



Love for quality, comparative advantage, and trade[☆]

Esteban Jaimovich^{a,*}, Vincenzo Merella^b

^a University of Surrey, School of Economics, Guildford GU2 7XH, United Kingdom

^b University of Cagliari and BirkCAM, Department of Economics and Business, Viale Sant'Ignazio 17, 09123 Cagliari, Italy



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ABSTRACT

We propose a Ricardian trade model with horizontal and vertical differentiation, where willingness to pay for quality rises with income, and productivity differentials across countries are stronger for high-quality varieties of goods. Our theory predicts that the scope for trade widens and international specialisation intensifies as incomes grow and wealthier consumers raise the quality of their consumption baskets. This implies that comparative advantages strengthen gradually over the path of development as a by-product of the process of quality upgrading. The evolution of comparative advantages leads to specific trade patterns that change over the growth path, by linking richer importers to more specialised exporters. We provide empirical support for this prediction, showing that the share of imports originating from exporters exhibiting a comparative advantage in a specific product correlates positively with the importer's GDP per head.

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1. Introduction

Income is a key determinant of consumer choice. A crucial dimension through which purchasing power influences this choice is the quality of consumption. People with very different incomes tend to consume commodities within the same category of goods, such as clothes, cars, wines, etc. However, the actual quality of the consumed commodities differs substantially when comparing poorer to richer households. The same reasoning naturally extends to countries with different levels of income per capita. In this case, the quality dimension of consumption entails important implications on the evolution of trade flows.

Several recent studies have investigated the links between quality of consumption and international trade. One strand of literature has centred their attention on the demand side, finding a strong positive

correlation between quality of imports and the importer's income per head [Hallak (2006), Fieler (2012)].¹ Another set of papers has focused instead on whether exporters adjust the quality of their production to serve markets with different income levels. The evidence here also points towards the presence of nonhomothetic preferences along the quality dimension, showing that producers sell higher quality versions of their output to richer importers.²

These empirical findings have motivated a number of models that yield trade patterns where richer importers buy high-quality versions of goods, while exporters differentiate the quality of their output by income at destination [Hallak (2010), Fajgelbaum et al. (2011), Jaimovich and Merella (2012)]. Yet, this literature has approached the determinants of countries' sectoral specialisation as a phenomenon that is independent of the process of quality upgrading resulting from higher consumer incomes. In this paper, we propose a theory where quality upgrading becomes the central driving force behind a general process of sectoral specialisation and comparative advantage intensification. The crucial novel feature of our theory is that quality upgrading by consumers leads to a strengthening in countries' specialisation in the

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* Corresponding author.

E-mail addresses: e.jaimovich@surrey.ac.uk (E. Jaimovich), merella@unica.it (V. Merella).

¹ See also related evidence in Choi et al. (2009), Francois and Kaplan (1996) and Dalgin et al. (2008).

² For example, Verhoogen (2008) and Iacovone and Javorcik (2008) provide evidence of Mexican manufacturing plants selling higher qualities in the US than in their local markets. Brooks (2006) establishes the same results for Colombian manufacturing plants, and Manova and Zhang (2012) show that Chinese firms ship higher qualities of their exports to richer importers. Analogous evidence is provided by Bastos and Silva (2010) for Portuguese firms, and by Crino and Epifani (2012) for Italian ones.

sectors where they exhibit a relative cost advantage. Therefore, the quality of the goods consumed and exchanged in world markets becomes a first-order determinant of the evolution of countries' sectoral specialisation, and of the intensity of the trade links that importers establish with different exporters.

Our theory is grounded on the hypothesis that productivity differentials are stronger for higher-quality goods, combined with willingness to pay for quality that rises with income. Within this framework, we show that international specialisation and sectoral trade intensify over the growth path. The evolution of trade flows presents novel specificities that stem from the interaction between nonhomothetic preferences and the deepening of sectoral productivity differentials at higher levels of quality. In particular, the process of quality upgrading with rising incomes sets in motion a simultaneous increase in specialisation by importers and exporters. Import and export specialisation arise as intertwined phenomena because, as countries become richer, consumers shift their spending towards high-quality goods, which are exactly those that tend to display greater scope for international trade.

We model a world economy with a continuum of horizontally differentiated goods, each of them available in a continuum of vertically ordered quality levels. The production technology differs both across countries and sectors. We assume that some countries are intrinsically better than others in producing certain types of goods. In addition, these intrinsic productivity differentials on the horizontal dimension tend to become increasingly pronounced along the vertical dimension. These assumptions lead to an intensifying process of sectoral specialisation as production moves up on the quality ladders of each good. For example, a country may have a cost advantage in producing wine, while another country may have it in whisky. This would naturally lead them to exchange these two goods. Yet, in our model, productivity differences in the wine and whisky industries do not remain constant along the quality space, but become more intense as production moves up towards higher quality versions of these goods. As a result, the scope for international trade turns out to be wider for high-quality wines and whiskies than for low-quality ones.

A key feature of our model is the embedded link between nonhomotheticities in quality and international trade at the sectoral level. More precisely, as richer individuals upgrade the quality of their consumption baskets, sectoral productivity differentials across countries become stronger, leading to the intensification of some trading partnerships and the weakening of others. In that respect, our model suggests that the study of the evolution of trade links may require a more flexible concept of comparative advantage than the one traditionally used, so as to encompass quality upgrading as an inherent part of it. In the literature of Ricardian trade, the comparative advantage is univocally determined by exporters' technologies. This paper instead sustains that both the importers' incomes and the exporters' sectoral productivities must be jointly taken into account in order to establish a rank of comparative advantage. This is because the degree of comparative advantage between any two countries is crucially affected by the quality of consumption. As a consequence, richer and poorer importers may end up establishing trade links of substantially different intensity with the *same* set of exporters, simply because the gaps between their willingness-to-pay for quality may translate into unequal degrees of comparative advantage across their trade partners.

The conditionality of comparative advantage on importers incomes entails novel testable predictions on the evolution of sectoral trade flows. In particular, our model predicts that the share of imports originating from exporters exhibiting a cost advantage must grow with the income per head of the importer. This is the result of richer importers buying high-quality versions of goods, which are those for which cost differentials across countries are relatively more pronounced. Using bilateral trade data at the sectoral level, we provide evidence consistent with the prediction that richer economies are more likely to buy their imports from producers who display a comparative advantage in the imported goods.

Finally, our theory also has implications in terms of policy, particularly with regard to stimulating the growth of a specific industry through import tariffs or subsidies to local producers. Using simple comparative statics, we show that the gains from free trade are stronger for more developed economies, as their consumers suffer a greater welfare loss when the tariff is imposed on more efficient producers. In addition, our results suggest that subsidies have a larger impact at fostering local production when introduced in developing countries.

1.1. Related literature

Nonhomothetic preferences are by now a widespread modelling choice in the trade literature. However, most of the past trade literature with nonhomotheticities has focused either on vertical differentiation [e.g., Flam and Helpman (1987), Stokey (1991) and Murphy and Shleifer (1997)] or horizontal differentiation in consumption [e.g., Markusen (1986), Bergstrand (1990) and Matsuyama (2000)].³ Two recent articles have combined vertical and horizontal differentiation with preferences featuring income-dependent willingness to pay for quality: Fajgelbaum et al. (2011) and Jaimovich and Merella (2012).

Fajgelbaum et al. (2011) analyse how differences in income distributions between economies with access to the *same* technologies determine trade flows in the presence of increasing returns and trade costs. Like ours, their paper leads to an endogenous emergence of comparative advantages. In their case, this could be either due to trade costs being too high to allow trade, or countries' income distributions being too similar to induce specialisation via a home-market effect. Our paper, instead, sticks to the Ricardian tradition where trade and specialisation stem from cross-country *differences* in sectoral technologies featuring constant returns to scale. Comparative advantages and trade emerge gradually in our model, not because trade costs initially hinder the scope for exchange in the presence of increasing returns to scale, but because the demand for commodities displaying wider heterogeneity in cost of production (the high-quality goods) expands as incomes rise.⁴

Jaimovich and Merella (2012) also propose a nonhomothetic preference specification where budget reallocations take place both within and across horizontally differentiated goods. That paper, however, remained within a standard Ricardian framework where absolute and comparative advantages are determined from the outset, and purely by technological conditions. Hence, nonhomothetic preferences play no essential role there in determining export and import specialisation at different levels of development. By contrast, it is the interaction between rising differences in productivity at higher quality levels and nonhomotheticities in quality that generates our novel results in terms of co-evolution of export and import specialisation.

A key assumption in our theory is the widening in productivity differentials at higher levels of quality. To the best of our knowledge, Alcalá (2012) is the only other paper that has explicitly introduced a similar feature into a Ricardian model of trade. An important difference between the two papers is that Alcalá's keeps the homothetic demand structure presented in Dornbusch et al. (1977) essentially intact. Nonhomotheticities in demand are indeed crucial to our story. In

³ For some recent contributions with horizontal differentiation and nonhomothetic preferences see: Foellmi et al. (2012) and Tarasov (2012), where consumers are subject to a discrete consumption choice; Fieger (2011) who ties the income elasticity of consumption goods across different industries to the elasticity of substitution of goods within the same industry; Simonovska (forthcoming) who fixes a bounded level of utility for each differentiated good; Breinlich and Cuñat (2013) who combine a Stone-Geary representation with Armington aggregators of country-specific varieties; and Melitz and Ottaviano (2008), Zhelobodko et al. (2012) and Dhingra and Morrow (2012), who adopt nonhomothetic specifications of preferences delivering linear demand systems.

⁴ In this regard, an important feature present in our model is that high-quality versions of goods are inherently more tradable than low-quality ones, while this is not necessarily the case in Fajgelbaum et al. (2011) unless they specifically assume quality-specific trade costs that are restricted to be relatively lower for high-quality varieties.

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