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The Role of Private Standards for Manufactured Food Exports from Developing Countries

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SUMMARY

The relevance of non-tariff barriers for global trade flows has increased in recent decades. However, the effect of food standards—as a particular important non-tariff measure—on agricultural trade flows remains unclear. We contribute to the debate with a unique dataset tmalte.ehrich@agr.uni-goettingen. dehat contains the number of food processing firms of 87 countries from 2008 to 2013 that are certified with the International Featured Standard (IFS). We estimate a gravity model using the one-year lag of IFS as well as IFS certification in neighboring countries as an instrument to address potential endogeneity. We find that IFS increases *c.p.* bilateral exports on average of seven agricultural product categories in both specifications. However, the effect remains robust only for high- and middle-income countries and disappears for low-income countries. Hence, while IFS increases exports on average, low-income countries do not benefit in terms of higher export volumes. Moreover, once we separate the dataset by sector, the trade-enhancing effect remains for bakery, dairy, and beverage sectors only. Overall, we argue that food standards are not a suitable development tool to integrate low-income countries into high-value chains per se.

1. Introduction

Significant tariff reductions during previous decades belong to the most successful tools to reduce poverty (Dollar & Kraay, 2004). Many South-East Asian countries integrated into the world trade system and achieved tremendous increases in per capita income. However, not all countries benefit from the world trade system in the same way despite tariff reductions which were achieved via multilateral as well as via regional negotiation rounds. Moreover, as the relevance of tariffs as trade barriers declines, non-tariff barriers (NTBs) to trade gain in quantitative as well as in qualitative importance. For example, the total amount of sanitary and phytosanitary (SPS) notifications to the World Trade Organization (WTO) as a proxy for public food safety standards increased from less than 200 in 1995 to almost 1,000 in 2015, see Figure 1. Moreover, the number of GlobalGAP producers as an important private standard increased from below 20,000 in 2004 to more than 150,000 in 2015 (GlobalGAP, 0000; Swinnen, Deconinck, Vandemoortele, & Vandeplas, 2015). The increasing relevance of standards is important for trade policies because standards usually imply significant costs of compliance which could prevent low-income countries in particular to benefit from global agricultural markets. Therefore, the effect of NTBs and standards in particular on trade is of deep interest for economists and policy makers that are concerned about the integration of developing countries into the world trade system (Otsuki, Wilson, & Maskus, 1999).

This study addresses these concerns by looking at the effect of the International Featured Standard (IFS) as an important private food standard on agricultural trade. We employ a unique dataset which was obtained via the IFS-auditing database. It contains more than 50,000 audits from about 12,000 companies in 87 countries for seven agricultural sectors including a time-span of six years from 2008 to 2013. Second, we apply a novel instrumental variable approach which we consider to be superior compared to the standard method of taking the one-year lag which is not appropriate if the errors are autocorrelated. Thirdly, we estimate a gravity model via poisson-pseudo-maximum likelihood (PPML) which accounts for high share of zeros and heteroskedasticity (Santos Silva & Tenreyro, 2006, 2011). We apply the Baier–Bergstrand method to address multilateral resistance (Anderson & van Wincoop, 2003; Baier & Bergstrand, 2010). This approach allows us to contribute to the debate whether standards act as barriers or catalyst to trade.

We find that IFS certification as a private standard increases bilateral trade flows in general which illustrates the trade-

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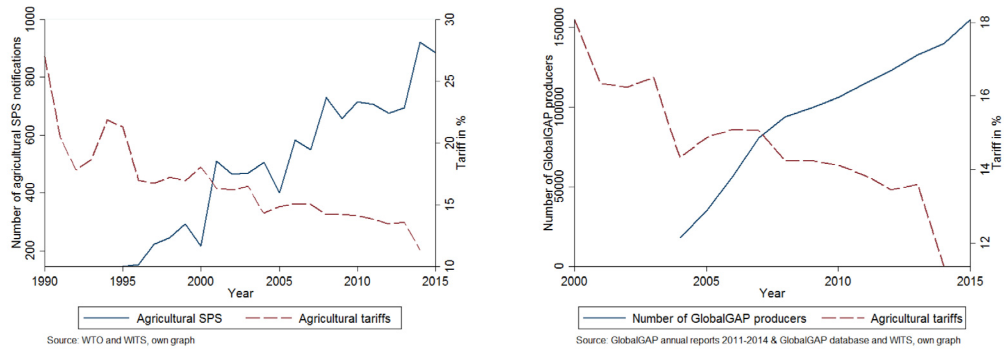
0305-750X/



(a) **Public:** SPS notifications (b) **Private:** Number of GlobalGAP producers

Figure 1. The raising relevance of standards.

increasing potential of IFS. However, the effect remains robust for high-income countries only and disappears for low-income countries once we separate by income. This finding has important policy implications. Although IFS certification increases trade on average, only high-income countries benefit in terms of larger trade volumes. This finding reduces the potential of food standards as a development tool to integrate developing countries into the world trade system. Furthermore, we show that the effect of IFS certification differs by sector. The trade-enhancing effect remains robust only for bakery, dairy, and beverage sectors.

The remainder of the paper is structured as follows: Section 2 provides an overview of the current research status within the field of standards and trade. Because IFS is analyzed rarely, we devote an entire Section 3 to provide the background of this specific food standard. Section 4 explains the PPML estimation and the instrumental variable approach in particular including the control–function approach. Section 5 shows the results, which are discussed within the research context in Section 6.

2. What do we know about the effect of standards on trade?

A debate entitled as "standards-as-catalyst vs. standards-as-barriers to trade" (Jaffee & Henson, 2004) emerged which—as a result—accumulated a large set of studies. Standards can either protect consumers or domestic producers. In addition, standards can either enhance or reduce trade flows. On the one hand, standards are likely to reduce trade because of high fixed costs of compliance which affect small-scale producers in particular (Herzfeld, Drescher, & Grebitus, 2011). For example, Czubala, Shepherd, and Wilson (2009) find that average compliance costs with product standards as percentage of firm sales exceed 100%. Other non-financial obstacles like financial literacy are also found to constraint farmers to adopt standards (Müller & Theuvsen, 2015). On the other hand, food standards can enhance trade by reducing information asymmetries (Henson & Jaffee, 2008). The westernization of diets as well as the increasing awareness of modern consumers regarding food safety makes transparent and safe food production processes quasi-mandatory for producers. Furthermore, food standards allow producers of developing countries to enter high-value chains. Private food standards in particular allow them to signal and prove high product quality. Thus, standards potentially reduce market failures due to information asymmetries which might be more relevant for developing countries (Jaffee & Henson, 2004). If private food standards are found to increase exports of developing countries in particular, this would have important policy implications. In addition to the poverty-reducing effect due to larger trade volumes, food standards would facilitate equal access to global agricultural export markets. The latter is important from a global perspective since it improves the functioning and benefits of global markets for all participants.

Moreover, there are potential additional benefits at the firm level. Since trade is not only welfare-enhancing via lower consumer prices, export sectors are on average also the most competitive sectors in a country. Thus, exporting firms earn on average higher profits, employ a larger number of workers, and pay higher wages than non-exporting firms worldwide (Mayer & Ottaviano, 2007). For example Colen, Maertens, and Swinnen (2012) provide empirical support that this pattern occurs in developing countries as well. In the context of GlobalGAP certification in Senegal, the authors show that exporting firms are important drivers for job creation and productivity spillovers which underlines the potential of private food standards as a development policy tool.

Empirical research results investigating the effect of food standards on agricultural trade highly depend on the corresponding context like the set of analyzed products, the set of countries, empirical method, and the type of food standard. For example, maximum residue limits (MRLs) as an important public food standard are more often—but not exclusively—found to be trade reducing than other standards (Li & Beghin, 2012; Otsuki, Wilson, & Sewadeh, 2001). The relevance of the chosen method is also highlighted by Ferro, Wilson, and Otsuki (2015) who create a restrictiveness index of MRLs for 61 importing countries. By applying the two-step Heckman procedure as illustrated by Helpman, Melitz, and Rubinstein (2008), the authors find evidence in the first stage that more stringent MRLs reduce the probability to export due to higher fixed costs. However, once the sample selection bias and the share of exporting firms are controlled for, standards have no effect on trade flows. In addition, the first-stage effect is stronger for the BRIC countries than for non-BRIC countries. Exports from low-income countries are more negatively affected by product standards than those from higher income countries. Ceteris paribus, countries export to destination markets which have the lowest fixed costs, i.e. less restrictive MRL standards. The effect of food safety standards on China's exports is also analyzed by Chen (2008) who finds a statistically significant negative effect. According to his estimates, the effect is even stronger than imposing tariffs. Further evidence for trade-reducing effects due to more restrictive standards is—among others—also provided by Chen, Otsuki, and Wilson (2006), Yue, Kuang, Sun, Wu, and Xu (2010), Drogué and DeMaria (2012), Melo, Engler, Nahuehual, Cofre, and Barrena (2014) who all focus on the effects of MRLs on exports. Wilson, Otsuki, and Majumdsar (2003) also find that standards affect trade flows negatively, and the authors provide further evidence that the harmonization of standards enhances trade. The article that—among others—continues this debate was written by Anders and Caswell, 2009. They argue that the introduction of