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# Modeling trade policies under alternative market structures<sup>☆</sup>

Giovanni Anania<sup>a,\*</sup>, Margherita Scoppola<sup>b</sup>

<sup>a</sup> *Department of Economics, Statistics and Finance, University of Calabria, Italy*

<sup>b</sup> *Department of Studies on Economic Development, University of Macerata, Italy*

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## Abstract

The paper focuses on the importance of assumptions made about market structure and firm behavior in empirical trade policy analysis. The contribution to the relevant literature is 3-fold: first the paper develops two original models which incorporate imperfectly competitive market structures in a spatial modeling framework; then it proposes a procedure to identify the degree of market power in international trading which is consistent with observed prices and traded quantities, and applies it to the banana market; finally, it assesses how analysis of the implications of recent changes in the EU import regimes for bananas (the Economic Partnership Agreements and the December 2009 WTO agreement) is affected by the assumptions made on the prevailing market structure.

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\* Corresponding author. Tel.: +39 0984492406.

*E-mail addresses:* [giovanni.anania@unical.it](mailto:giovanni.anania@unical.it) (G. Anania), [scoppola@unimc.it](mailto:scoppola@unimc.it) (M. Scoppola).

## 1. Introduction

Growing attention has been recently devoted to the role of intermediaries in international trade. Recent studies show that 24% of US imports are handled by “pure” intermediaries, that is, wholesalers and retailers, while on the export side they account for 11% of total trade (Bernard, Jensen, Redding, & Schott, 2010). The role of intermediaries has been highlighted also for Chilean imports – 35% are handled by wholesalers and 6% by retailers (Blum, Horstmann, & Claro, 2010) – and for China – 22% and 18% of total Chinese exports and imports, respectively, are handled by Chinese intermediaries (Ahn, Khandelwal, & Wei, 2010). Intermediaries are particularly important in several agricultural commodity markets, such as cereals, sugar, bananas and coffee, in which a small number of trading firms (not necessarily private) account for a large share of world trade and are, potentially, in the position to exert market power. These trading firms are, by and large, “pure” middlemen, that seldom produce themselves the products they trade.

The aim of this paper is to address the relevance of the assumptions about market structure and trader behavior in empirical analyses of trade policies; in particular when studying trade policy issues concerning commodity markets in which traders play an important role, the assumption of perfect competition may be restrictive and policy prescriptions obtained based on this assumptions distorted. Yet, empirical trade policy analysis often relies on this very assumption (McCorrison, 2002).

The paper analyzes recent changes in the European Union (EU) import regime for bananas, namely the Economic Partnership Agreements (EPAs) and the December 2009 WTO agreement which put end to the “banana war”. For several decades the EU import regime for bananas had been the cause of heated political confrontation, both domestically and internationally (Anania, 2006; Josling & Taylor, 2003). The EPAs made EU banana imports originating from African, Caribbean and Pacific (ACP) countries duty- and quota-free (previously they were subject to a duty-free quota, with out-of-quota imports subject to the MFN tariff), while the WTO agreement called for a reduction of the EU MFN tariff on bananas. This case study is used to provide insights into the effects of assumptions on non-competitive behaviors by international traders in the evaluation of the impact of trade policies. In fact, the banana trade is among the most evident examples of high concentration in international markets, with three international trading firms accounting for over 65% of world trade. The EU Commission (EC, 2008, 2011) has found that five banana traders have violated EU rules on competition, and consequently imposed fines. Making different assumptions about market structure, the paper provides a quantitative assessment first of the impact of the trade preferences the EU granted ACP countries with the EPAs, and then of the erosion of these preferences resulting from the reduction of its MFN import tariff for bananas under the December 2009 WTO agreement. The banana market is possibly the one in which benefits from trade preferences granted by the EPAs and potential losses from preference erosion are the greatest (Alexandraki & Lankes, 2006; Low, Piermartini, & Richtering, 2009; Yang, 2005).

We use a single commodity, spatial, mathematical programming model. Compared to general equilibrium models, partial equilibrium models allow for a better representation of complex policy instruments, a more detailed representation of markets and require less restrictive assumptions. The choice of a spatial model – i.e., a model which is able to generate trade flows between each pair of countries – is due to the fact that it is particularly effective in representing policies where different regimes apply to imports from different sources, without having to impose at times questionable assumptions, such as imperfect substitution between goods produced in different countries (Armington, 1969). Current and previous EU trade regimes for bananas considered in this paper include preferential tariffs and tariff rate quotas (TRQs) applied on imports from

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