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Productivity, terms of trade and the 'home market effect' ☆

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Abstract

This paper analyzes the international transmission and welfare implications of productivity gains and changes in market size when macroeconomic adjustment occurs both along the intensive margin of trade (changes in the relative price of existing varieties of tradable goods) and the extensive margin (creation and destruction of varieties). We draw a distinction between productivity gains that enhance manufacturing efficiency and gains that lower the cost of firms' entry and of product differentiation. Countries with lower manufacturing costs have higher GDP but supply their products at lower international prices. Instead, countries with lower entry costs supply a larger array of goods at improved terms of trade. Output growth

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driven by demographic expansions, as well as government spending, is associated with an improvement in international relative prices and firms' entry. While trade liberalization may result in a smaller array of goods available to consumers, efficiency gains from deeper economic integration benefit consumers *via* lower goods prices. The international transmission mechanism and the welfare spillovers vary under different asset market structures, depending on trade costs, the elasticity of labor supply, and consumers' taste for varieties.

Keywords: Trade; Productivity; Terms of trade; Taste for variety

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1. Introduction

A common view in trade and growth theory is that an increased supply of domestic goods is associated with the deterioration of a country's terms of trade, as the additional domestic supply is absorbed by international markets at falling prices. By the same token, stronger internal demand for domestic output reduces a country's supply of exports and improves its international prices. A key welfare implication is that domestic productivity gains are transmitted positively to the country's trading partners worldwide, thanks to changes in relative prices.[1] If the set of goods that a country produces and exports change over time, however, the tenet that a growing economy must experience weaker terms of trade is questionable. As argued by Krugman (1989), when domestic producers take advantage of enhanced productivity to change the attributes of their products, that country may enjoy the benefits of technological progress without experiencing any fall in its international prices.

Recent contributions to the literature have revisited the traditional wisdom from both a theoretical and empirical standpoint. The conventional view is espoused by Acemoglu and Ventura (2002), who emphasize that the association of capital accumulation with deteriorating terms of trade is an important factor contributing to a stable world income distribution. Yet, their empirical analysis unveils a positive correlation between terms of trade and human capital, interpreted as a proxy for product innovation. Hummels and Klenow (2005) document that richer countries tend to export more product varieties and benefit from stronger terms of trade.[2] This finding is corroborated by country-studies such as Kang (2004) for Korea. The quantitative analysis by Ghironi and Melitz (2005) also predicts terms of trade appreciation in response to productivity shocks which symmetrically reduce production costs and the costs of firms' entry. In the VAR analysis in Corsetti et al. (2005, in press), productivity shocks (identified *via* long-run

[1] This pattern of international transmission is clearly consistent with the Harrod–Balassa–Samuelson hypothesis, according to which countries with higher productivity growth in the tradable sector experience an increase in the relative price of their nontradable goods. Provided that the elasticity of substitution across tradables produced at home and abroad is sufficiently high, these countries will also experience an appreciation of their real exchange rates. Thus high-productivity growth in tradables may simultaneously cause appreciation of the real exchange rate and weakening of the terms of trade.

[2] The role of goods variety in international trade is emphasized in Gagnon (2003), which documents that the growth of U.S. bilateral manufactured imports is strongly correlated with the average growth rate of GDP of the exporting countries. This study provides evidence that the puzzling differences in estimated income elasticities of imports and exports across countries, as pointed out by Houthakker and Magee (1969), may be attributed to the omission of variety effects in import demand.