How decoupled is the Single Farm Payment and does it matter for international trade?

Kirsten Urban [a,*], Hans G. Jensen [b], Martina Brockmeier [a]

[a] Department of International Agricultural Trade and Food Security, University of Hohenheim, Stuttgart, Germany
[b] Department of Food and Resource Economics, University of Copenhagen, Denmark

A B S T R A C T

The extent to which decoupled agricultural support – including the European Union Single Farm Payment (SFP) – creates production incentives remains unclear. We apply an extended version of the standard Global Trade Analysis Project model and generate a set of 21 databases that captures a comprehensive representation of domestic support. By considering and modeling a range of different assumptions regarding the SFP's degree of decoupling, we investigate the SFP's effect on the model's results. The results of our analysis reveal substantially different effects that depend on the degree of decoupling, and the findings can help validate trade analysis results, particularly for developing countries.

© 2016 Elsevier Ltd. All rights reserved.

Introduction

For decades, there have been ongoing discussions regarding the trade distortions caused by the domestic support provided to agricultural producers. It is well established that agricultural support in high-income countries critically affects agricultural producers in developing countries, particularly in the least developed countries (McCalla and Nash, 2007a). Subsidies to agricultural producers enhance agricultural production, and border measures, such as tariffs and non-tariff barriers, protect many subsidized agricultural sectors by ensuring higher market prices. In addition, instruments such as export subsidies facilitate the dumping of subsidy-induced overproduction onto the world market, thus lowering world market prices. In this manner, subsidized countries procure a competitive advantage compared with other exporting countries and hurt developing countries, particularly those that are net exporters of agricultural and food commodities, by limiting net exporters' share of exports to the world market. By contrast, the impact on those developing countries that are net importers of agricultural and food commodities is less clear. These countries have become increasingly dependent on low-priced imports of long-term subsidized products from highly protected countries.

As a consequence, consumers in net food-importing countries are, at least in the short run, potential beneficiaries of domestic support. Furthermore, developing countries are favored through preferential trade agreements, and producers thus gain from the higher market prices in highly protected countries (Hertel and Keeney, 2006; Matthews, 2008; Panagariya, 2005).

The European Union (EU) is a prominent example of a heavily subsidized – and thus trade-distorting – agricultural sector. Despite multiple reforms to its Common Agricultural Policy (CAP) that aim to fulfill WTO requirements, the EU remains the subject of criticism because of the support it provides to agricultural producers. The EU's most important step toward less distortive trade was the introduction of the Single Farm Payment (SFP) in 2005, through which the EU provides direct income support to farmers with no production required, and which now accounts for over 50% of the EU's total domestic support payments. Thus, the SFP might be regarded as decoupled from production, but even the newly introduced SFP remains controversial. Decoupled payments may stimulate production through other coupling channels – including risk, uncertainty, imperfect credit markets, land and labor markets, and farmer's expectations about future payments (Bhaskar and Beghin, 2009) – and thus remain at least somewhat trade distortive (e.g., Chau and de Gorter, 2005; Goodwin and Mishra, 2006; Key and Roberts, 2009; Latruffe and Le Mouël, 2009; O'Toole and Hennessy, 2015). Furthermore, there is no consensus yet about the extent to which decoupled payments are capitalized in land values (Ciaian et al., 2014).

* Corresponding author at: Department of International Agricultural Trade and Food Security, University of Hohenheim, 70593 Stuttgart, Germany. Tel.: +49 711 459 22 600; fax: +49 711 459 23 762.

E-mail address: kirsten.urban@uni-hohenheim.de (K. Urban).

In recent years, a considerable number of articles have analyzed the effects of multilateral trade liberalization that focus on market access, export subsidies, and domestic support and that evaluate these effects with a particular focus on developing countries (Anderson and Martin, 2006, 2005; Anderson and Valenzuela, 2007; Bouët et al., 2005; Bureau et al., 2006; Martin and Anderson, 2008; McCalla and Nash, 2007b). Notwithstanding general trade liberalization, some analyses continue to focus on the effects of domestic support versus export subsidies (Nuetah et al., 2011), domestic support versus tariffs (Tamini et al., 2012), and agricultural tariffs versus subsidies (Hoekman et al., 2004). (Dimaranan et al., 2004; Rae and Strutt, 2003), in particular, examine the effects of domestic support on developing countries. Although a number of analyses have identified the effects of the CAP on the EU agricultural market, fewer assessments are available that emphasize the effects of the CAP on developing countries (Boysen et al., 2015a; Matthews, 2008; Nowicki et al., 2009; Winters, 2005).

Some of this literature analyzes the effects of trade liberalization scenarios by accounting for domestic support payments and applying various methodological settings. However, to our knowledge, no available analysis considers the effects of different underlying assumptions regarding the degree of decoupling of decoupled payments. With respect to the extent to which the SFP continues to incentivize production, the effects of the degree of the SFP's decoupling must be considered when analyzing the effects of domestic support on international trade.

Computable general equilibrium (CGE) models are comprehensive tools for analyzing trade liberalization scenarios. However, the attention to detail regarding the complex structure and country-specific properties of domestic support has been lacking in the previous literature. Although most of the applied CGE models consider the SFP, the assumptions about the degree of decoupling differ. The majority of approaches treat the SFP as fully decoupled by distributing 100% of it to land (Boulanger and Philippidis, 2015; Frandsen et al., 2003; Nowicki et al., 2009), whereas single-country CGE models treat the SFP as lump sum transfers allocated to households (Boysen et al., 2015b; Ferrari et al., 2012). By contrast, the standard Global Trade Analysis Project (GTAP) model allocates the SFP according to factor usage. Gohin (2006) and Balkhausen et al. (2008) compile different assumptions regarding the SFP's degree of decoupling as applied in CGE and partial equilibrium models and conclude that the degree of decoupling is the most important factor when comparing different analyses.

The objective of this article is to provide an analysis that reveals the effect of the SFP accounting for different assumptions regarding its degree of decoupling, its modeling, and its effects on trade with developing countries. Thus, this analysis helps validate results based on the experiences of experts and the available econometric results of the degree of decoupling. We base our analysis on the GTAP model, which incorporates domestic support payments that originate from the OECD Producer Support Estimate (PSE) tables. Based on the approach of Urban et al. (2014), we extend the standard GTAP model to capture detailed domestic support payments, accounting for different types and categories of support, and we adjust the GTAP database accordingly. Applying this extended version, we generate a set of 21 databases that reflect various degrees of decoupling, which are then used to simulate a total elimination of domestic support payments, of which the SFP accounts for more than 50%, and to quantify the effects on international trade and welfare. In so doing, we conduct an elaborate analysis that enables us to consider the effects of different assumptions regarding the production incentives resulting from the SFP. We compute different meaningful and commonly used indexes in international trade analysis to represent the SFP's effect on the model's results with a particular focus on developing countries. The results of this analysis provide a solid benchmark to contrast with other simulation results based on ad hoc assumptions and to validate their impact.

This article is organized as follows. First, we introduce the extended GTAP modeling framework and account for a detailed representation of domestic support payments and the modeling options of the SFP. The next section describes the elaborate experiment design that enables us to consider various degrees of decoupling. A selection of the results obtained is presented in Section 'Results'. The article concludes with a discussion of the effects that removing EU domestic support payments would have on international trade and welfare, with a particular focus on both developing and the least developed countries and prioritizing the impact of the SFP's degree of decoupling.

Extended GTAP modeling framework

The analysis in this article is based on the comparative-static, multi-regional general equilibrium GTAP model, which is well documented in Hertel (1997). The standard GTAP model represents all policy instruments as ad valorem tax equivalents that create wedges between the undistorted prices and the prices including the policy. Accordingly, the GTAP model mirrors agricultural policy instruments related to domestic support in the form of five price wedges that affect producers' transactions at agents' and market prices: output, intermediate inputs, land, capital, and labor. In this manner, the GTAP model considers only budgetary transfers but also indirectly captures market price support that is implicitly included in border measures. The primary production factors of land, labor, capital, and natural resources are fully employed within each economy. Labor and capital are mobile in the model and can relocate among sectors but not among regions. By contrast, land and natural resources are sluggish.

In this article, we apply an extended version of the standard GTAP model and updated versions of the underlying GTAP database Version 8.2 (Narayanan et al., 2012) that consider a much more detailed representation of domestic support payments, including payment categories and types. The PSE concept, which is defined on the basis of different production requirements, allocates domestic support payments to a specific product (single commodity transfers (SCT)), a special group of commodities (group commodity transfers (GCT)), all commodities (all commodity transfers (ACT)), or farm households without requiring any production (other transfers to producers (OTP)). In addition, the PSE distinguishes between payments based on output, input use, area, number of animals, receipts, income, and non-commodity criteria that are predicted on a current or fixed basis (OECD, 2010).

Adopting the approach of Urban et al. (2014), we integrate detailed domestic support payments into the GTAP database by applying an elaborate procedure. This updated procedure enables the integration of the PSE data by payment type, which is reflected in the GTAP model as five price wedges: output, input, land, labor, and capital. To integrate additional – and thus more precise – policy instruments into the GTAP model, we further subdivide each of the five price wedges according to the four PSE categories. In so doing, we achieve a detailed representation of domestic support payments in the underlying value flows and the corresponding price linkage equations.

The SFP is categorized as an OTP payment in the PSE concept, which by definition is a policy that requires no production. Thus, farmers receive those subsidies in the form of direct income transfers to households based on land entitlements. In the GTAP model, one representation of the SFP is the allocation to land at a homogenous rate across primary agricultural commodities (Urban et al., 2014). Policy instruments modeled in this manner do not create production effects in the GTAP model; thus, payments can be