

CONSUMERS' PREFERENCES, CREDENCE GOODS AND THE WTO SPS AGREEMENT

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Abstract

The SPS Agreement in the WTO exists to regulate the use of import barriers to protect, inter alia, human health. Yet consumers' preferences for food safety or for other information about food, play no part in the Agreement. The purpose in this paper is to argue that consumers' preferences should be taken into account for food products which possess the credence characteristic, quality.

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1. Introduction

Consumers' preferences appear to play no direct role in the trade rules of the World Trade Organization (WTO). Baldwin (1988) explained this bias, as far as the General Agreement on Tariffs and Trade (GATT) is concerned, in terms of the political economy of those who drafted GATT 1947. He argued that they recognised that producers form more powerful lobby groups than consumers do and, therefore, that the trade rules needed to be designed to restrict the ability of governments to pander to the self-seeking demands of their producers. Thus, despite this asymmetry, international tensions caused by trade disputes could be reduced or avoided altogether without reference to consumers. Recent evidence from the WTO suggests that this state of affairs is no longer true.

For food products, the Agreement on Sanitary and Phytosanitary Measures (the SPS Agreement) is also important in limiting the opportunities for governments to use SPS measures for purely protectionist purposes, i.e., for protecting the incomes in their farm sector. This Agreement (WTO, pp. 69-84) is based on the use of scientific evidence to determine the standards which imported products have to meet in order to achieve an acceptable level of risk (Annex A:1(b)). The standards to be applied are either those of the relevant international organisation which, in the case of food, is the Codex Alimentarius Commission (Article 3:4), or those determined by the individual government (Article 5:1 and 5:3). If a government opts for its own standard and if that standard is more trade restricting than the internationally-set standard, then a formal, science-based risk assessment is required (Annex A:5).

However, in the way in which risk assessment is usual conducted, only probabilities are estimated for particular outcomes (states of nature) in order to decide on the appropriate level of risk (Article 5:1). There are two deficiencies with this approach: first, the probabilities used may be vague or ambiguous or just not known at all; and second, there is no economic value put on the costs and benefits of alternatives. The first deficiency might be corrected through application of the precautionary principle (see below) or through the use of decision-theoretic models involving non-additive probability concepts; the second would be overcome through the use of an economic framework.¹ Despite these obvious limitations to the form of risk assessment undertaken in the context of the SPS Agreement, this approach is what has been used in decisions by Dispute Panels when national standards have been challenged.

There is a presumption in the SPS Agreement that consumers should defer to the judgement of scientists when trade rules are determined which cover products with potential risks to human health. However, in recent times, such deference has not been forthcoming, particularly in Europe and in Japan (Kerr). The example *par excellence* of this distrust, leading to a lack of deference, occurs with genetically modified foods. It is

¹ The use of social benefit-cost analysis has been argued cogently in Anderson *et al.* (2001), especially Part III.

unfortunate that this widely-used generic label does not allow the important distinction to be made between transgenic and non-transgenic technologies.²

Different attitudes across countries towards genetically modified foods are also revealed in the different approaches which governments have taken towards regulation. Some countries, e.g., Canada and the United States, have based their regulations on the principle of equivalence. If there is a consensus amongst scientists, using a risk assessment, that the genetically modified food is substantially equivalent to the non-genetically modified food, then the former is assumed to be safe (Sheldon and Josling (2002, p. 2). Given this conclusion, there is no need to introduce mandatory labelling and this is the position adopted by Canada and the U.S. (Sheldon and Josling, Table 1). Some countries, e.g., those of the European Union (EU), have used the precautionary principle and have required mandatory labelling (Sheldon and Josling, Table 1). Those who use the precautionary principle adhere to the position that scientific understanding alters through time and that current wisdom may be overturned by new evidence in the future. Therefore, it is prudent not to accept the notion of substantial equivalence without overwhelming evidence that it is safe to do so (Sheldon and Josling, p. 2). Finally, still other countries, e.g., Australia and New Zealand, have used the principle of equivalence but have introduced mandatory labelling (Sheldon and Josling, Table 1).

Food, whether imported or domestically produced, has, essentially, either 'experience' or 'credence' characteristics. The latter would include whether or not the food contains genetically modified ingredients in the absence of labelling. It is well known that credence characteristics cause a particular form of market failure. If high quality product costs firms more to produce than low quality product and if consumers have heterogeneous preferences for quality, which is an unobservable characteristic, then high quality products will be under-supplied because firms have no incentive to produce them. Therefore, there is a role for government to play to overcome the information asymmetry and, thereby, to increase consumer welfare. When the imported good is of a lower quality than the domestically-produced good, the intervention can take the form of banning or regulating the import. Alternatively, a mandatory labelling scheme could be introduced which signals to consumers the source and quality of the product. This latter approach reduces the potential for damaging trade disputes and allows consumers to determine, through their preferences, the range of products that they wish to purchase (Runge and Jackson).³ Such a labelling scheme may be a continuous one, e.g., the label differs for each and every quality, or alternatively, the label is a binary one, e.g., there is one label for all qualities of the product above some given level of quality.⁴

However, the success of a labelling strategy depends upon the confidence placed by consumers on the labelling system which in turn depends upon the ability of the government or its agent to test and to monitor (Kerr). But it may also depend upon whether the labelling scheme is a positive one (e.g., 'this product *may* contain GMOs') or a negative one (e.g., this product *does not* contain GMOs). Runge and Jackson argue that a negative scheme is less likely to cause trade problems than a positive one. However, this conclusion presupposes that there is agreement that labelling for GMOs is necessary.

² The main concerns about transgenic foods, as far as human health is concerned, are allergens and carcinogens, and resistance to antibiotics. There is also concern about the price effects induced by the development of oligopolistic and oligopsonistic market structures (Runge and Jackson). For a discussion of the differences in attitudes towards genetically modified foods in various countries, see Hobbs and Plunkett (1999).

³ For an analysis of the economics of food labelling, see Golan *et al.* (2000).

⁴ Labelling of GM foods is only one of the examples in existence which generate controversy. Geographical indications, a favourite of the EU, are another.

For those countries, such as the U.S., that use the principle of equivalence for GM foods, labelling is regarded as an unnecessary barrier to trade because it may affect consumers' preferences in a way which is detrimental to exporters who, otherwise, would claim to have a cost advantage over the equivalent product produced in the importing country and which they are being denied by labelling. Nevertheless, labelling is permitted under the TBT Agreement (WTO 1995, pp. 138-162). The important issue is whether countries might harmonise their different domestic schemes (see Sheldon and Josling 2002, Table 1) or whether, through international negotiation, they are harmonised. It turns out that this is a fundamental distinction for the welfare of countries with different preferences and with different costs of production, as will be explored below (Section 3).

In contrast with the position adopted by the U.S. is that by the EU. Kerr (1999) quotes the EU Commissioner for Agriculture as proposing a re-negotiation of the SPS Agreement to take consumers' preferences into account. He also reports that the U.S. negotiator for agriculture was aghast at such a proposal. Was each side merely reflecting the interest of its farmers or was there a genuine difference of view about the need to recognise the place of consumers in designing international trade rules for food products?

The remainder of the paper is structured as follows. Section 2 contains a brief review of some theoretical models of international trade in which minimum standards are imposed on the imported good which has a credence characteristic. Section 3 presents a sketch of a model which captures some stylised facts about international trade in a transgenic food. Some conclusions are presented in Section 4.

2. Review of the Literature

The analysis of asymmetric information developed by Akerlof (1970) found its way into the international trade literature in papers by Bond (1984), Donnenfeld *et al.* (1985), Falvey (1989), Creane (1998), Bureau *et al.* (1998), Roe and Sheldon (2001) and Jansen and de Faria (2002), amongst others. Bond and Donnenfeld *et al.* assumed that the imperfect information arose from a credence characteristic of the good, while Falvey assumed an experience characteristic which allowed firms to establish reputations. Because of the credence characteristic of quality, consumers know only the average quality of the product. Bond assumed that consumers had heterogeneous preferences for quality and found that the imposition of a minimum quality standard placed on the imported good, which was known by consumers to be of lower quality than the domestically produced good, in general raised overall consumer welfare. This result occurred because the minimum import standard raises the average quality of the good in the domestic market and, thereby, increases consumers' welfare. In the absence of the minimum standard, only the low-quality product is produced and the high qualities disappear from the market because firms take the price as given, and the maximum profit occurs at the lowest quality. Bureau *et al.* applied a similar model to that of Bond's to the example of the EU-U.S. trade dispute over hormone-treated beef. They investigated the welfare effects in the EU and the world of the import ban. In the absence of learning by consumers about the effects of hormone-treated beef on their health, the authors concluded that, theoretically, it was possible for the ban to raise welfare in the EU but to lower it overall. Donnenfeld *et al.* assumed that preferences were homogeneous but that incomes varied across consumers. In the importing country the good was supplied domestically by a monopoly. The imposition of a minimum import standard raises quality but reduces the monopolist's profit and may or may not increase welfare.

The results obtained by Bond seem to be intuitively reasonable but they may not be robust. For example, Creane investigated whether consumers would be better off

knowing the quality of the product that they purchased. In his model, firms compete on price and quality is exogenous. He concluded that, in the short run, consumers can be made worse off from knowing the quality of the product because learning reduces competition amongst firms and increases the import price. This conclusion was also obtained when he assumed that firms compete on the basis of Salop's model of horizontal product differentiation under imperfect competition. It is not clear whether the contrast in the conclusions to be drawn from Bond's and Creane's models are due to the difference between vertical and horizontal product differentiation, respectively, or to other reasons, e.g., market power and/or strategic interaction amongst domestic firms.

Roe and Sheldon also use a model of imperfect competition, with a vertically differentiated product, to investigate the effects of labelling on consumers' welfare. They consider two types of labelling scheme, namely, continuous and binary. In the absence of labelling and international trade, a single firm supplies the lowest quality. With trade and continuous labelling, consumer welfare increases; while with binary labelling, the outcome depends upon whether the two countries harmonise their threshold levels or whether they choose mutual recognition. With harmonisation, overall consumer welfare increases in the country but low-income consumers lose. With a scheme of mutual recognition, the outcome for consumers is ambiguous, depending upon the size of the gap between the standards upon which the labels are issued. Clearly, this aspect of Roe and Sheldon's results has important implications for the WTO and, in particular, for the way in which the TBT Agreement is used.

3. A Sketch of a Model

The following sketch draws heavily on the papers by Bond (1984) and Jansen and de Faria (2002) in which their innovation for trade policy arises on the consumption side of the market. The purpose here is only to show that consumers' preferences are an important determinant of the welfare outcomes from attempting to solve the market failure inherent in the credence characteristic of quality in a world in which there is international trade. Assume a two-country world (Home and Foreign) in partial equilibrium.

Consumers have heterogeneous preferences over the quality of a good, where quality is a credence characteristic. Consumers' preferences over quality are different in the two countries with those in the Home country being higher on average than those in the Foreign country. In the Home country quality is distributed in the interval $[q^l, q^h]$ with average quality \bar{q} . Consumers are indexed by their preference for quality, θ , which is restricted to the interval $[\theta^l, \theta^h]$. A consumer's willingness to pay for quality q is θq and the price paid is p . So long as the net benefit, $(V(p, \bar{q}, \theta) = \theta \bar{q} - p)$, is non-negative, then the consumer will purchase one unit of the good. Hence $V(p, \bar{q}, \theta) = 0$ determines the number of consumers in the market.

Producers are atomistic and can choose which quality to produce in order to maximise profits. Each firm produces only one unit. It is assumed that the total costs of production are an increasing and convex function of quality (i.e., $C(q) > 0$, $C'(q)$ and $C''(q) \forall q$). There is freedom of entry. Firms individually know which quality they produce but consumers do not.

Given this structure of information, the price received depends upon the expected quality as perceived by consumers and upon the choices made by firms. There will be only one market price. Hence, the individual profit-maximising firm will choose that quality which maximises the difference between the given price and its costs of

production. The quality chosen will be the lowest possible and, given freedom of entry, $p = C(q_l)$. Therefore, only the lowest quality of the good is available and consumers who value higher quality do not find it available.

In the Foreign country, the same assumptions hold, except it is assumed that the costs of production are lower there than in the Home country and that consumers' preferences for quality are lower too on average. Under the assumption of perfect information about quality, if trade took place between these countries, Foreign would export to Home and, relative to autarky, both would be better off. In particular, all consumers in the Home country would gain. However, in the model assumed here, where there is asymmetric information about a credence characteristic, and the expected quality in Foreign is less than that in Home, do consumers in Home gain or lose in moving from autarky to free trade? The answer is provided through reference to Figure 1.

Consider the function labelled V_a . It shows the net benefit to consumers in the Home country in autarky when quality q_l is the only one available. When free trade is permitted, consumers' expectations about quality in Home fall. This is shown by the flatter slope of the function V_t . But because the overall quality is now lower and the costs of production and price are lower too, the vertical intercept is higher. New consumers enter the market as shown by the horizontal intercept with trade being to the left of that in autarky. Thus, they gain from trade. But consumers to the right of where the two lines intersect, θ_i , who place a value on high qualities, are made worse off because trade lowers expected quality and, even although the price has fallen, the level of net benefit from consumption that they can achieve falls, $V_t < V_a$ for $\theta_i < \theta \leq \theta^h$. Consumers who were previously consuming the lowest domestic quality will be indifferent to trade. Whether consumers in total gain or lose depends upon the nature of the distribution of consumers along the interval $[\theta_i, \theta^h]$.

Suppose now that a labelling scheme were to exist in each country but, because preferences for quality differ, so too will the schemes. In particular, the minimum permitted quality to be given to the high-quality label is set at a higher quality in the Home country than in the Foreign country. When trade is permitted, three possibilities emerge: either the two governments agree to recognise each other's label and accord each other's product national treatment; or they allow an international organisation to set a harmonised standard which is somewhere between these national standards; or each ignores the other's label altogether. What now will be the welfare effects of labelling as compared with no labelling? It turns out that, without imposing more structure on the model, it is not possible to come to any general conclusions (Jansen and de Faria).

These authors explore the various cases by assuming first of all that costs of production are the same in both countries but allowing preferences to differ. If the governments decide on the mutual recognition option, then high quality production will cease and welfare in that country will fall. Hence, using the assumptions made above that the Home country has a greater preference for high quality, it loses. If the second option is chosen and harmonisation is accomplished by an international body which sets the standard, then Home will lose less than it does with mutual recognition, the amount depending upon the distance between the harmonised standard and its prior national standard. Suppose now that costs differ, as assumed above, but preferences are the same. Jansen and de Faria (pp. 21-22) delineate six cases but show that the country with the higher costs will in all cases gain more from harmonisation of standards than from mutual recognition and will gain relative to autarky. Finally, if the governments choose not to recognise the other's standard, then trade is never inferior to autarky regardless of

differences in cost or preferences. Therefore, an import ban cannot be justified on welfare grounds as a way of removing the market failure.

4. Conclusions

The purpose in this paper has been to argue that consumers' preferences should be taken into account in designing trade rules for food products which possess the credence characteristic, quality. One way in which a government can overcome the information asymmetry, and associated market failure, is to use a labelling scheme. It was shown that countries have adopted different approaches in terms of whether the labelling should be voluntary or mandatory, based in part on whether they use the equivalence or precautionary principle.

The theoretical literature provides some support for binary labelling based upon a minimum standard when the qualities of the imported and domestically produced good are different but consumers with heterogeneous preferences cannot identify the quality in the absence of labelling. However, whether or not consumers in aggregate are better off with a labelling scheme depends upon the distribution of preferences: some consumers will lose from the imposition of a higher standard and others, those with a preference for high quality, will lose without labelling. The outcome also depends upon whether countries decide to recognise each other's standard or whether they choose to harmonise on an international standard. It was reported that harmonisation raises welfare in all cases but mutual recognition need not.

The argument put in this paper has been based upon economics. Clearly, in the context of the WTO and any re-negotiation of the SPS Agreement that might take place, political economy would need to be used. A comparison of the policy conclusions stemming from these two approaches would make a useful extension to the conclusions presented here.

References

- Akerlof, G. (1970) The Market for 'Lemons': Qualitative Uncertainty and the Market Mechanism", *Quarterly Journal of Economics* 84: 488-500.
- Anderson, K., C. McRae and D. Wilson (2001) *The Economics of Quarantine and the SPS Agreement*, Centre for International Studies, Adelaide, and AFFA Biosecurity Australia, Canberra.
- Baldwin, R. E. (1988) The Economics of the GATT, Ch. 7 in *Trade Policy in a Changing World Economy*, Harvester Wheatsheaf, London.
- Bond, E. W. (1984) International Trade with Uncertain Product Quality, *Southern Economic Journal* 51: 196-207.
- Bureau, J.-C., S. Marette and A. Schiavina (1998) Non-tariff trade barriers and consumers' information: The case of the EU-US trade dispute over beef, *European Review of Agricultural Economics* 25: 437-462.
- Creane, A. (1998) Ignorance is Bliss as Trade Policy, *Review of International Economics* 6: 616-624.
- Donnenfeld, S., S. Weber and U. Ben-Zion (1985) Import Controls under Imperfect Information, *Journal of International Economics* 19: 341-354.
- Falvey, R. E. (1989) Trade, Reputations and Commercial Policy, *International Economic Review* 30: 607-622.
- Golan, E., F. Kuchler and L. Mitchell (2000) *Economics of Food Labeling*, Agricultural Economic Report Number 793, ERS USDA, Washington D.C.
- Jansen, M. and A. L. de Faria (2002) Product Labelling, Quality and International Trade, Discussion Paper No. 3552, Centre for Economic Policy Research, London.
- Kerr, W. A. (1999) International Trade in Transgenic Food Products: A New Focus for Agricultural Trade Disputes, *The World Economy* 22: 245-259.
- Roe, B and I. Sheldon (2001) The Impacts of Labeling on Trade in Goods that may be Vertically Differentiated According to Quality, Working Paper No. AEDE-WP-0006-01, Department of Agricultural, Environmental and Development Economics, The Ohio State University.
- Sheldon, I and T. E. Josling (2002) Biotechnology Regulations and the WTO, Working Paper #02-2, International Agricultural Trade Research Consortium, Department of Applied Economics, University of Minnesota.
- Runge, C. F. and L. A. Jackson (2000) Labelling, Trade and Genetically Modified Organisms, *Journal of World Trade* 34: 111-122.
- WTO (1995) The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts, The World Trade Organization, Geneva.

Figure 1: Net Benefits to Consumers

