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Patriotism and Preference Barriers: A Return to Mercantilism?

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Abstract

Endogenous asymmetric consumer preferences, based on region of origin, are incorporated in a modified version of the GTAP AGE model to capture welfare effects emanating from varietal diversity. Patriotic preferences for food are used to illustrate gains in varietal utility at the expense of reduced foreign trade shares. Simulation results are shown to be relatively insensitive to the strength of patriotic preference and the level of preference heterogeneity, both of which govern the varietal effects.

1. Introduction

The relationship between consumer preferences and region of origin has received considerable attention in the literature. Consumer studies have shown that country of origin has a considerable influence on the quality perceptions of a product (Bilkey and Nes, 1982), while market research focussing on food product preferences has shown that respondents typically favour the domestic variety over foreign substitutes (Juric *et al.*, 1996; Quagrainie *et al.*, 1998). With international trade in food products expanding rapidly in global markets, and with consumers facing an unprecedented

level of variety, such 'product-country images' are assuming greater significance (Skaggs *et al*., 1996). This may have important implications for international trade. Consumer favouritism towards domestically produced varieties can be viewed as a 'preference barrier'[1] to foreign suppliers. Additionally, any adverse effect on trade could be compounded by government measures which serve to actively promote local foods, as for example in the EU (Peri and Gaeta, 1999), and by the anti-globalisation sentiments now being expressed by some consumers. These factors run counter to further trade liberalisation sought through the WTO.

Asymmetry in preferences exists when consumers rank varieties differently. One type of asymmetric preference structure proposed in a seminal study by Lancaster (1984) is the 'interleaved' case, where for every domestic variety there is an adjacent foreign variety on the consumer's preference spectrum, which implies that both domestic and foreign varieties are close substitutes.[2] Contrary to conventional wisdom, Lancaster predicts that a small country *gains* by imposing a unilateral tariff on differentiated product lines. Specifically, the tariff creates domestic short run profits which entice new firms, and therefore new varieties, into the domestic market. The utility gain to domestic consumers favouring new varieties, as well as the ensuing price fall (the greater number of substitutes increases the price elasticity), outweighs the loss to those domestic consumers who favour foreign varieties.[3] Using Lancaster's approach, Philippidis and Hubbard (2001) show that the opportunity cost of the EU's Common Agricultural Policy may be overstated, in that potential allocative efficiency gains can

[1] This term is used by Torstensson (1999) with respect to intra-European trade.
[2] We follow this type of preference structure, where domestic and foreign varieties compete directly with one another within the Armington nest.
[3] Note that the importance of this result rests on Lancaster's assumption that existing foreign firms remain in the domestic market after the imposition of the tariff, to preserve the high substitution

be offset by negative utility effects associated with the loss of domestic food varieties.[4]

In this paper we employ an interleaved 'preferred variety' structure, after Lancaster, which captures welfare gains emanating from varietal diversity (associated with product-country images) as well as pro-competitive effects.[5] Specifically, we illustrate a method of modelling endogenous asymmetric consumer preferences, based on region of origin, within a conventional applied general equilibrium (AGE) framework. This extends the treatment of endogenous product differentiation in AGE models. We focus on patriotic preferences in respect of food products and illustrate a potential impact on trade shares.

The remainder of the paper is organised as follows. Section 2 outlines the main features of the preference structure, Section 3 describes the simulation design and Section 4 presents our results. Section 5 concludes.

2. Consumer preferences and market structure

The characterisation of consumer choice is similar to that employed in Philippidis and Hubbard (*op. cit.*)[6] in that consumers exhibit asymmetric preferences for varieties

possibilities of the interleaved structure. If foreign firms withdrew, product variety may fall and the subsequent increase in monopoly power of domestic firms would increase long run prices.

[4] A similar result was derived by Venables (1982) who demonstrated that patriotic asymmetries in demand specifications may result in additional welfare losses when domestic protection is cut from imperfectly competitive industries, due to exit of firms from the industry.

[5] Pro-competitive effects include internal scale effects emanating from movements down the average total cost curve with increases in firm output, and also the simultaneous reduction of the mark-up price distortion.

[6] This reference contains the full mathematical detail of our characterisation of consumer preferences.

based on region of origin.[7] Hence the endogenous treatment of product differentiation[8] follows the 'preferred variety' approach pioneered by Lancaster (1979, 1980, 1984), where utility (or 'varietal') effects are a function of the importance of a given variety in the consumer's utility function. This treatment adds an extra dimension to the exogenous 'region of origin' Armington specification employed in standard AGE model treatments.

The method of associating preference to any particular variety is based on an 'ideal',[9] where the closer a variety lies to the ideal, the more it is preferred. The notion of variety implies that firms exercise market power over their own brand which necessitates a model of imperfect competition. This paper uses the same Cournot conjectural variation approach[10] employed in Philippidis and Hubbard (*op. cit.*), where firms' mark-up over marginal cost is a function of the seller's market (domestic vs. export).

Within an AGE framework that emphasises international trade, each variety is consumed at the national level, i.e., the composite or 'representative' variety, where firms each produce a unique variant of the representative variety.[11] Any change in

[7] With respect to intermediate purchases, firms are assumed to be indifferent to the origin of an input because, as profit maximisers, costs are paramount. Thus, intermediate input demands are dictated solely by technological considerations governed by price and the elasticity of substitution.

[8] In this paper, we refer to *horizontal* differentiation which is associated with perceived product differences by consumers either in the form of 'love of variety' (Dixit and Stiglitz, 1977) or the 'preferred variety' approach (Lancaster, 1979). This contrasts with *vertical* product differentiation between products which is represented as actual quality differences through either comparative advantage or Research and Development (Shaked and Sutton, 1984).

[9] In Lancaster's treatment, the 'ideal' is a fictional utopia of the perfect variety which is never realised due to a limit on the number of *available* varieties.

[10] In perishable food markets, quantity changes by firms are argued to be a more realistic strategic variable than price.

[11] There are two reasons for this approach. First, from an economic point of view, a new firm is more likely to succeed in the industry by producing a new variant instead of duplicating an existing one (i.e., firms are trying to capture a niche in the product space). Secondly, a firm producing more than one

industry conditions resulting in a proliferation in the number of firms (product variants) in a given country results in that country's representative variety moving closer to the ideal (Vousden, 1990). It is this process that characterises the 'variety effect'. Reference to equation 1 and Figure 1 shows the relationship between degree of preference (V) and varietal utility (Z). We use a proliferation in the number of domestic firms/product variants as a proxy for a strengthening of domestic preference, captured as an increase in the value of V and leading to an increase in Z.[12]

$$Z = (1+V)^{\gamma} \qquad 0<\gamma<1 \qquad (1)$$

As well as characterising preference for domestic representative varieties, we also capture the degree to which the consumer identifies with varietal choice, or the degree of *preference heterogeneity*. Thus, the strength of the relationship between a given proliferation (reduction) in product variants and the subsequent varietal utility gain (loss) is governed by the size of the heterogeneity parameter γ in the varietal utility function (see equation 1 and Figure 1). If $\gamma = 0$, all representative varieties have the same varietal utility value which implies preference homogeneity. It is plausible to assume that marginal varietal utility falls as a representative variety moves closer to the ideal (i.e., concavity of the varietal utility function in Figure 1). This implies $0<\gamma<1$.

We focus solely on the role of patriotic food product preferences. More specifically, the ranking structure of representative varieties has been altered from Philippidis and

variant would imply a different mark-up pricing rule for each, significantly enhancing model complexity.

[12] Unless $\gamma = 0$ (see Figure 1).

Hubbard (*op. cit.*) such that varietal effects accrue only to the *domestic* representative food variety. We experiment with different levels of food product patriotism and preference heterogeneity to show the interrelationship between the two and, more importantly, to investigate their combined effect on trade shares.

3. Simulation design

The AGE model we use is the standard GTAP model (Hertel, 1997) modified to include the market and preference structures outlined in Section 2. We employ version 4 of the GTAP global database (McDougall *et al.,* 1998) aggregated to represent the EU, USA and the rest-of-the-world (ROW) and 17 industry sectors, focusing on agriculture and food processing.[13] The six food processing sectors are characterised as imperfectly competitive with varietal effects as described above. Given the sizes of the three regions and the level of sectoral aggregation, we set the number of firms in each food processing sector to 100 in the benchmark data set.[14] All remaining sectors are treated as perfectly competitive.

The GTAP database is projected ten years beyond its 1995 base, employing shocks to factor endowments, real GDP and total factor productivities (see Table 1), after Frandsen *et al.* (1998). This projection serves as the baseline against which the impacts of patriotic preference and preference heterogeneity are estimated. Three patriotic preference values (V) of 0.3, 0.5 and 0.7 are combined with three values for preference heterogeneity (γ) of 0.3, 0.6 and 0.9, giving a further nine projection

[13] The sectors are wheat, other grains, oilseeds, sugar, milk, cattle and sheep, pigs and poultry, other agriculture, other primary, meat processing, other meat processing, vegetable oils and fats, milk processing, sugar processing, other food processing, other manufacturing and services.

[14] Sensitivity analysis reveals that firm numbers above this threshold contribute only marginally to welfare outcomes.

simulations. Each of these is compared to the baseline projection, where V=0 and γ=0.

4. Results

Reporting of results is restricted to the EU and the six, imperfectly competitive, food processing sectors, in which varietal effects arise as a result of asymmetric preferences favouring domestically produced food. Results are presented for percentage changes in the number of firms (n), varietal utility (z), domestic market shares and foreign trade shares, under each of the nine simulations.

Probably the most notable overall feature is the robustness of the results with respect to patriotic preference value (V) and preference heterogeneity (γ). The impact on the number of firms (n) in the EU is shown in Table 2. Firm numbers increase by up to 6 per cent as a result of varietal effects, but are reasonably stable across different values of V and γ. These changes in firm numbers are used as proxy for changes in values of V, leading to gains in varietal utility, the size of which is governed by the values of γ and the benchmark values of V (Table 3). The sectoral increases in varietal utility range from 0.3 per cent (V=0.3, γ=0.3) to 2.1 per cent (V=0.7, γ=0.9).

In response to increased demand for the more preferred domestically produced foods, EU production increases and competes more favourably with foreign substitute foods. The effect of this is an increase in domestic market share and a concomitant decrease in the foreign trade share. Sectoral domestic market shares increase by up to 2.7 per cent, but again the results are stable under the different combinations of V and γ (Table 4). Foreign trade shares, being far smaller in the benchmark dataset, exhibit

much greater proportionate falls, of up to 35 per cent (Table 5). Again, these falls are relatively consistent across the nine simulations, although a slight increase is discernible, particularly under stronger preference heterogeneity (γ).

5. Conclusions

The motivation for this paper is threefold. First, to attempt to model, within an AGE framework, endogenous asymmetric consumer preferences. Second, to link this to research which shows that consumers typically favour domestically produced food varieties over foreign substitutes, and thereby to explore the extent to which such patriotic preference acts as a barrier to trade. And thirdly, to note that any such adverse effects on trade could be compounded by official measures that serve to promote local foods and, less officially though more alarmingly, by the growing unease that is being voiced by some sections of society regarding further trade liberalisation and ever-greater globalisation.

The modelling approach and empirical application reported in the paper represent work in progress. The *a priori* effects expected of patriotic preferences are demonstrated for processed foods in the EU. Within the confines of the model, an increase in the number of firms links directly to increased preference for domestically produced foods, which creates additional varietal utility gains, increased domestic market share and reduced imports. The extent of these varietal effects are governed by the strengths of patriotic preference and preference heterogeneity, although within the chosen range of values for these two parameters our simulations show that levels of the endogenous variables are not particularly sensitive.

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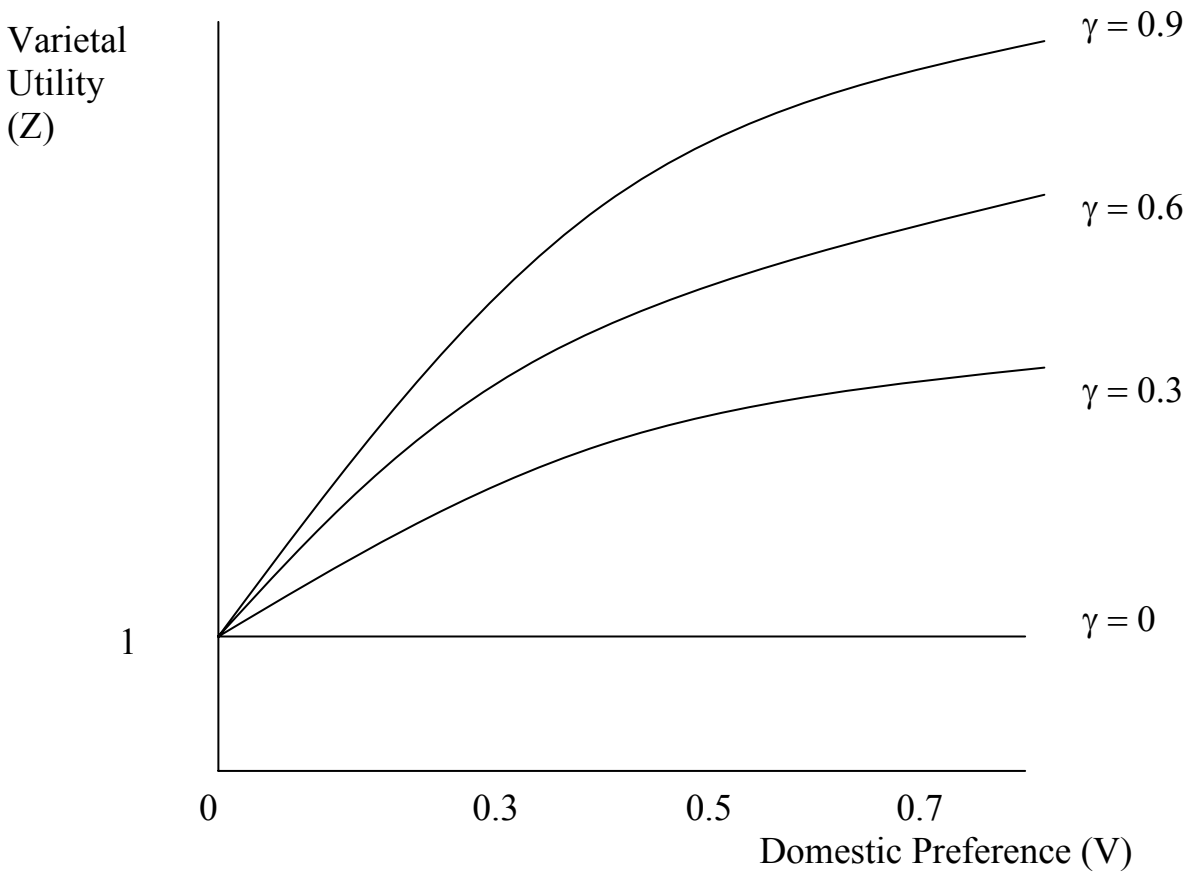

Figure 1 Schematic representation of the varietal utility function

Table 1 Annual Growth Rates for Projections, 1995-2005

	Factor Accumulation			GDP	Total Factor Productivity			Popu-
	Unskilled Labour	Skilled Labour	Capital		Crops	Livestock	Non-primary*	lation
EU	-0.17	2.60	3.11	1.41	2.00	2.25	0.21	0.10
USA	0.97	3.33	2.99	1.78	1.60	1.85	0.23	0.80
ROW	0.67	3.63	4.72	3.98	1.80	2.19	0.42	1.50

Source: Frandsen *et al.* (1998) and authors' own calculations.

* calculated endogenously within the model.

Table 2

Percentage changes* in EU firm numbers (n) under different levels of patriotic preference (V) and preference heterogeneity (γ)

Food sector	V=0.3			V=0.5			V=0.7		
	γ=0.3	γ=0.6	γ=0.9	γ=0.3	γ=0.6	γ=0.9	γ=0.3	γ=0.6	γ=0.9
Meat processing	4.1	4.1	4.1	4.1	4.1	4.0	4.1	4.0	4.0
Other meat processing	2.3	2.2	2.1	2.3	2.1	2.0	2.2	2.0	1.9
Vegetable oils and fats	4.4	4.3	4.2	4.4	4.2	4.1	4.3	4.2	4.0
Milk processing	3.2	3.0	2.8	3.1	2.8	2.6	3.0	2.7	2.4
Sugar processing	5.8	5.6	5.4	5.7	5.5	5.2	5.7	5.4	5.1
Other food processing	4.4	4.3	4.3	4.4	4.3	4.2	4.4	4.2	4.1

* From baseline projection with no varietal effects (V=0, γ=0).

Table 3

Percentage changes* in EU varietal utility (z) under different levels of patriotic preference (V) and preference heterogeneity (γ)

Food sector	V=0.3			V=0.5			V=0.7		
	γ=0.3	γ=0.6	γ=0.9	γ=0.3	γ=0.6	γ=0.9	γ=0.3	γ=0.6	γ=0.9
Meat processing	0.3	0.6	0.8	0.4	0.8	1.2	0.5	1.0	1.4
Other meat processing	0.3	0.6	0.9	0.4	0.9	1.2	0.5	1.0	1.5
Vegetable oils and fats	0.3	0.5	0.8	0.4	0.7	1.1	0.5	0.9	1.3
Milk processing	0.3	0.6	0.8	0.4	0.8	1.1	0.5	0.9	1.3
Sugar processing	0.3	0.7	0.9	0.5	0.9	1.3	0.6	1.1	1.5
Other food processing	0.4	0.8	1.2	0.6	1.2	1.7	0.7	1.4	2.1

* From baseline projection with no varietal effects (V=0, γ=0).

Table 4

Percentage changes* in EU domestic market share under different levels of patriotic preference (V) and preference heterogeneity (γ)

Food sector	V=0.3			V=0.5			V=0.7		
	γ=0.3	γ=0.6	γ=0.9	γ=0.3	γ=0.6	γ=0.9	γ=0.3	γ=0.6	γ=0.9
Meat processing	2.2	2.3	2.4	2.2	2.4	2.6	2.3	2.5	2.7
Other meat processing	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.7
Vegetable oils and fats	0.9	0.9	1.0	0.9	0.9	1.0	0.9	1.0	1.0
Milk processing	0.5	0.5	0.6	0.5	0.6	0.6	0.5	0.6	0.6
Sugar processing	0.8	0.8	0.9	0.8	0.8	0.9	0.8	0.9	0.9
Other food processing	1.6	1.7	1.8	1.6	1.8	1.9	1.7	1.8	2.0

* From baseline projection with no varietal effects (V=0, γ=0).

Table 5

Percentage changes* in foreign trade share in EU under different levels of patriotic preference (V) and preference heterogeneity (γ)

Food sector	V=0.3			V=0.5			V=0.7		
	γ=0.3	γ=0.6	γ=0.9	γ=0.3	γ=0.6	γ=0.9	γ=0.3	γ=0.6	γ=0.9
Meat processing	-22	-24	-25	-23	-25	-26	-23	-25	-27
Other meat processing	-26	-27	-29	-27	-28	-30	-27	-29	-31
Vegetable oils and fats	-25	-26	-27	-25	-27	-28	-26	-27	-29
Milk processing	-28	-29	-30	-28	-30	-31	-28	-30	-32
Sugar processing	-26	-27	-29	-27	-28	-30	-27	-29	-31
Other food processing	-28	-30	-31	-29	-31	-33	-29	-32	-35

* From baseline projection with no varietal effects (V=0, γ=0).