated in this study creates a situation where consumers who do not particularly value the information provided are still forced to pay for it. Certain studies have found that people are generally not willing to cover the cost of a mandatory labelling program even if the information provided is desirable (Raab and Grobe, 2003; Lourerio and Hine 2004). Conversely, it has been suggested that mandatory labelling is the most effective option in situations where a large portion of the population cares about the policy (Caswell 2000). Because the cost of the policy is shared by everyone that purchases the good, the more people that care to purchase the good, the more the cost is distributed and the cheaper the good becomes.

While mandatory labeling is one method used to inform the population of certain production processes or product attributes, it is not the only policy tool available. One potentially less drastic solution would be for the government to subsidize the cost of farmers and/or firms who direct market products directly to consumers. In Australia the responsibility and costs of labelling foods is generally the responsibility of the producer (Parliament 1999). Members of some farm organizations claim some retailers discourage producers from establishing their own name or farm brands or marketing some credence attributes (Griffith 2004). Farmers' markets (FM) provide consumers and producers the opportunity to communicate through face-to-face interaction and exchange both supply and demand side information whilst avoiding both the costly middleman and the large supermarket retailers. FM are potentially beneficial to consumers who are interested in products differentiated with credence attributes.

Over the past 20 years, over 3,500 FM have emerged in the US and around 450 FM have developed in the UK. Australia lags behind other countries with only around 70 recognized markets. More than one-half of Australian FM are only a few years old, suggesting growth and real interest in FM on the part of both Australian producers and consumers. (Coster and Kennon, 2005). In the UK, Europe and the US some federal government policies and assistance programs have been established to aid the development and sustainability of FM (Hamilton, 2005; Kirwan, 2004). Proponents of these types of direct to consumer marketing programs suggest that producer interactions provide consumer with improved knowledge and appreciation of the agricultural processes used to grow their foods resulting in increased confidence, awareness in the food production systems, and more efficient purchases (Guthrie et al. 2006). Additionally, studies have shown FM also have broad societal and environmental benefits such as promoting healthy eating, revitalizing communities, preserving farmland, promoting sustainable agriculture, increasing market access and profitability of smaller independent producers, reducing packaging and 'food miles' (transportation) (Coster and Kennon, 2005; Kirwan, 2004; LaTrobe, 2001; Payet et al. 2005).

At direct selling venues such as farmers' markets customers had the ability to personally communicate with the growers and investigate their production practices. These interactions provided the consumer with improved knowledge and appreciation of the agricultural processes used to grow their foods resulting in increased confidence, awareness in the food production systems and, more efficient purchases (Guthrie et al. 2006). Therefore, FM can help reduce market failures related to industrialized agriculture and food production.

Literature analyzing farmers' markets has found that consumer attend FM for a variety of reasons. While some attend to purchase what they felt were better, high quality foods others were interested in the societal and environmental attributes of their food purchases (Gale 1997;

Andreatta and Wickliffe 2002; Guthrie et al. 2006). Specifically noted was an expressed interest in food production practices, safety issues, and environmental impacts (Gale 1997; Aldrich 1999; Kremen et al., Coster, 2004).

Survey Methods

Data were gathered through in-person and online surveys conducted during May and June 2007. Participants at a large FM in Adelaide, a major urban Australian capital city were randomly recruited to participate in the survey. As an incentive for participation, each individual was offered a coupon valid for up to $3 off a beverage of their choice. Interviewers were trained students from a local University. Additionally, electronic surveys were distributed to existing members of the FM via an e-mail link to an online survey using Survey Monkey. Questions in the online survey were formatted to resemble the physical survey as closely as possible. Online surveys also included the incentive coupon.

In the survey, respondents were asked general questions regarding their purchasing behaviour with regard to food products at the FM and other retail outlets as well as attitude and knowledge regarding various agricultural practices. In order to achieve the goals of this research we asked consumers their concerns related to Australian agriculture and food systems (including market concentration), their interest in supporting a policy which would cover the costs of mandatory labelling, and their belief whether or not the government should provide assistance to farmers' market to encourage their growth and sustainability. Socio-demographic characteristics of survey respondents were also collected. Respondents' answers to these questions were used in the econometric analysis.

Econometric Analysis

To explore the characteristics of consumers who are relatively more likely to support specific food labelling policies and policies which support farmers and FM, limited dependent

variable models were developed and estimated. The first probit model (shown in equation 1 below) was estimated to determine the characteristics of consumers who indicated they would support a government assistance program for farmers markets.

(1) *SUPPFM* = f(*AGE, FEMALE, HIGHED, KIDS, AGINVOLVE, %FM_GROC, FRUIT_VEG, SHOPPING, SUPP_LOCAL, VARIETY, QUALITY, HUMANE, MILES, GMO, ANTIBIO, ORGANIC, PESTICIDES, LOCAL, SAFETY_FOOD, NOTINFO, NO_STANDARD, MKT_POWER, MANYREGS, FEWREGS, BARRIERS, ENVIRONMENT*).

The dependent variable, *SUPPFM* is equal to one if respondents indicated "yes" they would support "*a government policy which subsidized or provided government assistance to Farmers Markets to encourage their growth and to ensure their sustainability*." *SUPPFM* is set equal to zero if respondents indicated "no" or "do not know".

AGE is the respondent's age category as defined in table 1. *FEMALE, HIGHED, KIDS* and *AGINVOLVE* are socio-demographic variables equal to one if the respondent is female, has completed at least a university degree, has dependent children living in their household, is currently agriculture or food production, respectively. These socio-demographic variables my help explain a respondent's support or lack of support for FM assistance programs, however, there are no expected signs for the age, gender, education and dependent children variables. The sign on the *AGINVOLVE* coefficient is expected to be positive as respondents who are directly involved in food or agriculture production may be more supportive of programs which help farmers to access markets.

%FM_GROC, FRUIT_VEG, SHOPPING and *SUPP_LOCAL* are behavioural variables. *%FM_GROC* is the percent of total monthly food grocery expenditures that a respondent indicates he or she spends at the farmers market. This variable was created using consumers' responses to questions regarding their average total weekly expenditures on food type groceries, number of times they attended the farmers market in the last six months, and their average

expenditures at the FM per week. *FRUIT_VEG* is the equal to one if consumers indicated they purchased the majority of their fruit and vegetables at the FM. *SHOPPING* is equal to one if the respondent indicated their primary reason for coming to the FM was to shop for food. *SUPP_LOCAL* is the degree of influence that "supporting local producers and the community" has on the respondent's food purchase location. The signs on the estimated coefficients of these behavioural variables are all expected to be positive as we hypothesize that consumers who go to the FM to shop for food and who also spend a large share of their total food expenditures at the FM are more likely to be in favour of FM support programs. Additionally, respondents with a higher desire to support local producers and the community may also be more likely to support assistance programs for FM.

VARIETY and *QUALITY* are used to determine if beliefs about FM products measured through the respondent's level of agreement with statements relating to why they decided to come to the FM and purchase food products influence support for FM programs. Other psychographic variables, *HUMANE, MILES, GMO, ANTIBIO, ORGANIC, PESTICIDES, LOCAL,* are included to determine if consumers' perceptions of the importance of production (credence) attributes help explain support for FM programs. We expect consumers who are interested in variety and higher quality produce and those who are more concerned about certain types of food labeling information, particularly information related to food production (credence) attributes, to support policies which help develop farmers markets due to the potential relationships they can build with producers at FM.

An additional set of psychographic variables were included to determine if respondents' attitudes about issues facing producers and consumers in Australia help motivate support for FM programs. *SAFETY_FOOD, NOTINFO, NO_STANDARD* indicate the respondent believed the issues of safety of the food system, lack of information on production practices, or inconsistency

in and lack of oversight of food standards were one of the three most serious threats facing Australian *consumers*, respectively. *MKT_POWER MANYREGS, BARRIERS* and *ENVIRONMENT* indicate the respondent believed issues related to market power, too many regulations inhibiting production and innovation, barriers to entry and environmental issues (e.g. drought, salinity etc.) were one of the three most serious threats facing Australian agricultural *producers*, respectively. The signs on these variables were also expected to be positive as FM have been one proposed method to help alleviate some of these issues.

A second probit analysis explored the characteristics of consumers who indicated they would prefer a mandatory food labeling policy. Specifically, respondents were asked the following question: "*Please indicate whether you would prefer MANDATORY or VOLUNTARY labeling policies for food and agricultural products, including those purchased at the farmers markets*." The following empirical model was estimated:

(1) *MANDATORY* = f(*AGE, FEMALE, HIGHED, KIDS, AGINVOLVE, SUPP_LOCAL, CONFIDENT, FM_SAFER, KNOWFARMER, HUMANE, MILES, GMO, ANTIBIO, ORGANIC, PESTICIDES, LOCAL, SAFETY_FOOD, NOTINFO, NO_STANDARD, MKT_POWER, MANYREGS, BARRIERS, ENVIRONMENT*).

The dependent variable, *MANDATORY* equals one for consumers who answered "mandatory" and equals zero for consumers who answered "voluntary" or "I do not care, I am indifferent". Most of the socio-demographic variables and psychographic variables are the same as those used to estimate equation 1. However, the variables from equation 1 that were used to indicate current support and use of FM as a current source of food were not included in the estimation of equation 2 because we did not expect them to help explain preferences for a mandatory policy. Rather other variables, consumers' confidence in the source of food at FM (*CONFIDENT*), beliefs that food purchased at FM is safer (*FM_SAFER*), and the respondent's desire to know the farmers who produce their food (*KNOWFARMER*) were included to explain preferences for a mandatory labeling policy. The signs on the *CONFIDENT* and *FM_SAFER* coefficients are

expected to be negative as consumers who already trust the safety and source of their food may not need additional assurances, and therefore may be less likely to prefer a mandatory policy. Conversely, the sign on the *KNOWFARMER* coefficient is expected to be positive, as respondents who wanted to know the person responsible for producing their food are also expected to want additional labeling information related to production methods. Definitions and summary statistics of all variables used in these empirical estimations are presented in Table 1.

Respondents' FM Shopping Behavior, Beliefs and Policy Preferences

As with all surveys, the ultimate goal is to recreate a sample representative of the total population. The sampled obtained in this research is somewhat of a convenience sample and may be biased due to the fact that respondents were all either shoppers at FM and/or members of the FM. However, this sample is comparable to the 2006 Australian Census (Australian Bureau of Statistics) in terms of ethnic background, income, current employment status, number of children per household and household size. The sample includes fewer minorities, and participants are slightly older than the mean age reported by the Australian Census.

The majority of respondents were the person in their household responsible for purchasing most of the food-type groceries (91%). Many of the FM consumers travelled considerable distances to attend the FM, with 25.9% travelling greater than 10 kilometres and 32.5% travelling between 5 and 10 kilometres. The ASFM appears to be a very important source of food for consumers. Fresh vegetables, fresh fruit and bread were frequently purchased items by a large majority of consumers: 86.3%, 76.8% and 59.3%, respectively. Farmers markets are an important purchase location for several food products: fruits, vegetables, cheese, bread and dairy. Roughly 70% of consumers purchased the majority of their fruits and vegetables at farmers markets.

When asked whether they agreed or disagreed with 15 statements regarding why they attend the ASFM, over 50% of consumers indicated they "strongly agreed" with statements that they shop at the ASFM to support local farmers, to support the rural economy, to support independent farmers versus corporate agriculture, and because they believe the products are fresher. Other reasons including beliefs that ASFM products taste better, are of higher quality and more confidence in the source of food received a large percent of agreement, with mean ratings above "agree". Interestingly, over one-third (37.6%) of consumers were unsure (neither agreed nor disagreed) with the statement that ASFM products are safer.

Survey respondents rated the importance of 16 attributes that may appear of food product labels using a five-point Likert scale. Information related to Country-of-Origin, No Growth Hormones Used, Free Range, Animals Treated Humanely and Environmentally-friendly were the five most important attributes, considering mean ratings. Bio-Dynamic, Food Miles and Carbon Labelled were rated as the least important information non average. It could be that consumers were unfamiliar with these terms and did not know what they meant.

Knowledge and Preferences for Food and Agricultural Policy Alternatives

Survey respondents were asked to indicate their preference for mandatory versus voluntary labelling policies with regard to food and agricultural products including those purchased at their local FM. A majority of respondents (67%) said they prefer a mandatory labelling policy, while 29% preferred a voluntary policy. Respondents were then asked which entity they felt was best suited to initiate and oversee a *mandatory* labelling policy. The majority of people (almost 36%) preferred that a third-party (non-government) organization oversee a mandatory labelling policy. Respondents were more split between the Australian government (28%) and farmers/producers (26%). Respondents also were asked who they felt would be the

best entity to initiate and oversee a *voluntary* labelling program. Finally, individuals felt that the Australian government was least suited to initiate and oversee the program (19%).

Survey participants were asked two questions regarding their opinions on policies which would involve the government providing support (subsidizing) Australian producers to help bear the burden of labelling costs associated with a mandatory labelling policy and to subsidize the development of farmers markets to encourage their growth and sustainability. The majority of respondents, 75.2% and 81.2%, respectively, said they would support these policies. Consumers appear to see value in FM and indicated their support for certain agricultural enterprises and labelling programs.

In order to gauge how well informed people were about food labelling policy in Australia, survey respondents were asked four, True / False questions about Australian food labelling laws. Only 36.4% correctly answered the question regarding testing and certification standards for organic food products sold in Australia. However, 57.1% of people correctly answered the question regarding labelling requirements of organic products destined for export (as only those products labelled as organic and bound for export must, by law, be tested and certified as organic). Only 32% of respondents knew the correct requirements and guidelines for food products labelled as Certified Free-Range. Yet, 62% of consumers answered the question related to labelling of food containing genetically-modified organisms correctly. Although they may be concerned and interested in these specific attributes, respondents do not appear to be aware of the polices related to labelling the food attributes.

Perceptions of the Threats facing Agricultural Producers and Consumers

To better understand the issues which people were most concerned with, consumers were asked to state what they felt were the most serious threats to agricultural *producers* and *consumers* in Australia. Particularly, we asked people to rank what in their opinion were the top

three threats (1 = most serious) to agricultural *producers* in Australia. Respondents indicated that they felt that environmental issues (drought, arable soil, salinity etc) posed the greatest threat to Australian producers followed by market concentration (too much power held by too few resulting in low prices for farmers). Too many regulations (restrictions that inhibit production and innovation), too few regulations (farmers are not accountable), and market entry barriers (it is too costly or too competitive for farmers to survive) were overall seen as far less threatening.

Respondents were also asked to indicate, the top three threats facing *consumers* with respect to the Australian food system. Again, respondents indicated concerns about market concentration (too much power held by too few resulting in higher prices for consumers) and environmental issues (overuse of pesticides, hormones etc). Threats such as too much product information (too much information, information is too confusing to understand), not enough product information (not enough information on production methods to make educated decisions), food standards (inconsistency, lack of regulation and oversight) and safety of food system (diseases, pathogens, bacteria etc) were seen as less threatening. Clearly, consumers are concerned about the results of market concentration on both producers and consumers. On the other hand, the majority of consumers were not extensively bothered by the amount of information provided (or not provided) on product labels.

Econometric Results

The parameter estimates and marginal effects from the probit model used to explain *SUPPFM* are provided in Table 2. The model was significant (α = 1% level) and correctly predicted 89.4% of the outcomes. The coefficients on the variables *SHOPPING, VARIETY, PESTICIDES, NOTINFO, MKT_POWER, BARRIERS, ENVIRONMENT* were all significant and positive. Respondents who attended the FM in order to shop for food and those who shopped at FM because they believed the FM provided more variety were 11.2% and 2.8% more likely to

support the FM policy. If the attribute pesticide-free was rated as extremely important by the respondent, they were 5.2% more likely to support the FM policy. Respondents who perceived concentration (market power), market barriers and environmental concerns as major threats facing Australian producers were 6.6%, 4.4% and 6.1% (respectively) to support the FM policy. Similarly, respondents who rated the concern "not enough information on production methods to make educated decisions" as a top threat facing Australian consumers, were 4.0% more likely to support the FM policy.

The coefficients on the MILES and GMO variables were also significant; however their signs were contrary to what was expected. Respondents who viewed food miles and GMO-free as extremely important were 13.4% and 5.6% less likely to support the FM policy. This is surprising result, and one which needs further examination. One explanation is that because these attributes were not included in the marketing materials of any of the products being sold at the FM where the survey was conducted, respondents who desired these attributes did not associate FM with providing them.

Table 3 contains the parameter estimates and marginal effects from the estimation of the MANDATORY model (equation 2). This model was also significant (α = 1% level), however it correctly predicted fewer (72.2%) outcomes. Also, only five variables were significant: *AGE, CONFIDENT, MILES, ORGANIC* and *BARRIERS*. An increase in age (by one category) increases the probability a respondent will support the policy by 4.2%. Respondents who purchased food at FM because they were more confident in the source of food were 10.2% more likely to support the mandatory policy. The sign on this variable (*CONFIDENT*) is opposite to what was expected. Consumers may shop at FM because they distrust the quality or safety of other sources of food; thus, they may believe that a mandatory labelling program would increase transparency in the food system.

Interestingly, respondents who rated certified organic as an "extremely important" food attribute were 14.5% more likely to support a mandatory labelling policy. This may suggest a need to tighten existing organic standards in Australia. The size of the marginal effect on *BARRIERS* is also remarkable – respondents who viewed market entry barriers ("it is too competitive or too costly for farmers to survive) as one of the top three most serious threats facing agricultural producers were 23.4% more likely to support a mandatory policy. Consumers may view a mandatory labelling policy as a method to improve competitiveness and sustainability of food production. Similar to the previous model results, the coefficient on the *MILES* variable is significant and negative. Consumers who perceive food miles as an extremely important attribute were 14.8% less likely to prefer the mandatory policy.

Conclusions and Implications

Generally the Australian government's role with regard to food policy has been focused on providing food security, ensuring adequate supplies, product health and safety, and providing factual information to the public. However, many of the country's food policies, particularly those related to food labelling are under scrutiny. Some consumer groups are suggesting that government intervention is necessary to provide alternative food markets and information, not only to assist producers, but also to increase consumer choices and reduce information asymmetry. The results of this study shed light on consumers who are more likely to support two food-related policies, one which would provide government support to assist in the development and sustainability of FM, and one providing mandatory food labelling of certain credence attributes.

We explored the hypothesis that consumers who are more concerned about certain types of food labeling information, particularly information related to food production attributes, may be more likely to support policies which help develop farmers markets and support labeling

policies. Product information and attributes such as Country-of-Origin, No Growth Hormones Used, Free Range and Animals Treated Humanely and Environmentally-friendly were very important to consumers. It appears that respondents want increased government involvement in developing consistent food labelling standards for these attributes and they generally support mandatory food labelling policies. However, respondents are split between whether third-parties or the Australian government should oversee regulation of the program.

Few variables were significant in explaining consumer's preferences for a mandatory versus voluntary food labelling policy. Older respondents were more likely to support the mandatory policy. Respondents who purchased food at the FM because they were more confident in the source of the food and those who rated "certified organic" production methods as extremely important were also more likely to support a mandatory policy. These consumers may support a mandatory policy because they do not trust the existing marketing claims and programs used to differentiate food with credence attributes, and thus seek opportunities to gain information through alternative methods. This may suggest a need to tighten existing organic standards in Australia and to establish standards for labelling other credence attributes. Respondents who viewed market entry barriers (too competitive or too costly for farmers to survive) as one of the top three most serious threats facing agricultural producers were the most likely (23.4% more likely) to support a mandatory policy. These respondents may view a mandatory labelling policy as a method to improve competitiveness and sustainability of small food producers who want to use labelling to differentiate themselves. Additionally, they may believe that the costs of the establishing standards would be relatively less under a mandatory policy.

Respondents also tended to support the government subsidizing the development of farmers markets. Respondents who currently shop for food at farmers markets and who shop at

FM because they believe there is more variety, were more likely to support the FM policy. Clearly FM are an important alternative market for consumers who use them as a source of food and who are looking for additional choices. Respondents who rated pesticide-free as extremely important and those who ranked the lack of information on productions methods as one of the most important threats facing consumers were also more likely to support FM. This relationship may suggest that respondents viewed FM as an opportunity to gain additional information or purchase foods that have credence attributes such are pesticide-free. Thus, policies supporting FM may help alleviate market failures related to asymmetric information and lack of choice. Respondents who ranked market power issues leading to low prices for farmers and market barriers making it too costly for farmers to survive and environmental issues (drought, salinity etc.) as major threats to producers were also more likely to support FM policy. The significance of these related variables may suggest that consumers view FM as a possible solution to these problems too.

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Table 1. Variable Names, Definitions and Summary Statistics.

Variable Name	Description	Mean	Std. Dev	Min.	Max.	N
SUPPFM	1 = Respondent would support a government policy which would subsidize or provide government assistance to FM to encourage growth and sustainability.	0.817	0.387	0	1	416
MANDATORY	1= Respondent indicated they preferred a mandatory food labelling policy; 0 = respondent preferred a voluntary or was indifferent	0.637	0.481	0	1	416
AGE	Age, 1 = 18-24; 2 = 25-34; 3 = 35-44; 4 = 45-54; 5 = 55-64; 6 = ≥ 65.	3.550	1.313	1	6	382
FEMALE	1 = female, 0 = male	0.683	0.466	0	1	416
HIGHED	1 = completed University degree or higher	0.288	0.454	0	1	416
KIDS	1 = dependent children living at home	0.464	0.499	0	1	416
AGINVOLVE	1 = currently involved in agriculture or food production	0.141	0.348	0	1	405
SUPP_LOCAL	"Ability to support local producers and community" [a]	3.947	1.053	1	5	398
VARIETY	"I purchase food products at the FM because there is more variety than other shopping locations" [b]	3.327	0.889	1	5	394
QUALITY	"I purchase food products at the FM because the products are of higher quality" [b]	4.221	0.775	1	5	398
CONFIDENT	"I am more confident in the source of the food." [b]	4.151	0.786	1	5	397
FM_SAFER	"I believe the products are safer for my health" [b]	3.730	0.865	1	5	397
KNOWFARMER	"I want to know the farmers who grow/raise my food." [b]	3.652	0.948	1	5	397
HUMANE	Animals treated humanely [c]	0.438	0.497	0	1	416
MILES	Food miles [c]	0.200	0.400	0	1	416
GMO	GMO-free [c]	0.317	0.466	0	1	416
ANTIBIO	No antibiotics used [c]	0.430	0.496	0	1	416
ORGANIC	Certified organic [c]	0.262	0.440	0	1	416
PESTICIDES	Certified pesticide free [c]	0.382	0.487	0	1	416
LOCAL	Locally raised [c]	0.361	0.481	0	1	416
%FM_GROC	% of total food type grocery expenditures spent at the FM	0.381	0.205	0.014	1	403
FRUIT_VEG	1 = Purchase majority of fresh fruit and vegetables at FM	0.728	0.927	0	2	416
SHOPPING	1 = primarily came to FM to shop for food	0.910	0.287	0	1	410

[a] Influence of statement on choice of where to purchase food where1 = not at all influential ... 5 = extremely influential; [b] Level of agreement with statement about food purchasing decisions at FM, where 1 = strongly disagree ... 5 = strongly agree; [c] Importance of labelling information indicating the attribute, where 1 = not at all important ... 5 = extremely important, data was recoded for the analysis so that 1 = respondent indicated the attribute was extremely important and 0 = otherwise.

Table 1. Continued. Variable Names, Definitions and Summary Statistics.

Variable Name	Description	Mean	Std. Dev	Min.	Max.	N
SAFETY_FOOD	Safety of food system: diseases, pathogens, bacteria etc. [d]	0.286	0.452	0	1	416
NOTINFO	Product Information: *not enough information* on production methods to make educated decisions. [d]	0.421	0.494	0	1	416
NO_STANDARD	Food Standards: inconsistency, lack of regulation and oversight in food standards [d]	0.430	0.496	0	1	416
MKT_POWER	Market Concentration: too much power held by too few, resulting in low prices for farmers [e]	0.286	0.452	0	1	416
MANYREGS	Too Many Regulations: restrictions that inhibit production and innovation [e]	0.024	0.153	0	1	416
FEWREGS	Too Few Regulations: farmers are not accountable, may result in fraud, etc. [e]	0.017	0.129	0	1	416
BARRIERS	Market Entry Barriers: it is too competitive or too costly for farmers to survive [e]	0.063	0.242	0	1	416
ENVIRONMENT	Environmental Issues: drought, arable soil, salinity, etc. [e]	0.478	0.500	0	1	416

[d] 1 = Respondent rated the statement / concern as one of the top three most serious threats facing Australian *consumers* regarding the food system, 0 = otherwise; [e] 1 = Respondent rated the statement / concern as one of the top three most serious threats facing Australian agricultural producers regarding the food system.

Table 2. Maximum Likelihood Estimates and Marginal Effects from the Binary Probit Model for Support of Policy Subsidizing or Providing Government Assistance to Farmers Markets.

Variable	Coefficient	Standard Error	P-value	Marginal Effect
CONSTANT	-2.536	0.859	0.003	-0.200
AGE	-0.043	0.085	0.613	-0.003
FEMALE	0.308	0.243	0.206	0.028
HIGHED	-0.206	0.231	0.372	-0.018
KIDS	-0.109	0.110	0.325	-0.009
AGINVOLVE	0.052	0.326	0.874	0.004
SUPP_LOCAL	0.169	0.118	0.153	0.013
VARIETY	0.356	0.142	0.012	0.028
QUALITY	0.134	0.130	0.303	0.011
HUMANE	-0.063	0.286	0.825	-0.005
MILES	-0.986	0.316	0.002	-0.134
GMO	-0.579	0.329	0.078	-0.056
ANTIBIO	0.427	0.354	0.228	0.033
ORGANIC	0.470	0.371	0.205	0.031
PESTICIDES	0.716	0.391	0.067	0.052
LOCAL	-0.218	0.292	0.455	-0.018
SAFETY_FOOD	-0.026	0.251	0.918	-0.002
NOTINFO	0.515	0.232	0.026	0.040
NO_STANDARD	0.207	0.229	0.366	0.016
%FM_GROC	-0.651	0.516	0.207	-0.052
FRUIT_VEG	0.062	0.128	0.630	0.005
SHOPPING	0.803	0.341	0.018	0.112
MKT_POWER	1.072	0.359	0.003	0.066
MANYREGS	7.836	199823.000	1.000	0.055
FEWREGS	0.464	0.789	0.557	0.025
BARRIERS	1.395	0.643	0.030	0.044
ENVIRONMENT	0.721	0.325	0.026	0.061
Chi-squared	64.233		0.000	
N	358			
Log likelihood	-93.217			
% Correct Predictions		89.39		

Table 3. Maximum Likelihood Estimates and Marginal Effects from the Binary Probit Model for Support of Mandatory Food Labelling Policy.

Variable	Coefficient	Standard Error	P-value	Marginal Effect
CONSTANT	-0.817	0.524	0.119	-0.284
AGE	0.120	0.059	0.040	0.042
FEMALE	0.246	0.170	0.147	0.088
HIGHED	0.016	0.159	0.919	0.006
KIDS	0.127	0.149	0.392	0.044
AGINVOLVE	0.336	0.213	0.115	0.108
SUPP_LOCAL	-0.092	0.085	0.282	-0.032
CONFIDENT	0.293	0.116	0.012	0.102
FM_SAFER	-0.180	0.110	0.104	-0.062
KNOW FARMER	0.016	0.095	0.864	0.006
HUMANE	0.165	0.185	0.371	0.057
MILES	-0.405	0.224	0.070	-0.148
GMO	0.143	0.204	0.482	0.049
ANTIBIO	-0.182	0.215	0.397	-0.063
ORGANIC	0.445	0.233	0.056	0.145
PESTICIDES	0.342	0.227	0.132	0.116
LOCAL	0.084	0.193	0.665	0.029
SAFETY_FOOD	0.117	0.168	0.486	0.040
NOTINFO	0.197	0.152	0.196	0.068
NO_STANDARD	0.104	0.151	0.489	0.036
MKT_POWER	-0.078	0.238	0.744	-0.027
MANYREGS	-0.500	0.470	0.288	-0.189
FEWREGS	-0.284	0.581	0.625	-0.105
BARRIERS	0.896	0.384	0.020	0.234
ENVIRONMENT	-0.118	0.233	0.614	-0.041
Chi-squared	44.290		0.007	
N	373			
Log likelihood	-211.405			
% Correct Predictions		72.23		