

Economic Development without Pre-Requisites: How Bolivian Producers Met Strict Food Safety Standards and Dominated the Global Brazil-Nut Market

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Summary. — Brazilian firms used to dominate the brazil nut (BN) market to such an extent that the product still carries the country's name. In a surprising twist, 77% of all BNs are now processed and exported by Bolivia, a country with far fewer resources than its neighbor. This paper analyzes the impact of EU regulations on the global BN market. It finds that Bolivian producers prevailed because they joined forces to revamp their manufacturing practices and meet EU sanitary standards despite continued mutual mistrust. In contrast, Brazilian producers have been unable to work cooperatively and lost access to the European market entirely.
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1. INTRODUCTION

Global trade can be a double-edged sword: while it creates economic opportunities, it also exposes exporters to higher levels of scrutiny concerning labor, environmental, and sanitary standards than they may be able to meet. Food safety hazards are particularly likely to trigger immediate and drastic responses. For instance, in 2008 news emerged that some brands of infant formula produced in China contained melamine, a chemical that increases protein content in milk but can be fatal when ingested (Gao, 2011). Within days, 28 countries had banned all milk imports from China and many of its trading partners. In the ensuing furor, Chinese milk producers posted multibillion dollar losses and at least one large producer went bankrupt. In 2009, *Salmonella* bacteria were found in peanuts sold by the Peanut Corporation of America (Irlbeck, Akers, & Palmer, 2011). Hundreds of people got sick and nine died. Throughout the US, food manufacturers recalled products that contain peanuts, including cookies, crackers, ice cream, trail mixes and pet foods. Sales of peanut related products plunged and the US peanut industry lost an estimated three billion dollars. The public is now so sensitive to food scares that even false alarms can cause significant damage. For example, the inaccurate and temporary labeling of H1N1 influenza as “swine flu” affected the futures market of lean hogs to such an extent that the industry lost US\$200 million within four months (Attavanich, McCarl, & Bessler, 2011).

As these real and imagined safety issues are exposed, customers flee and producers struggle to adjust. Eventually, some producers upgrade their practices and facilities and go on to retain or even improve their market position. Other producers fail to adapt, downsize, or leave these demanding markets altogether. What explains this disparity? Scholars of industrial clusters, global commodity chains, and local economic development have identified three agents of change: either (a) global buyers or (b) local governments help producers upgrade or (c) producers act collectively to upgrade on their own. Unfortunately, these change agents seem to require strict prerequisites to deliver results. At the very least, global buyers must be

willing to intervene, local governments must have managerial capacity and the political will to act, and producers are more likely to collaborate when they share preexisting social, cultural, or ethnic ties.

To understand how producers can meet stringent food safety standards even when these change-facilitating conditions are not initially present, this study compares the recent evolution of the brazil-nut (BN) industry in both Brazil and Bolivia. The BN is the seed of the *Bertholletia excelsa*, a tree that grows exclusively in the Amazon and that has never been domesticated (Mori & Prance, 1990). To this day, all BNs consumed worldwide come from contiguous areas of native forests in Brazil, Bolivia, and Peru. For centuries, Brazilian producers dominated this sector to such an extent that the product still carries the country's name. And yet, in 2010, 77% (in value) of all BNs consumed worldwide were processed and exported by Bolivia (Food and Agriculture Organization, 2013), a country with far fewer resources and economic capabilities than its larger neighbor to the east.

During my preliminary inquiries, observers of the industry attributed this outcome to Brazilian deforestation, high labor costs, or Bolivia's ability to attract large amounts of foreign

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aid. My research suggests that none of these hypotheses explains the observed outcomes. At present, Brazil retains enough forest cover to export unprocessed BNs to both Bolivia and Peru (Ministério do Desenvolvimento, Indústria e Comércio Exterior, 2013),¹ which process and export the final product to other countries. While the Global Competitiveness Report (World Economic Forum 2012) ranks Brazil's "labor market efficiency" as the 69th worst in the world (out of 144 countries; p. 116), it ranks Bolivia even worst at 132nd (p. 110). Finally, Bolivian BN producers have received significant amounts of foreign aid (Assies, 1997, p. 64; Mangurian, 1998; Chemonics International, 2004) but so did their Brazilian counterparts, who have also benefitted from foreign aid (Standards and Trade Development Facility, 2006), private philanthropic grants (Assies, 1997, p. 38; Welles, 1998) and various forms of public-sector support (Drew & Fujiwara, 2002; SUFRAMA, n.d.; Pagina 20, 2003; Freitas-Silva & Pereira, 2012).

Contrary to these hypotheses, my research reveals that Bolivian BN producers prevailed because their business association helped them upgrade manufacturing practices and facilities despite intense and continued mistrust. Thanks to these improvements, producers have been able to meet strict new EU food quality and safety standards. Conversely, Brazilian producers tried to meet the EU standards individually, failed to do so, and found themselves shut out of that market. This finding challenges the idea that engaged buyers, proactive government agencies, or a foundation of mutual trust are prerequisites for successful upgrading. Bolivian BN producers did not have access to any of these resources at the outset but still developed the required institutional arrangement that helped them succeed.

The remainder of this paper is structured as follows: Section 2 discusses the challenges faced by developing country firms as they try to meet stringent food safety standards and the levers they use to upgrade. Section 3 provides background on the global BN industry. Section 4 describes the methodology employed in this study. Sections 5 and 6 discuss the findings for Bolivia and Brazil respectively, and Section 7 summarizes and concludes.

2. FOOD SAFETY STANDARDS AND LOCAL ECONOMIC DEVELOPMENT

In recent decades, developed country governments and multinational firms have been imposing an ever growing array of food quality and safety standards on imported foodstuffs. Once this trend became apparent, scholars used econometric models to predict a large and negative effect of tightened standards on trade. For instance, Otsuki, Wilson, and Sewadeh (2001) estimated that the EU's 1999 adoption of stricter aflatoxin standards would decrease imports of dried fruits and edible nuts from nine African countries by 47%, or US\$220 millions per year as compared to the 1998 baseline (p. 509). Similarly, Gebrehiwet, Ngqangweni, and Kirsten (2007) estimated that South Africa would have increased its food exports by US\$69 million per year if five OECD countries had not tightened sanitary standards beyond the level suggested by international conventions (p. 35). Strengthening these predictions, trade representatives from 65 low and middle-income countries surveyed by Henson and Loader (2001) asserted that sanitary and phytosanitary standards constituted "the most important impediment to agricultural and food exports to the EU" (p. 99).

Subsequent empirical research challenged these estimates and suggested that the impact of food quality and standards on trade is more diverse than anticipated (Jaffee & Henson, 2004; Jaffee, Henson, & Diaz Rios, 2011). On average, small

firms, firms based in less-developed countries, and firms that export perishable or lightly processed commodities tend to suffer large losses (Anders & Caswell, 2009 pp. 317–18; Shepherd & Wilson, 2010, p. 16). Conversely, firms based in richer countries and larger firms from developing countries tend to adapt to the new requirements more easily (Amekawa, 2009). Other variables of import include the share of the target market held by the affected country, the suitability of its legal framework, coordination among private sector actors, technical capacity, clarity of institutional procedures, and agro-climatic conditions (Henson & Jaffee, 2008, p. 564).

Crucially, these correlations between country-wide variables and trade performance conceal enormous variation. While some producers act as if standards were a barrier to trade, others with comparable profiles take standards as a stimulus to invest and upgrade. For instance, groundnut producers in Argentina anticipated the EU's stricter sanitary standards and developed new varieties, enacted plant disease controls, and improved water management and post-harvest practices in ways that allowed them to increase sales and market share (Rios & Jaffee, 2008, pp. 22–23). In Malawi, the US Agency for International Development (USAID) helped small farmers create a network of associations that closely monitors groundnut production and screens shipments for contamination. Thanks to these interventions, local farmers have retained access to the stringent EU market and benefit from fair-trade premiums (p. 27). Conversely, in Senegal, the private company responsible for the national confectionery peanut program has taken a series of steps to increase the output of preferred groundnut varieties but has not been able to improve quality sufficiently to meet EU standards (p. 25). In The Gambia, the multinational corporation responsible for marketing the national groundnut crop has changed payment procedures, rehabilitated the domestic marketing infrastructure, and invested in research but quality remains so low that a large proportion of its groundnut exports end up as bird feed (p. 26).

Given that the returns for compliance are sizeable (Masakure, Spencer, & Cranfield 2009; Henson, Masakure, & Cranfield, 2011), why do some countries (and firms) revamp their practices to comply with strict food quality and safety standards, while others give up, or try to reform but fail? And what is it that successful countries and firms do to succeed? The literature on industrial clusters, global value chains, and local economic development has identified three actors—global buyers, local governments, and business associations—that can potentially help producers in developing countries upgrade their manufacturing practices.

Practically all studies of industrial clusters have found that producers adjust successfully when they establish close ties of collaboration with global buyers. This type of vertical relationship has benefitted a variety of local industries including producers of—surgical instruments in Pakistan (Nadvi, 1999a, 1999b), woolen knitwear in India (Tewari, 1999), footwear items in Mexico, India, and Brazil (Schmitz, 2000), and fresh vegetables in Kenya and Zimbabwe (Dolan & Humphrey, 2000). As highlighted by Locke, Amengual, and Mangla (2009), labor auditors sent by a large US-based apparel company to visit its clothing suppliers around the world often help producers improve their performance on various fronts, including inventory management, turnaround time, defect rates, and labor standards.

Opening a second set of possibilities, studies of local economic development have found that domestic government agencies also can help producers upgrade. Typically, these interventions entail protracted (and sometimes heated) negotiations through which government agents and local

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