



# A general equilibrium, ex-post evaluation of the EU–Chile Free Trade Agreement<sup>☆</sup>



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## ABSTRACT

This paper evaluates the impact on the Chilean economy of the EU–Chile Free Trade Agreement, in force since 2003, based on a computable general equilibrium (CGE) model. The evaluation method, inspired by structural decomposition methods, consists of double calibration of the model, to account for interactions between the agreement's impact and structural change in the Chilean economy. Trade flows are modeled at the detailed product level (six-digit level classification). The agreement is found to be slightly beneficial to Chile's economy on the whole, benefiting mainly unskilled labor, with gains concentrated in few sectors (fruits, wine, fisheries and sea-food processing).

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## 1. Introduction

The evaluation of policies is recognized as important to improve their effectiveness. In various countries, it is routinely carried out for policies linked to taxes and labor markets. In the case of trade policy, however, evaluations are less common. Several studies questioned the trade creating impact of preferential trade agreements (PTAs) (for recent reviews of this literature, see Cardamone, 2007; Cipollina and Salvatici, 2010), but these analyses are very general and tell little about the detailed impacts of a specific agreement. Several studies focus on one single agreement, such as the Canada–US Free Trade Agreement (CUSFTA) or North-American Free Trade Agreement (NAFTA) (e.g., Clausing, 2001; Head and Ries, 1999; Romalis, 2007; Trefler, 2004), using mostly econometric analysis focusing on a specific dimension of the agreement's impact, such as the structure of trade patterns across partners and/or sectors. Such studies fall short of addressing in a consistent and complete way questions such as: what was the agreement's impact upon the structure of output, labor market

or incomes? While these questions are often dealt with in ex-ante assessments, they are seldomly subject to ex-post evaluation.

In this paper, we attempt to carry out a comprehensive, ex-post evaluation of the free-trade agreement (FTA) between the European Union (EU) and Chile, which entered into force in 2003.<sup>1</sup> Taking an econometric analysis of the trade impact of this agreement as a starting point (Jean, 2012), we use a computable general equilibrium (CGE) model for this purpose.

CGE models are generally used to answer counterfactual experiments, i.e. prospective, “what if” questions, whereby the impact of a hypothetical shock is evaluated *ceteris paribus*. A different approach is proposed here, taking advantage of information available about observed changes in tastes and technologies in Chile after the implementation of the agreement. The approach is inspired by so-called structural decomposition analyses (see for examples Abrego and Whalley, 2003; Dixon and Rimmer, 2004, 2008; Jean and Bontout, 2002), involving a double calibration of the model. This method is applied here to analyze changes between 2002 and 2008.<sup>2</sup>

This methodology requires building two fully consistent social accounting matrices (SAMs) of the Chilean economy for 2002 and 2008.

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<sup>1</sup> The term EU–Chile FTA is used here to refer to provisions regarding “Trade and trade-related matters” of the Association Agreement. While the whole agreement came fully into force on 1 March 2005, articles governing the institutional framework, trade in goods and cooperation were implemented on a provisional basis from February 1, 2003.

<sup>2</sup> Although data are available for 2009, this year is misleading because of the strong impact of global financial crisis on the Chilean economy.

**Table 1**

EU's imports from Chile and corresponding tariff duties, by main sector, in 2002 and 2008.

Source: Authors' calculations based on the EU–Chile FTA's text, on TARIC (DG Taxud) for protection data and on Comext (Eurostat) for trade data.

Sector	Imports (M €)		Share in extra-EU imports (%)		Average tariff (AVE, %)	
	2002	2008	2002	2008	2002	2008
Alcoholic beverages	373	498	11.64	12.16	6.0	0.0
Fruits	476	975	5.61	7.93	8.0	3.0
Fish, crustaceans & products	291	473	2.54	3.15	6.9	1.6
Other agricultural & food products	200	439	0.50	0.74	8.5	12.5
Ores	432	1,380	5.37	7.55	0.0	0.0
Wood & its products	412	718	1.87	2.86	0.2	0.0
Copper & its products	1778	4777	41.75	40.63	0.0	0.0
Other manufactured products	692	492	0.10	0.04	0.7	0.0
All products	4654	9753	0.60	0.76	2.2	0.9

Note: Data refer to EU15 imports. "Average tariff" refers to the trade-weighted average of ad-valorem equivalent tariff duties applied on imports from Chile. "Share in extra-EU imports" refers to EU15 imports from Chile as a share of EU15 total (extra-EU27) imports. "Fish crustaceans and their products" includes HS chapter 03 and headings 1603–1605. "Wood & its products" includes HS sections IX and X (i.e., chapters 44 to 49), including pulp of wood, paper and printed material. "Copper & its products" includes chapter 74 and subheading 720,270 (ferro-molybdenum). Agricultural and food products definition is limited to chapters 1 to 24. The average tariffs by sector in 2002 and in 2008 are shown in Table 3.

This includes sector-level data on production factors, intermediate inputs, resources and uses. In addition to national accounts data, these data were put together using the LA-KLEMS database of the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) for Chile.<sup>3</sup>

The EU–Chile FTA is clearly important for Chile: the EU was the destination for almost 18% of Chile's exports in 2010, making it the second leading Chilean export market (ranking second to China), and it supplied 14% of its imports (next to China and the United States). For the EU, this agreement, together with the ones clinched with Mexico and South Africa, pioneered the development of FTAs with distant partners. In contrast to neighborhood agreements, the motivation for these distant FTAs is essentially economic. At a time when such agreements are spreading quickly, a thorough evaluation is useful. Still, for the EU, this agreement does not stand out by its trade weight, as Chile ranked only 34th among EU's trading partners in 2010, accounting for 0.6% of imports and 0.4% of exports. An agreement with such a small trading partner is unlikely to significantly alter market equilibrium relationships in the EU. This means that changes induced in incomes and prices are minor for the EU economy, except for a few products. In this context, a general equilibrium model of the EU economy would not bring much insights compared to a partial equilibrium one, whereby trade flows with Chile are modeled assuming constant output prices and demand functions. In consequence, we favor the latter modeling approach here, as the implied simplicity allows for a detailed analysis of the Chilean economy. A similar combination of CGE approach for a smaller partner and partial equilibrium modeling of trade flows with the larger partner is found in for example Harrison et al. (1997) and Rutherford et al. (1997).

A specificity of the Chilean economy is that, despite a high trade-to-GDP ratio (75% in 2008), its export basket is concentrated in few products. This is especially true when it comes to trade with the EU, as illustrated below. Inspired in Gouel et al. (2011), this paper's model provides a detailed breakdown of products of common interest for Chile–EU bilateral trade, which are singled out at the six-digit level of the Harmonized System (HS6 level).

Another challenge is the sensitivity of product-level trade flows to tariff cuts following the agreement. Corresponding elasticities are difficult to estimate, and may differ across sectors and countries. We rely here on econometric estimates carried out in a framework consistent with the one used here, dealing with the trade impact of the EU–Chile FTA at the product level (Jean, 2012).

The EU–Chile Association Agreement includes political dialogue, cooperation and trade. The trade-related provisions include the establishment of a free-trade area in goods and services, as well as a number of important rules-related measures. Hence, this agreement goes well

beyond tariff liberalization. However, a quantitative assessment such as the one carried out here needs to rely upon meaningfully quantified elements, which are lacking for most of these dimensions. Rather than relying upon arbitrary, unverifiable assumptions about the qualitative impact of the FTA, we thus focus on tariffs. This may be a narrow focus, but tariffs remain a decisively important dimension of such an agreement.

The paper is structured as follows. The next section describes bilateral trade and tariff concession between the EU and Chile. The model's features and the experiment design are described in Section 3. Results of the simulation are presented in Section 4, while sensitivity analyses (elasticities and macroeconomic closure) are discussed in Section 5. Finally, we give our final remarks in the last section.

## 2. EU–Chile bilateral trade and tariff concessions in the agreement

Putting an FTA's tariff concessions in context with initial tariffs and trade patterns is necessary to gain insights about their likely consequences. In the present case, this is useful given the complexity of the EU tariff structure and the growing number of FTAs signed by Chile with its main trading partners.

As Chilean exports to the EU are concentrated in few sectors, a general-purpose classification would be ill-suited to illustrate the importance of EU concessions. This is because important narrowly defined sectors would be mixed with less important broadly defined sectors. Instead a sectoral classification tailored to Chilean's export structure is used here, where copper and its derivatives, wood and its products, ores, fruits and fish are considered separately (Table 1).

A key feature of Chile's exports to the EU (as for most other destinations) is the dominant share of copper ores and their derivatives in the total extra-EU imports. This share even increased further between 2002 and 2008, mainly due to the rise in the copper price. As a matter of fact, changes in this sector's role in exports have little to do with the FTA, since they are not dutiable in the EU market.

Agricultural products are also important, especially fruits and wines, for which the EU's MFN protection is relatively high for many of these products. Although Chile was eligible to the EU's GSP in 2002,<sup>4</sup> the ad-valorem equivalent tariff applied by the EU to imports from Chile averaged 8.0% for fruits and 6.0% for alcoholic beverages. In 2008, the FTA had reduced these levels down to 3.0% and 0%, respectively.<sup>5</sup> As a matter of fact, Chile's share in EU imports increased in these sectors. This is also the case for fish and crustaceans, where the average tariff duty fell from 6.9% to 1.6%. The increase in average protection of other agricultural

<sup>3</sup> We are especially grateful to ECLAC's LA-KLEMS team for making these data available. For more details on the LA-KLEMS database, see [www.eclac.cl/la-klems/](http://www.eclac.cl/la-klems/).

<sup>4</sup> This was the case until 2007, when Chile voluntarily withdrew from the EU's GSP.

<sup>5</sup> Remaining protection on fruits is mainly related to the EU's entry price system, which was not altered by the FTA.

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