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Preferences and the home bias in trade☆

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ABSTRACT

Why is there less observed trade than is predicted by neoclassical trade models? A home bias in consumption due to preferences can partially explain this. Using data from a randomly assigned auction mechanism and survey conducted in Madagascar, respondents' willingness to pay for rice of varying quality and origin is investigated. By imposing a novel structure on traditional valuation collection methods, one finds that consumers will pay approximately 8% more for home-grown rice. The key result is that consumers place greater value on an item produced in their own country without any tangible reason to do so other than the product's origin. This preference-based explanation is one piece of the mosaic of factors that cause disproportionate consumption of domestically produced goods. This paper provides concrete evidence in favor of structuring trade models to allow for an explicit home bias in preferences.

1. Introduction

It is commonly accepted that there is significantly less trade than is predicted theoretically. Trefler (1995) concluded there to be roughly 50% less international trade than would be expected based on the neoclassical Heckscher-Ohlin-Vanek (HOV) trade model, a phenomenon he calls "missing trade." A home bias, the disproportionate consumption of domestically produced goods, can arise for a variety of reasons. While many have studied the supply side, this paper analyzes a demand side explanation: that individuals have a personal preference for domestically produced goods even if an identical foreign-produced alternative were available.

An experimental auction in Madagascar identifies a preference-based home bias by randomly allowing consumers to bid for imported or domestically produced rice while either knowing or not knowing the origin. By comparing willingness to pay, the results show consumers prefer rice produced domestically. Other things equal, consumers are willing to pay at least 8% more for domestic production. Back of the envelope calculations suggest this should represent a 5% reduction in the quantity consumed of imported rice.

One can define a home bias in a number of different ways. One common framework is that consumers prefer the types of goods produced at home to the types of goods produced abroad. There are studies that focus on why individuals prefer one type of good to another. For example, Atkin (2013) concludes that habit formation determines which goods a person prefers. However, that conception of habit formation cannot explain why a consumer would prefer the same good from one location rather than another. Evans (2001) argues home bias can be decomposed into locational factors and a preference for domestic goods. She compares the sales of foreign multinational enterprises to domestic competitors finding that locational factors dominate. However, this relies on the assumption that goods produced by foreign firms and their domestic counterparts are homogenous, which is unlikely given that she focuses on various categories of manufactured goods. An agricultural commodity such as rice will have fewer dimensions that can vary.

Similar to the present focus, Hoffmann and Gatobu (2014) found that Kenyan consumers were willing to pay more for maize produced on their own farm because they could be certain of its safety. In this case, there was a preference for own-farm consumption because there was a tangible benefit to having overseen the production process of ensuring the maize was free of aflotoxin. They provide evidence that consumers value information that reveals the unobservable quality of a product. Hoffmann and Gatobu's findings indicate that consumers value the safety of their food. In the present study, this would imply that consumers should pay more for rice subjected to quality standards. However, Hoffman and Gatobu do not focus on why a consumer would prefer an agricultural product from one off-farm source compared to another.

The focus of this study is on individuals' preference for one good relative to an identical good produced in a foreign country. If two items only differ in their origin, then a preference for one over the other implies that the origin is a characteristic that consumers care about. It is certainly possible that consumers would value domestic production differently depending on the foreign alternative. Similarly, consumers may value domestically produced rice more or less than other products. However, the first step is simply to demonstrate consumers possess any preference for a domestically produced good.

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A simple difference in price of imported and domestically produced rice does not demonstrate the existence of a home bias. Quality varies systematically based on origin so part of the price difference is due to quality.

By randomly providing or withholding information on the origin from consumers, I am able to identify a lower bound for the premium on domestic production. Willingness to pay was collected for domestically produced rice and imported rice in two different ways for each variety: with the origin disclosed to the consumer and with the origin unknown to the consumer. Without knowing the origin, any difference in willingness to pay is based on quality differences. Any extra payment for home production can be isolated by taking this away from the overall difference in willingness to pay.

The ideal scenario to test this phenomenon would actually be the case of a truly homogenous product. Any difference in valuation could only be attributed to a home bias. In reality, there are very few truly homogenous products since different production methods yield different levels of quality. The context of rice consumption in Madagascar is an ideal scenario to study home bias for several reasons. First, rice is a relatively homogenous product, which will minimize the dimensions along which it may vary, and a given grain can only be grown in a single country. Second, consumption of rice is exceptionally prominent in Madagascar so all survey respondents will be familiar with it. Third, respondents in this area all were native to Madagascar and will have had similar experiences with foreign countries.

Random assignment in experimental methods eliminates the majority of factors that may confound a home bias estimate. A particularly important aspect of the rice that is not eliminated is its unobservable quality. When a consumer is presented with the origin of his or her product, this reveals the production location but it also reveals an information set regarding unobservable characteristics of quality. In this particular empirical application, unobservable measures of quality would be higher for the rice imported from France, roughly akin to rice in an American grocery store, than for rice from Madagascar, which is riddled with impurities. A study of food supply by Oxfam International ranked countries by a variety of categories, including 'Food Quality.' Out of 125 countries, France tied for tenth highest food quality while Madagascar finished last out of all countries.[1] The higher quality of French rice is one reason why the premium on domestic production could appear lower than it actually is. Subsection 3.2 discusses unobservable quality in greater depth.

Furthermore, because consumers may recognize the origin of rice without being told, the contrast between the origin being disclosed and the origin being undisclosed is diluted. For this and the previous reason, it is only possible to provide a lower bound on the degree to which consumers value domestic production. Section 5's results show that consumers in Madagascar value rice, the staple food, produced domestically and are willing to pay at least 8% less for rice imported from France. If certain information were available, such as respondent's beliefs regarding origin, then it would be possible to identify the exact effect. While this would be preferable, the simple demonstration that there exists a home bias based in preferences is novel by itself.

Previous microeconomic studies focusing on the production origin of a good are largely limited to the choice to consume locally-grown produce. Consumers pay more for locally grown agricultural products than products grown further away (Darby et al. (2006); Hu et al. (2012)). This approach differs from the current study's international perspective in several ways. The 'Buy Local' movement is largely predicated on the idea that local consumption is more environmentally sustainable. Income-constrained residents in rural Madagascar are unlikely to be worried about their environmental footprint. Furthermore, these studies do not focus on potential quality differences between their local sample and the "imported" sample, which could explain the slightly larger effect sizes of the 'buy local' papers. However, consumers may be motivated by similar senses of regional or national pride in each case. In this way, the "Buy Local" phenomenon may have common underpinnings. A preference for a locally produced product and a domestically produced product could be quite similar if "local" to a consumer means the same thing as domestic.

The notion that consumers display a preference for domestically produced goods is not a new observation. Armington (1969) was the first to distinguish among goods by origin of production using a model in which he developed a theoretical structure of demand which reflected the empirical fact that countries consumed a larger share of domestically produced goods than would otherwise be expected if the goods were perfect substitutes. In another significant paper early in the history of the study of home bias, Samuelson (1954) introduces the concept of trade costs as a cause of home bias. This is the first in a long line of literature that explains the prevailing home bias as a result of trade costs. The Ricardian model of trade can also support a home bias in the presence of trade costs Dornbusch et al. (1977).

There has been extensive work studying the roll of the supply side of the market. It has been argued that trade costs (Obstfeld and Rogoff (2001)), corruption (Anderson and Marcouiller (2002)), and production structure (Yi (2010)) could generate missing trade. There has been a small sample of work presenting the case for preferences generating a home bias (Markusen (2013)). Thus far, however, the sentiment regarding preferences can be summarized by Helpman (1999) who argued a preference-based explanation to be "unappealing" because technology differences are documented across countries whereas there is no such evidence for demand patterns.

Numerous things could motivate an assymetry of preferences across nations. Habit formation, similar to Atkin (2013), is a viable explanation. Individuals may feel a sense of nationalistic pride or believe they are improving their nation's welfare through general equilibrium effects by consuming domestically produced items. This preference may even lead consumers to ignore objective measures of quality in favor of a domestically produced item that is of lower objective standards. While ignoring quality may appear to be irrational, this may in fact simply be a rational response to a preference for home goods.

There are many reasons why a home bias in preferences may exist. The purpose of this paper is to demonstrate its existence rather than to identify the specific mechanism. This paper sets out to demonstrate that characteristics other than quantity, quality, and price are important for consumption and that production origin matters.

2. Theory

Suppose there is a class of goods $X_Q^{C^D}$ endowed with a vector of characteristics: quality $Q \in [0,1]$, the origin of production at home M or the foreign country F indexed by $C \in \{M,F\}$, and the known (K) or unknown (U) disclosure of origin to the consumer $D \in \{K,U\}$. This good represents a variety of rice but could apply to any differentiated good.

Assume consumers are presented with and able to purchase a single variety of the good $X_Q^{C^D}$. Alternatively, they could consume a numeraire good Y. The utility derived from the consumption of $X_Q^{C^D}$ is a function of its vector of characteristics (Q,C,D). Identical consumers within each country possess the following expected utility function.

$$u\left(X_Q^{C^D}\right) = \pi_Q^{C^D} \cdot \left(X_Q^{C^D}\right)^{\alpha_0+\alpha_1+\alpha_2 Q+\alpha_3 \cdot \mathbb{1}_{\{D=K\}}} + \left(1-\pi_Q^{C^D}\right) \cdot \left(X_Q^{C^D}\right)^{\alpha_0+\alpha_2 Q+\alpha_3 \cdot \mathbb{1}_{\{D=K\}}} + \kappa Y \tag{1}$$

where $\pi_Q^{C^D} = \Pr(C=M \mid Q, C^D)$ is the probability the rice is from Madagascar given the quality and, if disclosed, the origin. Quality Q is always observed, $D=K$ ensures perfect observability of C, and $D=U$ ensures no information is directly gained from C. The available variety of the good $X_Q^{C^D}$ is demanded with concave preferences ensured by the condition $0 < \sum_{n=0}^{3} \alpha_n < 1$. Furthermore, assume that consumers'

[1] "Good Enough to Eat". Oxfam International (2014).