What drives home market advantage? ☆

A. Kerem Coşar [a,b,c], Paul L. E. Grieco [d], Shengyu Li [e], Felix Tintelnot [f,g,*]

[a] *University of Virginia, Department of Economics, United States*
[b] *CEPR, United Kingdom*
[c] *CESifo, Germany*
[d] *Pennsylvania State University, Department of Economics, United States*
[e] *Durham University, Business School, United Kingdom*
[f] *University of Chicago, Department of Economics, United States*
[g] *NBER, United States*

ARTICLE INFO

ABSTRACT

In the automobile industry, as in many tradable goods markets, firms usually earn their highest market share within their domestic market. The goal of this paper is to disentangle the supply- and demand-driven sources of this home market advantage. While trade costs, foreign production costs, and taste heterogeneity all matter for market outcomes, we find that a preference for home brands is the single most important driver of home market advantage—even after controlling for brand histories and dealer networks. Furthermore, we also find that consumers favor domestically producing brands even if these brands originated from a foreign country. Therefore, our results suggest a novel demand effect of FDI: Establishing local production increases demand for the brand even in the absence of any cost savings.

1. Introduction

In tradable goods industries, it is typical for firms to earn their highest market shares in their domestic market. This home market advantage persists despite substantial integration of international markets over the past several decades. There is no shortage of explanations (e.g., trade costs, investment frictions, home preference, taste heterogeneity for characteristics) for this empirical regularity, but different explanations have substantially different policy implications. The goal of this paper is to quantify the sources of home market advantage, and to understand their implications for international trade and investment. In particular, what are the roles of tariff and non-tariff barriers, transportation costs, and foreign production costs in explaining global market outcomes? How are consumer preferences, either for particular characteristics or simply

for national brands? The automobile industry provides an interesting case for analyzing these questions. The industry accounts for over 10% of world trade in manufactured goods (WTO, 2013) and bears the features of many oligopolistic industries, producing differentiated and tradable goods, while domestic producers command a dominant share in their home markets.

Apart from the auto industry's importance in world trade and manufacturing employment, the availability of data also makes this industry suitable for our analysis. We have compiled a rich and unique dataset of global sales and supply. The sales data inform us about prices and quantities (as opposed to revenue only) by automobile model, as well as several characteristics (e.g., horsepower, size, weight and fuel efficiency) in nine countries across three continents. On the supply side, we have worldwide data on the assembly plant locations of each model. We propose a structural model that exploits two features of the data to separate preference-based incentives to purchase local products from supply-side frictions such as trade and investment costs. First, the availability of price data allows us to measure the willingness to pay for models. Second, the prevalence of foreign direct investment (FDI) provides variation between national brand identity and assembly location across models, helping to disentangle their demand and supply effects. Moreover, we are able to separately identify country-level preferences for observed characteristics (such as heterogeneous taste for fuel efficiency across countries) from home preference—a systemic preference for purchasing local products. Such a preference could arise from several sources including consumer information asymmetries between local and non-local products, nationalistic feelings, or a stronger ability on the part of local brands to respond to localized tastes for unobserved characteristics (e.g., body styling or interior features such as cup holders).[1]

Traditionally, models of international trade have relied on relatively restrictive demand systems (e.g. constant elasticity of substitution in Krugman, 1980; Eaton and Kortum, 2002; Melitz, 2003; Anderson and van Wincoop, 2003) to analyze market outcomes.[2] While these approaches represent tractable means of analysis, they may be limited in their ability to capture rich substitution patterns that are a feature of horizontally differentiated oligopolistic industries such as cars. Quantitative applications have also been limited by the availability of only revenue data without credible price and quantity information. As a result, they may lead to biased estimates of trade costs and an underappreciation of preference differences across national markets. We incorporate a random coefficients approach to estimate demand, allowing for both within- and across-market heterogeneity in consumer preferences. This more flexible approach enables us to consistently estimate demand- and supply-driven mechanisms behind market segmentation.[3] The model yields estimates of product-specific markups, trade costs, and production costs from detailed industry level data. This extends, in an industry equilibrium, the analysis of recent quantitative trade models with multinational production (Ramondo and Rodriguez–Clare, 2013; Arkolakis et al., 2013; Tintelnot, 2017), which were also limited by the availability of only revenue data on multinationals' foreign affiliate sales for the aggregate manufacturing sector.

Separating the underlying drivers of home market advantage is important for understanding how globalization affects market outcomes and welfare. In the absence of preference-based drivers, one would expect the home market advantage to vanish if all trade barriers were removed. Despite large reductions in formal barriers to trade and foreign investment, as well as in transport and communication costs, significant home market advantages persist. If this is to a large extent accounted for by demand-related factors, the implications for policy and firm strategies are very different from models that only consider supply-side frictions. We find that demand-side differences are significant drivers of home market advantage relative to supply side policy frictions. This limits the extent to which trade liberalization can foster market integration; ignoring these limitations would lead policy makers to over-emphasize the benefits of trade liberalization.

Our model builds on the random coefficients demand model developed by Berry et al. (1995). While we follow the general approach in estimating demand and cost side in that workhorse model in the industrial organization literature, we make several departures from the standard analysis. On the demand side, we recover a brand-market-specific shifter to consumers' utilities that we decompose into a rich set of observables such as brand nationality, dealer density, and brand entry date to each market. On the cost side, we build on the model of FDI and export platforms by Tintelnot (2017) to solve a firm's sourcing decision from its portfolio of plants. In the data, firms tend to have multiple assembly plants that can produce their products, and therefore a multi-plant model is necessary for the quantitative analysis of the supply side. We use variation in assembly and headquarter locations to estimate trade and foreign production costs while accounting for firms' endogenous sourcing decision across the set of available plants. This allows us to directly recover the cost elasticities of various trade related observables such as assembly-to-market distance and headquarter-to-assembly distance. To our knowledge, our paper is the first to combine a random coefficients demand side model—to flexibly estimate a rich set of market-specific demand elasticities—together with a multi-plant supply side model—to estimate trade and multinational production frictions. Finally, we develop a procedure to unpack the contributions of tariffs, trade/FDI costs, home preference, and taste heterogeneity in explaining market shares.

To quantify home market advantage, we calculate the difference in market share when a model is sold at home versus abroad, controlling for model and market fixed effects. Using our structural estimates, we then evaluate the contributions of potential drivers of home market advantage by computing counterfactual prices and shares after removing various demand and supply components of our model and re-computing the home market advantage statistic. We find that home market advantage is most sensitive to the removal of home preference for domestic brands, declining by about 47%. In contrast, when we remove all tariffs, trade, and foreign production costs, the home market advantage declines by only 19%. Importantly, our results are obtained by controlling for the impact of a brand's entry date into a market, dealer density, and whether the brand has any local assembly. Since, for historical reasons, these factors are correlated with home status, treating them as unobserved would lead to even larger estimates of home preference. While the trade literature has often used trade costs and home bias in preference interchangeably, one of the key contributions of this paper is to disentangle the role of these two forces.[4]

---

[1] In a world with trade costs and increasing returns to scale, local producers may obtain larger national market shares for reasons distinct from home preference if they happen to supply the goods that are in high relative demand in the home country (the home market effect in Krugman, 1980). Auer (2014) applies this idea to the automotive industry in order to rationalize the sluggish response of trade flows when trade costs fall.

[2] With the notable exception of non-homothetic preferences (Fieler, 2011; Fajgelbaum et al., 2011; Fajgelbaum and Khandelwal, 2014) which are used to rationalize a certain pattern in the trade data, namely the prevalence of north-north trade. However, in that literature consumer preferences are identical across countries, and it is income levels that vary.

[3] In previous work (Coşar et al., 2015), we estimated supply-side border frictions in wind turbine trade using detailed geographic data on firm sales.

[4] See for example the following quote from the gravity model review article by Anderson (2011): "It is usual to impose identical preferences across countries. […] Henceforth trade cost is used without qualification but is understood to potentially reflect demand-side home bias. Declines in trade costs can be understood as reflecting homogenization of tastes."