S E R I E

114

comercio internacional

Effects of trade opening on household welfare: the Chilean case

José E. Durán Lima

Alfonso Finot

Marcelo LaFleur

UNITED NATIONS

ECLAC

Division of International Trade and Integration

Santiago, December 2011

MINISTERIO DE ASUNTOS EXTERIORES Y DE COOPERACIÓN

aecid

This document was prepared by José E. Duran Lima and Marcelo LaFleur, Economic Affairs Officers with the Division of International Trade and Integration of the Economic Commission for Latin America and the Caribbean (ECLAC), and Alfonso Finot, Consultant with the Division of International Trade and Integration of ECLAC.

The research was carried out as part of the Poverty, Trade Policy and Complementary Policies project conducted by ECLAC and the Spanish International Cooperation Agency for Development (AECID). The authors are wholly responsible for any errors or omissions and for the conclusions drawn, which do not necessarily reflect the views of the financing institutions. Comments may be addressed to: afinot@ing.uchile.cl, marcelo.lafleur@eclac.org, jose.duran@eclac.org.

United Nations publication
ISSN printed version 1680-869X
LC/L.3433

Printed in United Nations, Santiago, Chile

Index

Tables

Figures

Abstract

We conduct an ex-post analysis of the effects of trade policy changes on poverty and income distribution in Chile between 1999 and 2006. We follow the methodology developed by Porto (2006) and Nicita (2009), both of whom identify three channels of transmission through which a change in trade policy variables (e.g., tariffs) affects the welfare of households. The effect is estimated by characterizing the labor demand elasticities, the effect of border prices on revenues, and the ensuing effect on the wage bill of each industry.

The specific parameters that characterize each of the transmission channels are estimated independently. In the case of tradable prices, we use the standard methodology of the pass-through literature (Mallick & Marques 2008), and estimate the pass-through parameters for each tradable price group. In order to compute the effect of non-tradable prices we estimated price elasticities of these prices relative to tradable goods. The effect of trade liberalization on wage income is estimated using firm-level data to characterize the labor demand elasticities with respect to domestic prices.

We find that the impact of the lower effective tariffs resulted in lower domestic prices and welfare gains. The overall effect was found to be positive, though small, and was larger in lower income households. The results also show that the dispersion variance of the benefits is high, especially in the first and second income quintiles. We also find that the adjustment of domestic prices to changes in border prices is not complete, and in some product groups, particularly food products, the pass-through is rather low.

These results have implications for the design of complementary policies that seek to promote more competitive market structures that more effectively transmit the benefits of trade liberalization to consumers.

I. Introduction

There is a consensus in the international trade literature about the potential welfare benefits of a more open trading regime, always assuming competitive market conditions and the absence of information asymmetries.[1] This effect could be greater still in small countries with small or underdeveloped domestic markets. At a time of many new trade agreements, each with a growing number of partners, it is natural to ask what effect trade liberalization might have on poverty and income distribution. To answer this question, it is necessary to properly identify the mechanisms whereby the effects of liberalization spread through the economy. Surprisingly, this type of analysis has not yet been fully developed in the literature and there are few empirical analyses of the subject, partly because data were inadequate until recently.[2]

Establishing the relationship between international trade liberalization and poverty, especially in developing countries, is essential as a guide to public policy and so that the potential benefits of trade opening can be capitalized upon as efficiently as possible. Proper characterization of these effects in Latin America remains a work in progress.[3] More common have been studies evaluating the possible effects of the free trade agreements negotiated or planned by the countries, and even in these cases the effects on poverty and income distribution are evaluated on the basis of ex ante models, which only present possible effects going forward and do not evaluate impacts in the past. Very few studies analyse the actual effects of agreements already signed by the countries. The main constraint arising from the lack of studies of this nature has been the absence of detailed, disaggregated information.

1 Bernhofen and Brown (2004), Helpman and Krugman (1987) and Fischer and Serra (1996), among others.
2 See Goldberg and Pavcnik (2004) for a review of the recent literature and Reina and Zuluaga (2008) for an account of studies relating to Latin America.
3 See Giordano (2009).

Lack of information has been ceasing to be a problem in recent years thanks to the availability of larger amounts of data at the firm level and the systematization of household surveys (microdata). It is now possible to undertake ex post impact studies based on the evolution of observed data for prices, incomes, spending and tariff protection. The present study seeks to shed some light on the effects of trade opening on the different sectors of the economy and to analyse the most important pass-through channels, especially as regards poverty and income distribution.

The aim of the study is to take the new methodologies developed in the recent literature on the ex post effects of free trade agreements and apply them to the evaluation of social effects, and particularly those on poverty and income distribution. The idea is to use the information available in the region's countries to characterize the short-term impact of a trade opening process on households in countries that changed their trade policies in the last decade of the twentieth century and the first decade of the twenty-first, especially those countries where liberalization has gone furthest, such as Chile, Costa Rica and Mexico. In all these cases, the process of trade policy change is of longer standing and has been further-reaching than in other countries of the region. In any event, there has been a new impetus towards economic integration in the last few years following the signing of a large number of free trade agreements, both bilateral and multilateral, by other countries in the region.

This study represents the start of an effort to develop a tool that is flexible enough to be able to evaluate the application of different policies. The first case study to be used was that of Chile, and what was evaluated were the direct effects from the signing of new trade agreements between 1999 and 2006 on the welfare of households in the Metropolitan Region of Santiago, the country's most populous region.

The general finding is that, on average, the effect of lower tariffs and the lower domestic prices associated with them is to improve welfare, especially for lower-income households. The effect encountered is positive right across the income distribution. The variability of the benefits is fairly high, however, particularly in the first and second income quintiles, which reveals the greater vulnerability of these groups. For the population of the Metropolitan Region as a whole, the welfare gains observed are fairly minor, as they do not exceed 0.15%.

Another important finding of this analysis is that the pass-through of tariff adjustments to domestic prices is incomplete, very much so in the case of some product groups such as foods. This creates scope for complementary policies aimed at inducing competition with a view to the benefits of trade opening being effectively passed on to final consumers and not just captured by firms or business groups. This effect is brought into relief by simulating results for pass-through coefficients of 1, which yield much greater welfare effects (up from 0.15% to 1.3% of income).

The results of the parameters estimated (coefficient of price pass-through from the border to the domestic economy, price elasticity of tradables and non-tradables, and wage-price elasticity) provided a basis for some alternative policy simulations to quantify what the short-term benefits would be for families, other things being equal, in the event that other forms of market opening had been introduced as part of the country's trade policy.

The document is organized as follows. After this introduction, section B reviews the literature. Section C develops the theoretical general equilibrium model with microdata, allowing the welfare effects of trade opening on households to be identified. Part D describes the data used and the econometric methodology. Part E presents the findings for the Chile case study. Lastly, part F presents the main conclusions and policy recommendations.

II. Literature review

In recent studies, it is possible to distinguish two different methodological approaches to identifying the effects of international trade on inequality and poverty levels. One uses ex ante simulations with computable general equilibrium models and combinations of these with microsimulation analyses. This is known as the top-down approach, and its analytical basis is the use of the household surveys in the countries' national censuses to define a baseline that is then used to simulate changes in prices, employment by skill level and wages, all obtained from the general equilibrium simulations. Monte Carlo econometric techniques are then used to re-estimate the poverty and inequality indicators.[4]

The second methodology combines the use of observed international trade figures with another dataset, usually of household survey, family expenditure and domestic price data. This methodology tends to be less restrictive in its assumptions and can be used to exploit the microdata that have recently become available in almost all the region's countries. A number of important studies have been conducted along these lines. Topalova (2005) uses household surveys in a number of districts in India to evaluate the impact on poverty and income distribution. Goldberg and Pavcnik (2005) analyse the impact of market opening in urban areas of Colombia. Porto (2006) studies market opening in the case of Argentina. Hanson (2005) and Nicita (2009) analyse the case of Mexico. Thomas and others (2002) study the impact of the financial crisis on families in Indonesia. Goh and Javorcik (2007) examine the changing wage structure in Poland. Balat and Porto (2005) review policies

[4] Some references that summarize the method developed in this part of the literature and can be recommended include Bourguignon, Bussolo and Cockburn (2010) and the reviews carried out by Wong and Kulmer (2010) and Tellería, Ludeña and Fernández (2010) in this volume.

complementary to trade liberalization and their impact on rural areas of Zambia. Lastly, Levinsohn and McMillan (2005) analyse the subject of international aid in Ethiopia.

The evidence found in these studies regarding the relationship between trade opening, inequality and poverty can be summarized as follows: (i) having complementary policies in place makes it more likely that poorer families will participate in gains from trade; (ii) export development and access to foreign investment have an impact on poverty reduction; (iii) financial crises are most costly for the poor; (iv) market opening produces winners and losers among the lower-income population (most studies show trade reform increasing the wages of people who are poor but have ties to export sectors or sectors where foreign direct investment is rising, while poverty in formerly protected sectors increases); and (v) poor people in countries with a glut of unskilled workers do not always benefit from market opening.[5]

The greatest contribution of these studies is that they show us different strategies for analysing and measuring the effect of trade liberalization on poverty and family incomes. Paradoxically, all the studies except Porto (2006) and Nicita (2009) are concerned to characterize the effects from the perspective of income variation. It is important, however, to supplement the analysis by measuring the effect trade policies have on domestic prices, as this transmission channel has a direct impact on household welfare, at least in the short run.

Methodologically, this document follows the line of development of Porto (2006) and Nicita (2009). In both cases, the idea is to characterize the effects of trade opening on the basis of a household-level microeconomic model, with different econometric techniques subsequently being used to estimate the parameters identified in the model.

This document also supplements the analysis with the extensive empirical literature pioneered by Feenstra (1989) and Froot and Klemperer (1989), whose focus is on measuring the degree to which tariff and exchange-rate changes are passed through to imported product prices.[6] Studies in this area have usually focused on measuring the exchange rate, finding evidence of a partial adjustment in the pass-through of the exchange rate to import prices, at least in the short run. In the case of tariff pass-through effects, empirical studies are much thinner on the ground and only three stand out: Feenstra (1989) for the United States, Menon (1993) for Australia and Mallick and Marques (2008) for India. The conclusions of these studies reinforce the idea that import prices adjust only partially if at all to tariff changes, and in some industries adjustments might actually have the opposite sign, depending on the structure of the market.

[5] Giordano (2009) offers a detailed examination of the current state of knowledge about trade and poverty and concludes that that preexisting policies and socio-economic conditions are central to the interaction between trade and poverty.

[6] Frankel, Parsley and Wei (2005) can be recommended for a review of progress in this area.

III. Methodology

Like Nicita (2009), we follow Porto (2006) in the theoretical method used to measure the effects of liberalization on household welfare. In this case, we define an expenditure function for each household *h* that depends on a certain level of utility and on a price vector p_i for tradable goods and p_k for non-tradables.[7] In equilibrium, this expenditure function must be equal to incomes characterized by an exogenous consumption level of x_0^h, the sum of the wage income of household members w_m^h, capital income G^h and transfers ϕ^h.[8] Equilibrium is characterized by equation (1).

$$e^h(p_i, p_k, u^h) = x_0^h + \sum_m w_m^h + G^h + \phi^h \quad (1)$$

One way of calculating the change in welfare for each household *h* is to calculate the compensating variation, which is defined as the sum of money that needs to be provided to or withdrawn from a household so that there is no change between its initial situation and its situation following the change in the tariff level τ_i. By taking the expenditure differential and making it equal to the change in exogenous expenditure, assuming equilibrium conditions in the goods and factor market, it is possible to characterize the compensating variation in relation to expenditure as:

$$\frac{dx_o^h}{e^h} = \underbrace{\left[s_i^h \frac{\partial \ln(p_i)}{\partial \ln(\tau_i)} \mathrm{dln}(\tau_i)\right]}_{Direct\ Price\ Effect} + \underbrace{\left[\sum_{k \in K} s_k^h \frac{\partial \ln(p_k)}{\partial \ln(p_i)} \frac{\partial \ln(p_i)}{\partial \ln(\tau_i)} \mathrm{dln}(\tau_i)\right]}_{Indirect\ Price\ Effect} - \underbrace{\left[\sum_{m \in h} \left(\theta_m^h \varepsilon_{wmpi}\right) \frac{\partial \ln(p_i)}{\partial \ln(\tau_i)} \mathrm{dln}(\tau_i)\right]}_{Indirect\ Wage\ Effect} \quad (2)$$

[7] Note that each i ∈ I where I is the set of the tradable goods and each k ∈ K where K is the set of non-tradable goods.

[8] This specification implicitly ignores effects on saving.

where s_i^h is the share of tradable good i in household h, s_k^h is the share of non-tradable good k in household h θ_m^h is the income share of individual m in household h and ε_{wmpi} is wage-price elasticity.[9]

In this way it is possible to analyse the impact of trade opening on household welfare at three levels: a direct one that evaluates the effect of the tariff change on domestic prices for tradable goods (the first part of equation (2)), an indirect one that considers the change in non-tradable goods prices resulting from the change in tradable goods prices (the second part of equation (2)) and a third one that captures the change in the production structure resulting from the price change, which influences wage changes (the third part of equation (2)). The advantage of writing out the problem in this way is that each of the effects is isolated, enabling us to deal with each case separately and carry out an econometric estimation of each effect.

A. Estimating the price pass-through coefficient

Unlike Porto (2006), but like other studies on short-term price pass-through, this paper does not assume that tradable goods markets are perfectly competitive, so that tariff-adjusted international equilibrium prices are not directly equated with domestic prices. The other fundamental difference is that observed tradable product prices were used in the exercise, so that it was unnecessary to make any inference about price changes. This meant that the degree of tariff pass-through to the domestic market could be estimated directly.

Formally, we can approximate $\frac{\partial \ln(p_i)}{\partial \ln(\tau_i)} \mathrm{dln}(\tau_i)$ using the following tradable price dynamic:

$$p_i = p_i^*(1+\tau_i)^{\alpha} \tag{3}$$

where p_i is the domestic price of tradable good *i* in local currency, p_i^* is the international price of tradable good *i* in local currency, τ_i is the tariff and α is the pass-through factor for the effect of tariff changes on local prices. By taking the differential of equation (3) in logarithms, we can approximate the direct effect as follows:

$$\frac{\partial \ln(p_i)}{\partial \ln(\tau_i)} \mathrm{dln}(\tau_i) \cong \alpha \tag{4}$$

To estimate α in this section, we adapt the methodology proposed by Mallick and Marques (2008) for calculating the parameters for pass-through of tariff changes to tradable product prices. The functional form specified by this relationship (arrived at by resolving an imperfect competition model in which importers have the option of adjusting prices when the exchange rate changes or tariffs are adjusted) is given by the following equation:

$$dp_{it}^m = \phi_i + (1-\delta_i) d\ln(e_t) + \alpha_i d\ln(\tau_{it}) \tag{5}$$

where $\phi_i = (1-\delta_i) d\ln(MC_i)$, with MC_i being the marginal cost associated with the specific sector *i*, which is assumed to be constant throughout the period studied, while e_t is the nominal exchange rate and τ_{it} the tariff for sector i in period t and $\alpha_i = -\delta_i * C$, where C is a scaling constant. The parameters δ_i and α_i therefore depend on the degree of market competition.[10] If $\delta_i = 0$ then the importer has the market power to absorb all changes, which means that there is zero pass-through of any tariff cut to domestic prices.[11]

[9] A more detailed description of this derivation can be found in Porto (2006).

[10] The δ coefficient varies between 0 and 1 and is related to the ability of the importer to set prices in the market. δ affects pass-through of both exchange-rate and tariff changes. See Mallick and Marques (2008) for greater detail in the derivation.

[11] Formally, the importer has the market power to decide how much of the change to pass through to the local price, and this creates a problem of asymmetrical adjustment if our understanding is that a benefit-maximizing firm passes through increases but not

Using this result, we can specify the econometric function to be estimated as follows:

$$dp_{it}^{m} = \phi_i + \mu d\ln(e_t) + \alpha_i d\ln(\tau_{it}) + \varepsilon_{it} \quad (6)$$

Setting out from the characterization of α, the first part of equation (2) is calculated directly since the share of output within the consumption basket s_i^h is observable. Removing the assumption of full pass-through of tariff changes to local prices on the basis of the information available is a non-trivial extension that enables us to produce more realistic calculations of the effects of trade opening; besides, it is natural to assume imperfect markets in at least some product categories.

B. The indirect effect of tariffs on non-tradable goods

The second step in the estimation strategy is to characterize the effect of import prices on non-tradables prices in the economy, the second effect in equation (2). In this case we needed to find parameters that would let us duly characterize the ratio $\partial \ln(p_k) / \partial \ln(p_i)$. For this, we followed the specification proposed by Porto (2006) in which non-tradables prices are assumed to be an unknown function of tradables prices and of υ and ϕ.

$$p_k = p_k(p_i, \upsilon, \phi) \quad (7)$$

where υ and ϕ are factors related to the state of the economy.[12] An adjustment dynamic was introduced to estimate this equation, using prices lagged one period. In addition, the function was approximated by a second-order Taylor polynomial, yielding the following specification:[13]

$$\begin{aligned} \log p_{kt} = A + \sum_{i\in I} \alpha_{0i} \log p_{it} + \frac{1}{2}\sum_{i\in I}\sum_{j\in K\setminus\{k\}} \alpha_{ijt} \log p_{it} \log p_{jt} + \sum_{i\in I} \beta_{0i} \log p_{it-1} \\ + \frac{1}{2}\sum_{i\in I}\sum_{j\in K\setminus\{k\}} \beta_{ijt} \log p_{it-1} \log p_{kt-1} + c_t'\gamma_c + \mu_t \end{aligned} \quad (8)$$

Equation (8) represents the functional form to be estimated in the data where c_t' is a vector of control variables and μ_t the white noise error term, k is the non-tradable product, *j* represents the non-tradable product groups in the set *K* that are different than k and *i* represents the tradable products groups in the set I. For each non-tradable prices group k, this specification yields a vector of parameters corresponding to each of the tradable product groups $i \in I$ and the interaction with the tradable and the non-tradable product groups.

Note should also be taken of the potential for serial autocorrelation of errors, given that nominal prices are used for the estimation. Because prices are grouped into eight categories, to avoid the potential problem of heteroskedasticity the estimations were carried out by the generalized least squares method using the methodology proposed by Cochrane-Orkut.[14] The results are presented in the following section.

C. The indirect effect of tariffs on wages

The final step in the estimation strategy is to characterize the effect of changes in import prices on wages in the economy, the third effect in equation (2). To do this we need to estimate the wage-price elasticity, ε_{wmpi}. Once again we followed the specification proposed by Porto (2006) in which wages are an

reductions. This is not a problem in our application because tariffs only fell, and it is therefore assumed that all importers in principle are going to be unwilling to pass on this reduction.

12 Formally, υ is factor endowment in the economy and φ is the technical progress factor; these are assumed to be constant and will be captured by the intercept in the econometric estimation. Details in Porto (2006).

13 See Porto (2006) for further details.

14 Different specifications were tried out for the model and this last one proved the best. See the annex for an example in the case of food.

unknown function of the price of tradables, $p_{i,t}$ and exogenous factors. In order to make this function workable the author proposed a linear relation between variables as follows:

$$\ln(w^m) = \sum_i \ln\left(p_{i,t}^m\right)\left(\mathbf{e^{m\prime}}\beta_i\right) + \mathbf{e^{m\prime}d} + \mathbf{z^{m\prime}}\gamma + \varepsilon^m \quad (9)$$

where $\mathbf{e^{m\prime}}$ is a vector of dummy variables for educational level (years of schooling with breaks at 6 and 12 years). β_i is the vector of coefficients that captures the wage-price elasticity. The exogenous variables are in the vector $\mathbf{z^{m\prime}}$ (gender, age, marital status, age, year, occupation and industry). ε^m is the error term. As you can notice the problem to use household level data is the lack of variability of the prices between households, in this case we use the time variation of the prices (the t term in $p_{i,t}$) to identify the change of wages due to price changes.

IV. Applying the model. The case of Chile

A. Selecting a country for the case study

To carry out a particular application of the model to the derivation of social impacts, we reviewed the countries that had signed the most free trade agreements and applied the furthest-reaching trade reforms in the past two decades. For these countries, the availability of information in all the databases required for the modelling was analysed. Table 1 shows the availability of the requisite information for the countries of Latin America, providing the basis for the selection of a pilot country for the methodology. Note that it is necessary to have a number of datasets with particular data on: (i) the evolution of border protection at the product level (tariffs), (ii) family incomes and expenditure by representative product group, (iii) socio-economic household surveys, (iv) the evolution of domestic prices in the economy and (v) imports at the product level.

Taking into account the data availability analysis, the relevance of a study like the one proposed and, above all, the judgement as to whether the exercise proposed in the previous section would definitely be possible, the conclusion was that there were at least three countries for which an ex post study was possible at the present time. These are Chile, Costa Rica and Guatemala, where reforms are of longer standing than in others of the countries considered. Another group of countries in which this methodology might usefully be applied are the remaining Central American countries, El Salvador, Honduras and Nicaragua, which on average have also been granted large preferences and have more than 37 trading partners. The domestic prices dataset presented the greatest problems of accessibility.

In terms of scope for applying the method, Chile was the best option and was accordingly selected for the pilot exercise, although this does not mean that similar exercises cannot be carried out in future for other countries. The following subsection details the steps taken to prepare the data before the proposed methodology was applied.

TABLE 1
LATIN AMERICA (SELECTED COUNTRIES): AVAILABILITY OF INFORMATION REQUIRED FOR THE PROPOSED ANALYSIS (AS OF NOVEMBER 2010)

Country	Most-favoured-nation tariff (2009)	Tariff applied (2009 estimate)	Number of countries preferences granted by	Preferences as percentage of total imports	Surveys available			Tariffs and imports
					Household	Family income and expenditure	Domestic prices	
Brazil	13.6	11.8	12	13.6%	Yes	Yes	No	Yes
Chile	6.0	1.0	60	83.7%	Yes	Yes	Yes	Yes
Colombia	12.5	9.4	15	24.5%	Yes	Yes	No	Yes
Costa Rica	5.4	1.1	51	78.8%	Yes	Yes	…	Yes
Ecuador	11.2	7.9	11	29.9%	Yes	Yes	No	Yes
El Salvador	5.9	1.6	40	72.4%	Yes	Yes	No	Yes
Guatemala	5.6	1.6	38	72.3%	Yes	Yes	No	Yes
Honduras	5.6	1.1	37	79.9%	Yes	Yes	No	Yes
Mexico	11.5	2.4	43	79.4%	Yes	Yes	Yes	Yes
Nicaragua	5.6	1.3	39	77.6%	Yes	Yes	No	Yes
Peru	5.5	2.0	17	63.8%	Yes	Yes	No	Yes
Dominican Republic	7.1	2.0	47	72.3%	…	…	…	Yes
Venezuela (B.R.)	12.2	4.8	25	60.3%	Yes	Yes	No	Yes

Source: Prepared by the authors on the basis of World Trade Organization (WTO), World Tariff Profiles (http://stat.wto.org), United Nations Commodity Trade Database (COMTRADE) and information provided by national statistical offices.

B. Description of the Chile data

For the methodology described in the previous section to be applied, as already noted, it is necessary to bring together a variety of databases and surveys that usually intersect at only a few points. The following are all the data sources selected in accordance with the needs of the model:

- The family expenditure survey (EPF) for 1997 and 2007, prepared by the National Institute of Statistics (INE) of Chile, was used to calculate the shares of different products in each household's consumption basket.
- Average tariffs weighted by imports from the country's trading partners were used to define changes in trade policy. This information was obtained from the Trade Analysis and Information System (TRAINS) of the United Nations Conference on Trade and Development (UNCTAD).
- Nominal exchange rate series were obtained from the databases published by the Central Bank of Chile for the period between January 1982 and September 2010.
- The required domestic price information was taken from the INE database. This database has a coverage of 456 final consumption products and services for the Metropolitan Region of Santiago. The periodicity of the data is monthly from January 1999 to December 2008 and matches that of the basket of products used to calculate the Consumer Price Index (CPI). These

products were grouped into eight categories: (i) food, (ii) housing, (iii) household equipment, (iv) clothing, (v) transport, (vi) health care, (vii) education and leisure and (viii) others.[15]

- The family income data are also taken from the EPF for 1997 and 2007.
- The employment survey of Chilean households (Encuesta Suplementaria de Ingresos ESI) carried out by the INE. This is an annually survey that collects information related with the income, level of educations, main activity and others.

A particular challenge was to find a way of using common variables to integrate the price databases with the international trade databases and the income and expenditure survey. For this purpose, each product in the CPI goods and services basket was individually mapped with its respective spending category in the EPF, which in turn was mapped with its respective product category in the nomenclature of the six-digit Harmonized Commodity Description and Coding System.[16] This procedure was crucial for effectively capturing any changes between 1999 and 2006, the last year for which mapped and processed information was available at the close of the financial year.

The work of correlating tariff changes with changes in the set of prices available was carried out in full; these accounted for 96% of the EPF expenditure categories. In the case of tradables, all the goods in the consumption basket had their corresponding codes in the Harmonized System.

Table 4 further on presents the structure of family incomes in the two surveys by quintiles and the evolution of tariffs during the period of analysis for each of eight product groups. It also illustrates the degree of inequality by expenditure on each product group in the 1997-2007 period.

A detailed analysis shows that tariffs changed dramatically between 1999 and 2006, with tariff cuts of between 5% and 10% for all product groups. This meant that the average effective tariff fell from 10% to 1.9%. At the same time, it shows how the aggregate preferences of the population shifted between 1997 and 2007, the years when the EPF was processed. Note that the bulk of aggregate spending by Chilean families is in the food, health-care and household equipment categories.

C. Calculating price pass-through coefficients

Using the econometric specification described in equation (6) and the data described in the previous section, a balanced panel was constructed for the 1999-2008 period covering 483 products grouped into eight categories. Unit root tests were then carried out to verify that the panel series were all stationary. The results of the tests show that prices at least were not stationary in levels but were in first differences, so this specification was used for the estimates.

The parameter estimates for price pass-through from the border to the domestic market are presented in table 2. These parameters show that with the exception of one category of health-care products, all the adjustment factors match what economic intuition would suggest, both in the normal panel data model and in the model adjusted for potential problems of heteroskedasticity and autocorrelation.[17]

[15] A listing of the products in each category can be found in the appendix to Duran, Finot and LaFleur (2010).
[16] The mapping lists will be available from the authors upon request.
[17] The coefficients are adjusted for potential problems of heteroskedasticity or error autocorrelation with a model of generalized least squares in panel. The market for medicines is a special case; Chile recently had an investigation into collusion among pharmacies that clearly revealed a low-competition environment and could explain the sign of the coefficient.

TABLE 2
ESTIMATED EFFECT OF DIRECT PASS-THROUGH OF TARIFF CHANGES ON DOMESTIC PRICES

Product category	Panel data		Generalized least square panel data	
	Coefficients	Standard errors	Coefficients	Standard errors
Food	0.075*	(0.025)	0.140*	(0.020)
Housing	0.059	(0.061)	0.093**	(0.038)
Equipment	0.077**	(0.031)	0.114*	(0.022)
Clothing	0.215*	(0.039)	0.330*	(0.024)
Transport	0.150	(0.106)	0.134*	(0.046)
Education	0.068	(0.042)	0.119*	(0.024)
Health care	-0.107*	(0.036)	-0.243*	(0.024)
Other	0.723*	(0.136)	0.883*	(0.082)
Diff ln(Exchange rate)	0.885*	(0.018)	0.735*	(0.017)
Observations		5 762		5 762
Number of subgroups		230		230

Source: Prepared by the authors on the basis of econometric estimates.

Note: Standard errors in parentheses.

** significant at 5%.

* significant at 1%.

The findings show that adjustment of tariff changes is far from matching the hypothesis of a single price and thus of perfectly competitive markets with full pass-through. This evidence agrees with the findings of similar studies, of which we can name Feenstra (1989), Menon (1993) and Mallick and Marques (2008), with the last of these also finding results with a negative sign for some sectors. It should be noted that the category with the highest pass-through is clothing, which covers textiles, apparel and footwear, followed by the food and equipment groups. Although the others category shows a high coefficient, this grouping contains only a few products. All the coefficients are statistically significant.

With the estimated pass-through coefficients by product group, and with the information on the consumption basket of each household, it is possible to estimate the direct effect on each household on the basis of the EPF data. The objective is to compare the sensitivity of benefits to international price changes by income level, on the basis of tariff changes in the period.

D. Findings for the indirect price effect

The second step in the estimation strategy is to characterize the effect of import prices on non-tradables prices in the economy, the second effect in equation (2). For this, the regressions were run in accordance with the specification of equation (8); in this case, different specifications were run starting with the ordinary least squares model, but there are two problems to be taken into account. First, each product category has its own variance, so there is a problem of heteroskedasticity; furthermore, because prices are what is at issue, there is a problem of serial correlation of errors. Although this problem does not affect the level of the estimator found, it does affect the quantification of the standard errors. To correct this, we used the methodology proposed by Cochrane-Orcutt, which controls for both problems (heteroskedasticity and correlation of errors) at the same time.

For each of the product categories, we ran the regression that had the price level of the tradable products category as its dependent variable and all non-tradable product price categories as independent variables. Lagged prices and month and year dummies were also included as controls. By way of illustration, the annex shows the results of all the models for the specific case of the food category.

The findings presented in table 5 represent the full regressions using the Cochrane-Orcutt methodology with all the controls and dummies for each of the product categories. There is no ex ante presumption of what the right signs for the coefficients are, as these depend on the degree to which products are complementary or interchangeable. However, it is possible to observe that the coefficients which are statistically significant are usually those which are associated with the same category.

By way of illustration, we analyse the elasticity coefficient between the prices of the food inputs required for non-tradable food activities, including restaurants and hotel services among other users of certain imported products such as bread, biscuits and preserves, flours, dairy products, soft drinks and natural fruit juices, spirits, fruit and vegetables, etc. The coefficient calculated is 0.256. From this it follows that if there is a change of 1% in tradable food product prices, one quarter will pass through to the prices of non-tradable products. In summary, the expected effects in terms of lower domestic prices for restaurant and hotel tourist services are quite small. Much the same thing, with low and significant coefficients (0.162), is observed in the case of housing and non-tradable related services.

In the cases of non-tradable health-care and education services, no direct relationship is observed, as the coefficients are actually negative and non-significant. The logical conclusion is that for education services and medical care of various kinds, lower prices for school materials such as textbooks or for medicines do not affect the prices of education and health services, respectively.

When the categories are completely different, the correlations are usually not significant in the regression, and this holds for many of the cases indicated in table 3. The results reported in table 5 also demonstrate the presence of autocorrelation when the difference in Durbin-Watson indicators between models is observed.

TABLE 3
RESULTS OF THE ESTIMATION: EFFECT OF INDIRECT TRADABLES PRICE PASS-THROUGH ON NON-TRADABLES PRICES (COCHRANE-ORCUTT METHODOLOGY)

Tradables \ Non-tradables	Food	Housing	Equipment	Clothing	Transport	Health care	Education	Others
Food	0.256*	-0.014	0.080+	0.046	0.012	0.043	0.062**	0.092**
	(0.034)	(0.096)	(0.048)	(0.061)	(0.061)	(0.029)	(0.025)	(0.041)
Housing	0.134*	0.162**	0.072	0.119+	0.207*	0.060**	0.047	0.124*
	(0.049)	(0.065)	(0.044)	(0.070)	(0.069)	(0.027)	(0.038)	(0.042)
Equipment	0.623*	1.428*	0.214	0.255	-0.378	0.139	0.684*	0.629+
	(0.194)	(0.469)	(0.320)	(0.377)	(0.611)	(0.240)	(0.208)	(0.366)
Clothing	0.163	-0.014	-0.029	0.306+	-0.037	-0.091	-0.241	-0.049
	(0.103)	(0.201)	(0.123)	(0.180)	(0.244)	(0.115)	(0.149)	(0.156)
Transport	-0.061	-0.239**	-0.013	-0.063	0.070	-0.021	-0.135*	-0.101+
	(0.057)	(0.093)	(0.056)	(0.066)	(0.076)	(0.029)	(0.039)	(0.056)
Health care	-0.060	-0.132+	0.010	-0.149**	0.025	-0.027	0.001	-0.032
	(0.041)	(0.067)	(0.042)	(0.072)	(0.108)	(0.027)	(0.042)	(0.043)
Education	0.233+	0.198	-0.025	-0.149	0.571+	0.052	-0.267	0.063
	(0.138)	(0.318)	(0.174)	(0.209)	(0.318)	(0.156)	(0.172)	(0.196)
Others	0.038**	-0.028	0.023	0.040	0.059	0.018	0.075*	0.031
	(0.019)	(0.056)	(0.018)	(0.041)	(0.039)	(0.023)	(0.018)	(0.019)
Number of observations	120	120	120	120	120	120	120	120

(continued)

Table 3 (concluded)

Non-tradables / Tradables	Food	Housing	Equipment	Clothing	Transport	Health care	Education	Others
R^2	0.995	0.847	0.965	0.979	0.982	0.972	0.997	0.987
Durbin-Watson statistic	1.76	1.96	1.99	2.08	1.86	1.67	2.04	1.84
Durbin-Watson statistic 0	0.90	1.04	1.22	1.05	1.11	0.92	1.48	0.98

Source: Prepared by the authors on the basis of econometric estimates.

Note: Standard errors in parentheses.

+ Significant at 10%.

** significant at 5%.

* significant at 1%.

E. Findings for the effect on household income

Next we characterize the effect of import prices on household incomes, the third effect in equation (2). For this, the regressions were run in accordance with the specification of equation (9).

The estimation is done with Ordinary Least Squares, regressing the log of wages for each household on the log of the prices for each of the 24 combinations of product categories and education level (8 product categories and 3 education levels as proxies for skill) and the control variables. The coefficients of each of the 24 price-skill combinations are the estimated wage-price elasticities, reported on Table 4.

There is no ex-ante presumption of what the right signs for the coefficients are, as these depend on particular characteristics of each industry. For example, a decrease in prices in the clothing sector results in a positive effect on the growth of wages across all skill levels. This might be a function of higher sales or a more complex dynamic such as firms exiting or entering the market and changing the demand for labor.

TABLE 4
RESULTS OF THE ESTIMATION: EFFECT OF CHANGES IN DOMESTIC PRICES ON THE GROWTH OF WAGES

	Low skill (0-6)	Medium skill (>6<12)	High skill (> 12)
Foods	-0.159	-0.037	**-0.578**
	(0.75)	(0.37)	**(3.85)****
Housing	0.110	0.022	-0.072
	(0.44)	(0.12)	(0.32)
Equipment	**-3.578**	**-5.236**	-2.881
	(2.09)*	**(4.40)****	(2.01)*
Clothing	**2.681**	**2.827**	**2.609**
	(5.91)**	**(7.00)****	**(6.14)****
Transport	0.443	0.188	0.166
	(1.37)	(0.81)	(0.60)
Health care	**1.438**	1.457	1.111

(continued)

Table 4 (concluded)

	Low skill (0-6)	Medium skill (>6<12)	High skill (> 12)
	(4.98)**	(6.32)**	(4.22)**
Education	0.522	2.368	0.493
	(0.24)	(1.38)	(0.26)
Other	1.519	1.234	2.113
	(2.80)**	(3.33)**	(4.77)**
_cons	116.340		
	(5.33)**		
R^2	0.45		
N	290,053		

Source: Prepared by the authors on the basis of econometric estimates.

Note: Standard errors in parentheses. Estimation includes controls for gender, age, marital status, year, occupation and industry.

** Significant at 10%.

* significant at 5%.

From the results of the regression we can observe that the change in domestic prices affect differently in each type of good, in a positive way in the case of clothing transport, Health Care and Education and in a negative way in the case of food housing and equipment. Also the impact of the change in domestic prices affects differently in each level of skills. For example the low skill population is more sensitive to changes in equipment prices than the medium or high skill population.

These elasticities are then used to estimate the actual affect of the changes in border prices on the income of each household by combining these wage-price elasticities with the estimated pass-through.

V. Welfare effects

This section calculates the welfare effect, in accordance with measures 1, 2 and 3 described in equation (2), on the basis of the estimation of the pass-through coefficients for tradable and non-tradable products, the estimation of the wage-price elasticities, and the household expenditure structure described below. The results are analysed at the level of income groupings (quintiles and deciles) to reach a correct appreciation of the effects of trade policy changes on the welfare of the most economically vulnerable households. At the same time, the extent of inequality is illustrated with a measure that relates differences in consumption between the last and first population quintiles. In order to make the analysis comprehensive and obtain derivations for public policy purposes, we proceeded to estimate the money amount (millions of pesos) for the whole population and for different groups of households at the level of population deciles and quintiles.

Table 5 illustrates the extent of tariff changes by product group between 1999 and 2006, together with the evolution of the family expenditure structure in these same groups. When inequality levels for different population segments are calculated by quintiles, the highest-income quintile (Q5) is found to have spent about 17.5 times more than the lowest income quintile (Q1) in 2007 or thereabouts. Although this fell between 1997 and 2007, inequality is quite elevated for several groups.

TABLE 5
CHILE: EVOLUTION OF TARIFFS, FAMILY EXPENDITURE AND INEQUALITY IN HOUSEHOLD SPENDING

(Percentage points and multiples)

	Tariffs calculated *(Percentages)*			Family expenditure structure *(Percentages)*		Inequality measured by family expenditure *(Multiples)*	
Product groups	1999	2006	Change 1999-2006	1997	2007	Q5/Q1 1997	Q5/Q1 2007
Food	10.0	3.3	-6.7	21.5	21.5	5.3	6.1
Housing	10.0	0.4	-9.6	7.0	5.1	33.4	43.4
Equipment	10.0	2.1	-7.8	12.0	13.0	10.4	8.7
Clothing	10.0	4.6	-5.4	10.4	8.5	46.2	26.1
Transport	10.0	2.8	-7.3	5.9	6.3	40.1	40.5
Health care	10.0	1.2	-8.8	28.6	22.6	48.0	39.1
Education	9.4	1.4	-8.0	5.2	4.0	40.2	23.2
Others	10.0	0.4	-9.6	9.4	7.1	71.3	69.5
Total	10.0	1.9	-8.0	100.0	100.0	20.5	17.5

Source: Prepared by the authors on the basis of United Nations Conference on Trade and Development (UNCTAD), Trade Analysis and Information System (TRAINS), and 1997 and 2007 family expenditure surveys.

Given the great heterogeneity in different households' consumption levels, evaluation requires spending structures to be disaggregated by product groups for the different population quintiles. It was this structure that largely determined the compensating variation and the greater or lesser incidence of the income distribution effects deriving from the tariff changes observed following the trade policy reforms that took place between 1997 and 2007.

Observation of developments in the family expenditure structure at the quintile level between 1997 and 2007, using data from the family expenditure surveys for those years, reveals the existence of a pattern that is generally heterogeneous in terms of differences between the two ends of the distribution but fairly homogeneous insofar as the preferences of households in the first three quintiles are predominantly concentrated in the food and equipment categories. These products account for some 65% of total spending in lower-income families (see table 6). Likewise, spending in the health-care group by the population stratum in the highest quintile is observed to be more significant.

TABLE 6
STRUCTURE OF FAMILY EXPENDITURE BY QUINTILES AND CATEGORIES, 1997 AND 2007

(Percentages of the total)

Quintile / Type of good	1997					2007				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Food	49.5	42.6	35.8	28.3	12.7	43.4	37.6	33.0	27.3	15.2
Housing	3.7	6.1	7.9	9.6	5.9	2.0	4.0	6.0	6.1	5.1
Equipment	17.2	16.2	16.2	16.2	8.7	22.2	18.8	16.0	14.1	11.1
Clothing	4.7	6.6	8.0	9.9	10.5	6.1	6.9	7.0	8.1	9.1
Transport	2.9	4.3	4.9	6.2	5.7	3.0	4.0	5.0	6.1	7.1

(continued)

Table 6 (concluded)

Quintile / Type of good	1997					2007				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Health care	14.5	14.0	14.3	13.7	33.9	12.1	12.9	14.0	16.2	27.3
Education	2.5	3.4	4.7	5.6	5.0	3.0	4.0	4.0	4.0	4.0
Other	5.1	6.6	8.3	10.6	17.6	8.1	11.9	15.0	18.2	21.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Prepared by the authors on the basis of the 1997 and 2007 family expenditure surveys.

A. Calculating the welfare effect

In view of the pass-through coefficients and elasticities between tradable and non-tradable products (as derived from the tariff changes calculated previously), the estimated wage-price elasticities, and the spending structures of the different socio-economic strata, we calculate the effect of observed changes in tariffs on household welfare. For this, the following procedure was used: the data on spending per household were used to construct a matrix of weights for each of the products in each household's basket. The direct effects were calculated by multiplying the tariff change by the estimators for direct effects (pass-through) and indirect effects (change in prices of non-tradables resulting from the change in tradables prices). The result is a vector for each effect (direct and indirect) at the product level that contains the effect of the tariff change. The spending structure defined above (table 6) is used to calculate the direct and indirect effect on each household of the change in tariffs in the period considered.

The wage income effect was calculated by multiplying the observed change in domestic prices in each of the 8 product groups by the estimated wage-price elasticities for each education level, and adding the education-specific effects according to the share of household income associated with each education level.

The aggregate results for all income effects are presented in table 7. It should be noted that a simple decomposition of the income mass generated by the sum of trade policies in the period analysed yields a short-term benefit equivalent to US$ 64 million, or the equivalent of 0.06% of the gross geographic product of the Metropolitan Region[18] and 0.15% of total household income (see table 7). These findings point in the same direction as those of other studies that have found welfare across the economy to increase by between 0.5% and 1.8%,[19] although in these other cases the effect also includes static employment gains. The total benefit from changes in wage income is equivalent to 0.05% of total household income.

The calculations performed allow us to conclude that in respect of its short-run ex post effects the liberalization policy applied by Chile was favourable in terms of income for all households in the Metropolitan Region of Santiago. It now remains to break down this finding at the level of the different income strata in the population. The following section will derive the effects at the population quintile and decile level.

[18] The GDP of the Metropolitan Region is estimated from its share in the total GDP of Chile (approximately 46% of the total).

[19] Harrison, Rutherford and Tarr (2003, 1997) estimated welfare gains of 1.8% for a situation in which unilateral cuts in the MFN tariff to 6% are combined with the application of additive regionalism policies, i.e., agreements with the United States, Mexico and others. Similarly, Schuschny, Lima and De Miguel (2007) estimated that the welfare gains deriving from various agreements as of around 2004 amounted to 1.2% of GDP for Chile. Schuschny, Lima and De Miguel (2008) likewise estimated additional benefits of 0.8% for the agreements signed by Chile with countries in Asia, especially China, Japan and the Republic of Korea.

TABLE 7
CHILE (GREATER SANTIAGO): EQUIVALENT VARIATION AFTER LIBERALIZATION BETWEEN 1999 AND 2006

Income distribution	Millions of Chilean pesos	Millions of dollars (US$ 1 = 499.28 pesos)	Percentage of total
Gross geographic product of the Metropolitan Region of Santiago		75 586	
Total household income (EPF)	1 361 014	32 711	100.000%
Total effect	2 686	64	0.197%
Direct effect	1 967	47	0.144%
Indirect effect	36	1	0.003%
Wage effect	683	16	0.051%

Source: Prepared by the authors on the basis of the methodology developed in the previous sections and the 2007 family expenditure survey.

B. Evolution of the effect by income level

The findings for the direct and indirect price effects and wage effect by quintile show a greater incidence in favour of quintiles 1 to 4, where the increases are large relative to the total income mass of the population. As expected the wage effect for the fifth quintile was small (see table 8a and 8b).

TABLE 8A
CHILE (GREATER SANTIAGO): EQUIVALENT VARIATION AFTER THE TARIFF CHANGE BETWEEN 1999 AND 2006
(Millions of pesos a month and percentages)

Quintile	Total household income (2007) (*millions of pesos)* (A)	Direct effect *(percentage)* (B)	Indirect effect *(percentage)* (C)	Wage effect *(percentage)* (G)	Change in tariffs *(percentage points)* (D)
Q1	87 883	-0.218	-0.002	0.067	-7.5
Q2	143 865	-0.192	-0.002	0.080	-7.6
Q3	185 316	-0.180	-0.002	0.128	-7.8
Q4	267 718	-0.164	-0.002	0.100	-7.9
Q5	676 233	-0.141	-0.003	0.028	-8.1
Total	**1 361 014**	**-0.178**	**-0.002**	**0.081**	**-8.0**

Source: Prepared by the authors on the basis of the methodology developed in the previous sections.

TABLE 8B
CHILE (GREATER SANTIAGO): EQUIVALENT VARIATION AFTER THE TARIFF CHANGE BETWEEN 1999 AND 2006

(Millions of pesos a month and percentages)

Quintile	Total household income (2007) (A)	Direct effect (B)	Indirect effect (C)	Wage effect (D)	Compensating variation *(millions of pesos)* (E)=((B+C+D)	Percentage of total (F)=(E/A)*100
Q1	87 883	178	2	11	190	0.22
Q2	143 865	256	3	76	335	0.23
Q3	185 316	308	4	254	565	0.30
Q4	267 718	415	6	296	718	0.27
Q5	676 233	810	21	47	878	0.13
Total	**1 361 014**	**1967**	**36**	**684**	**2686**	0.20

Source: Prepared by the authors on the basis of the methodology developed in the previous sections.

Considering only the price effect, at the decile level the result show that lower-income households have seen a greater variance in the observed impacts on the prices of their baskets than higher-income households. It can be seen that the price pass-through effect is largest (24%) in the first decile, with per capita monthly incomes of less than 62,171 Chilean pesos (or the annual equivalent of 746,052 pesos), being 6 percentage points higher than the average for all households in the distribution and 10 higher than that for the highest-income decile of households. This is a very important finding, particularly given that the first decile approximates to the population with incomes below the poverty line (52,504 pesos).

If all households from deciles 1 to 6 are considered, the effect proves to be above average in all of them. It should be noted that the average income of these deciles is below the mean income of the population of Greater Santiago and that the total effect is greater, allowing us to conclude that liberalization had a clear pro-poor bias in its short-run effects in that it favoured the lowest-income population strata in the fifth region (see table 9).

TABLE 9
CHILE (GREATER SANTIAGO): DECOMPOSITION OF DIRECT AND INDIRECT PRICE EFFECTS BETWEEN 1999 AND 2006

(Thousands of pesos a month and percentages)

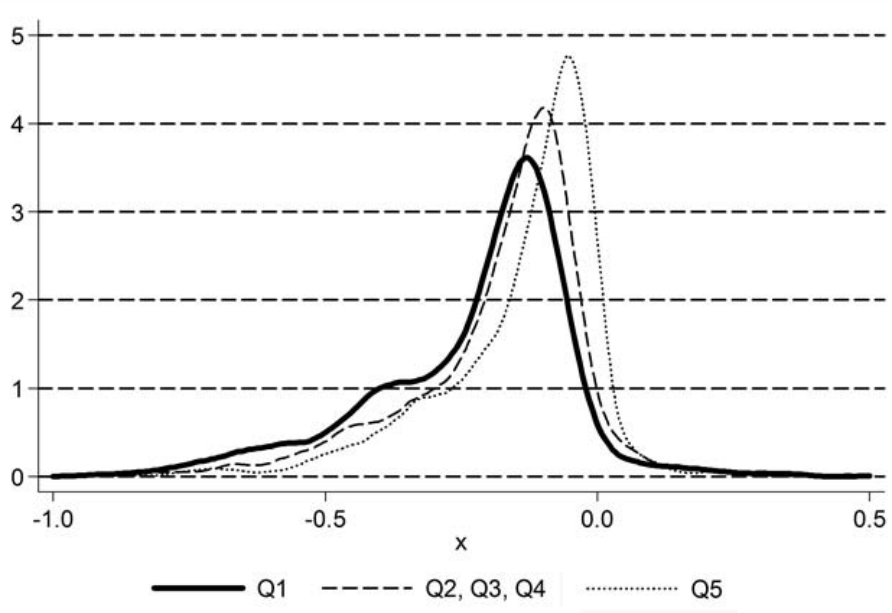
Decile	Number of people	Income cut-off by decile	Effects calculated (percentages)			Standard deviation	Symmetry measure
			Direct	Indirect	Overall effect		
1	768 162	62 171	-0.243	-0.015	-0.245	19.95	0.58
2	712 521	87 643	-0.192	-0.018	-0.194	19.57	-0.68
3	686 470	109 843	-0.195	-0.019	-0.197	17.17	0.88
4	628 541	133 836	-0.188	-0.020	-0.190	18.17	0.79
5	596 831	163 455	-0.180	-0.021	-0.182	18.91	1.03
6	532 692	203 904	-0.179	-0.022	-0.181	17.28	1.02
7	512 588	265 701	-0.165	-0.023	-0.167	15.31	1.07
8	474 192	376 650	-0.162	-0.024	-0.165	18.08	0.46
9	474 837	645 137	-0.145	-0.028	-0.148	14.77	1.36
10	400 267	>645 137	-0.137	-0.032	-0.141	15.83	1.55
Total	**5 787 100**	**235 180**	**-0.178**	**-0.022**	**-0.180**	**17.46**	**0.82**

Source: Prepared by the authors on the basis of the methodology developed in the previous sections and the 2007 family expenditure survey.

To determine the greater or lesser pro-poor effects of liberalization more clearly and comprehensively, the income distribution density function was defined for the first quintile, the fifth quintile and the other three quintiles (Q2 to Q4). Figure 1 shows the number of households for each level of benefit. Overlapping the three functions, we see that the distribution of benefits in quintile 1 is centred more to the left, indicating a greater impact in favour of that group.[20] Similarly, figure 2 shows that a larger number of households obtain a greater benefit than in the rest of the quintiles. This chart also shows that in some cases (although relatively few), a small proportion of households in all quintiles experience a loss of welfare, this being the result of the negative pass-through coefficient for health care calculated in table 2.

Table 9 calculates the equivalent variation for the different population quintiles at the level of both households and number of inhabitants. Note that each household in the poorest quintile is calculated to have received benefits amounting to some 7,000 pesos a year after liberalization, representing an increase in income of 0.22%. Measured in per capita terms, the benefits to individuals in the first quintile of households represent extra income of just over 1,450 pesos, or about 130 pesos a month. The amount of the benefit continues to rise by quintile, so that the wealthiest quintile experiences a somewhat larger increase in absolute welfare of 11,399 pesos for those forming part of this group. On average, the welfare gains are equivalent to a benefit of 4,100 pesos a year for each individual in the Metropolitan Region of Santiago.

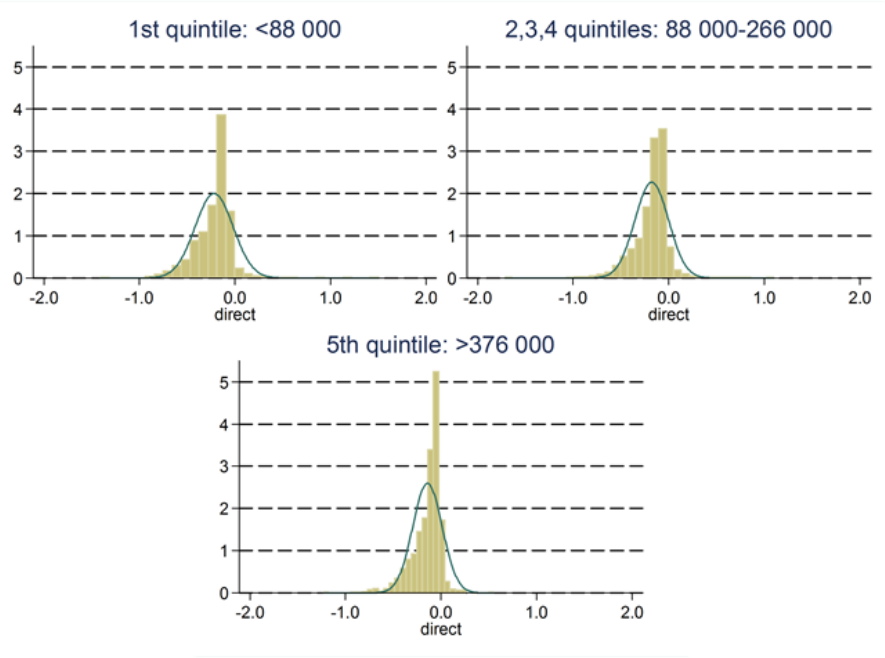
FIGURE 1
DISTRIBUTION OF BENEFITS AMONG HOUSEHOLDS BY QUINTILE



Source: Prepared by the authors on the basis of the methodology developed in the previous sections and the 2007 family expenditure survey.

[20] The benefit is measured by the fall in the cost of the household basket, which is why the number reported is negative.

FIGURE 2
DISTRIBUTION OF BENEFITS AMONG HOUSEHOLDS BY QUINTILE



Source: Prepared by the authors on the basis of the methodology developed in the previous sections and the 2007 family expenditure survey.

TABLE 10
CHILE (GREATER SANTIAGO): EQUIVALENT VARIATION AFTER TARIFF CHANGE BETWEEN 1999 AND 2006
(Pesos and percentages)

	Annual equivalent variation		Equivalent variation per household (pesos)		Equivalent variation per person (pesos)	
	(Millions of pesos)	Percentage of total income in each quintile	Monthly	Annual	Monthly	Annual
Q1	1 439.8	-0.218	548	6 582	121	1 453
Q2	2 120.6	-0.192	792	9 501	196	2 358
Q3	2 614.9	-0.180	955	11 462	276	3 311
Q4	3 500.7	-0.164	1 291	15 493	427	5 126
Q5	7 914.5	-0.141	2 547	30 563	950	11 399
Total	**17 590.5**	**-0.178**	**1 227**	**14 718**	**346**	**4 152**

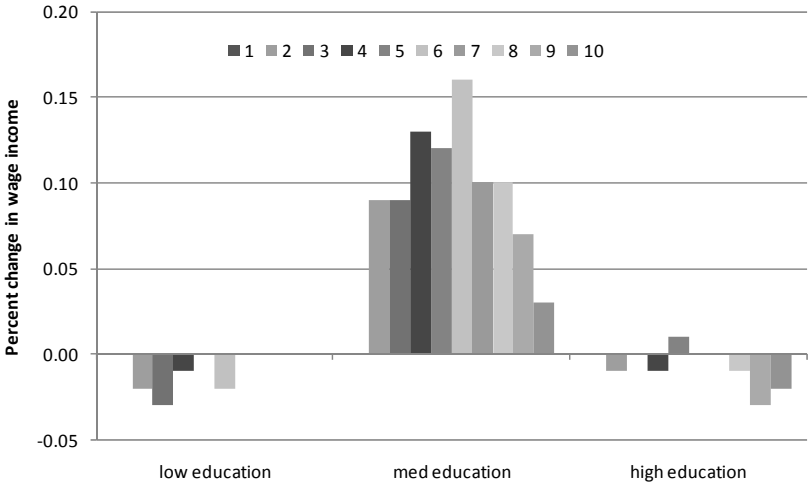
Source: Prepared by the authors on the basis of the methodology developed in the previous sections and the 2007 family expenditure survey.

As for the wage income effect, the results show that earners with medium education benefit from higher wages independent of their current income level (Figure 3). Notably, lower educated and higher educated households show an insignificant effect on wages from lower domestic prices. Generally speaking, the more favourable outcomes of the price effects for the poorest quintile are a clear

manifestation of the pro-poor impact of trade policy changes in Chile between 1996 and 2006, while the pro-middle class outcomes show that the gains can be broad based if the population is sufficiently educated and prepared. Nonetheless, a somewhat more thorough analysis of alternative policies showed that public policy challenges remain (see next section).

While a proper explanation of this result is beyond the scope of this study, it is likely that this result comes from a combination of more flexibility in labour contracts in certain industries and in the medium skilled workers and greater dynamism in the industries that demand for medium skilled as compared to low skilled labour (see figure 3). It is clear that the most vulnerable workers are not able to benefit from higher wages due to liberalization. For these workers, the price effects are much more important in improving their welfare following a decrease in prices from liberalization, as shown above.

FIGURE 3
CHILE (GREATER SANTIAGO): WAGE INCOME EFFECT ACCORDING TO EDUCATION LEVEL BY DECILE



Source: Prepared by the authors.

Note: Decile 1 is lowest (poorest).

The following section explores some policy alternatives using certain assumptions that modify the baseline scenario defined previously. A counterfactual analysis is then performed and some policy conclusions drawn.

C. Some public policy simulations

This section simulates six counterfactual scenarios as alternatives to the changes observed and presented in the previous section. The characteristics of the alternative scenarios will now be described:

- **Scenario 1: Uniform transfer of benefit:** It is assumed that benefits are redistributed uniformly among all individuals, giving 4,152 pesos a year per individual in every household. Income exceeding the average is withdrawn from quintiles four and five and reallocated to the first three quintiles so that all individuals in the population receive the equivalent of 4,152 pesos.
- **Scenario 2: Robin Hood-style transfers:** The benefits of the higher-income quintiles are redistributed to the lower-income quintiles. A benefit equivalent to 5,000 pesos per individual per year was calculated for each inhabitant belonging to the first three quintiles. This amount is withdrawn from the benefit mass of the fourth and fifth quintiles.

- **Scenario 3: Liberalization favouring the poor alone:** It is assumed that tariff changes between 1999 and 2006 only occurred in the food and clothing groups, with the 1999 tariff level being retained for the remaining groups.
- **Scenario 4: Further liberalization favouring the poor:** There are assumed to have been further-reaching tariff changes favouring the consumption basket of the most vulnerable households, i.e., tariffs both on food, drinks and tobacco and on textile and clothing products are cut to zero.
- **Scenario 5: Full price pass-through:** This scenario simulates a rise in pass-through coefficients from the levels calculated in the econometric estimates presented in the study to 1, following the lead of Porto (2006), who assumes full pass-through of tariff cuts to domestic prices.
- **Scenario 6: Full price pass-through and Robin Hood-style transfers:** This scenario simulates the rise in pass-through coefficients on the assumption of full pass-through of tariff cuts to prices plus simultaneous application of direct transfers from higher-income households to lower-income ones.

The results obtained are compared with the observed changes using the parameters calculated (table 10). It can be seen that policies to redistribute income from the top quintiles to the lowest-income ones have direct effects in improving inequality and thus in reducing somewhat the incidence of poverty.

If, in addition to the results observed, redistributive social policies had been implemented to help the lowest quintile of the population, either through provision of a uniform benefit (the same for the whole population) or one targeted only on the poorest, the income of these three groups would have been greatly increased. Although society as a whole does not register changes in welfare, scenarios 1 and 2 are clearly beneficial to the poor. Thence it can be concluded that well-targeted direct social policies can serve as a palliative to level the benefits playing field, especially if there are large asymmetries in the results, which is not the situation in the case analysed.

A second set of alternative measures, presented in scenarios 3 and 4, also show improvements benefiting the poor. Here it is shown how larger increases in sectors critical to consumption in the poorest households would tend to improve their relative position as regards benefits received. However, these gains would be marginally less than those observed.

Lastly, simulations 5 and 6 indicate percentage benefit changes in terms of total incomes for a situation where competition in the domestic market increases, i.e., where the pass-through coefficient is allowed to be equal to 1. In this case, welfare gains increase for all groups of households, but especially the poorest. It is interesting to observe that these benefits cease to be marginal for the poor when Robin Hood-style direct transfer policies are implemented, i.e., when income is withdrawn from the highest-income quintiles for the benefit of the bottom quintiles. The poor can increase their welfare by up to three times the observed level.

TABLE 11
CHILE (GREATER SANTIAGO): EQUIVALENT VARIATION AFTER THE TARIFF CHANGE BETWEEN 1999 AND 2006, OBSERVED CHANGES AND DIFFERENT SCENARIOS

(Percentages of total income)

		Social policy of direct transfers with income redistribution		Alternative trade policy changes		With rise in pass-through coefficient and income redistribution	
Quintile	Observed changes	Scenario 1 Uniform transfer of the benefit	Scenario 2 Robin Hood-style transfers	Scenario 3 Pro-poor	Scenario 4 Further liberalization favouring poor	Scenario 5 Pass-throug h = 1	Full pass-through and Robin Hood-style transfers
Q1	0.22	0.60	0.70	0.28	0.26	1.90	6.12
Q2	0.23	0.37	0.52	0.28	0.26	1.75	4.33
Q3	0.30	0.34	0.52	0.35	0.32	1.70	3.70
Q4	0.27	0.24	0.11	0.30	0.29	1.56	0.11
Q5	0.13	0.05	0.01	0.17	0.15	1.08	0.01
Total	**0.20**	**0.20**	**0.20**	**0.26**	**0.24**	**1.38**	**1.38**

Source: Prepared by the authors on the basis of the methodology developed in the previous sections and the 2007 family expenditure survey.

VI. Conclusions and policy ideas

The study presented has been based on an ex post methodology developed to analyse the effects of liberalization on countries that have brought in trade policy changes, especially in the form of tariff reduction, either unilaterally or by signing free trade agreements. The analysis centres on welfare effects and changes in income distribution following liberalization, and three effects deriving from the estimation of a set of parameters are calculated: (i) the direct impact of price changes on each household's consumption basket in consideration of a coefficient of price pass-through from the border to the domestic market, (ii) the indirect impact of changes in tradable product prices on non-tradables and (iii) the impact of price changes on wages. On the basis of the data available, the case of Chile, and specifically the Metropolitan Region of Santiago, was identified as a pilot for applying the method.

The present study differs from similar ones in that it includes an econometric estimate of the short-run coefficient of pass-through of international prices to domestic prices. The estimated pass-through coefficient was used to analyse household consumption patterns and the way price changes would affect the cost of the basket, which we term the equivalent variation. We also estimated the wage-price elasticity to quantify of the effect of changes in border prices on labor income.

From a public policy standpoint, the findings provide enough evidence to argue that liberalization in Chile went in the right direction, generating immediate welfare gains in the Metropolitan Region. The size of the effect calculated is small, bearing in mind that only the very short run is looked at and changes in the consumption basket are not allowed. Households increased their potential consumption and income by about

0.18% of total baseline income due to price effects, and another 0.8% due to increases in wage income. The results by product group were found to be greatest for food and household equipment.

The results of the simulations carried out using the family expenditure survey (EPF) determined that the overall price effect (sum of direct and indirect effects) for the period of analysis (1999-2006) was pro-poor to the extent that the lower deciles benefited more than the higher deciles. When the effects were broken down by income quintile it was found that the poorest quintiles/deciles in the population gained more in relative terms than the higher-income groups, receiving an average of 0.4% more of their respective income total than the richest quintile of the population, and more than 5% in the most optimistic simulation.

The price effects of trade policy changes over the period in Chile are positive, although small. These findings point in the same direction as other studies carried out for Chile, which use other methodologies to compute the total effect of trade policy changes in the late 1990s.

The methodology deployed here also casts light on different potential ways of influencing this pass-through, whether involving further-reaching liberalization of the products that are most important for the poor population or improved pass-through coefficients. Alternative trade policy measures are shown to have more modest effects than direct transfer measures involving cash benefits and transfers between income levels.

The results generally show that pass-through of trade policy changes has an effect on the poorest population and that there is scope for creating policies that take this link into account. This bias is partly due to the composition of consumption baskets at each income level, which means there is an opportunity for liberalization to adopt a still more favourable bias towards the poorest.

The potential for a liberalization programme to improve income distribution and reduce poverty depends on its differentiated impact. The share of food products is three times as great in the consumption basket of the first quintile as in that of the highest quintile, but the change in tariffs between 1999 and 2007 was smaller in this category than in most others (although the price pass-through coefficient is not high for these products).

Another conclusion of no less importance is that there is scope for complementary competition policies that encourage higher pass-through of tariffs to prices. One of the main reasons why the results are modest is that liberalization passes through to domestic prices to only a small degree, as demonstrated by policy simulations assuming full price pass-through. In this scenario, welfare gains would have been around 1.4% instead of 0.2%. Transfer policies associated with measures to increase competition in local markets would have large multiplier effects in terms of improvements in the relative incomes of the poor, with a much further-reaching impact on the reduction of inequality.

We shall now summarize the main policy recommendations, both technical and economic, derived from the study presented here. These points are offered for consideration as an input into the debate on ex post evaluations of trade policy changes and the way these feed through into new policy design.

- Trade policies have to take account of national development objectives. In the case of Chile, the effects of tariff reductions are very evenly spread, since there is no tariff escalation, and they could well provide a basis for applying supplementary social policies, as it is clear that pass-through of prices from the border to the domestic economy alone does not have a decisive enough impact to reduce the incidence of poverty. Applying protection policies of an inclusive type, however, does prove to have more immediate effects.
- Increasing economic competition to raise pass-through coefficients. A low coefficient indicates that domestic chains are uncompetitive, either because demand elasticity is low or because sellers have the power to extract a large portion of the rent from lower prices at the border. Policies to increase competitiveness in domestic markets, together with actions to reduce friction for transactions in the product marketing chain, are also important for their effect in increasing the benefits from liberalization. Governments need to make an even greater effort to lower transaction costs, as these operate as a form of protection for domestic firms.

- It is suggested that direct transfer policies be applied in cases where liberalization is prejudicial to lower-income sectors of the population, although this is not the case with the results observed for liberalization in the Metropolitan Region of Santiago in Chile. The simulations carried out for direct transfers, be these horizontal across the whole population or clearly pro-poor (Robin Hood-style), have markedly pro-poor effects, and the welfare gains tend to be skewed towards lower-income sectors.
- It is suggested that policies focus on how to include the lowest quintiles and the most vulnerable in the gains from trade. It is clear that the poorest are excluded from benefits of higher wages from greater trade, either due to poor skills or because they are engaged in the wrong industries (or both). A set of active policies to better prepare this group and improve their skills should be explored and implemented.
- We recommend the evaluation of gradualist trade policies whereby the effects of liberalization are concentrated in sectors where they benefit lower-income individuals most. Emphasis must be laid, however, on the need for due weight to be given to the opportunity cost of liberalizing intermediate goods needed to improve competitiveness in sectors that have comparative advantages in export products. It is crucial here for this methodology to be combined with others, such as partial equilibrium or computable general equilibrium models, particularly where trade policy research is concerned.
- We suggest that similar analyses be carried out for other countries that still have high levels of protection for certain products in particular and few free trade agreements, but that have applied liberalization policies for capital goods and intermediate inputs, examples being Ecuador and the Plurinational State of Bolivia. These exercises could yield a variety of results. We suggest that analyses be carried out in these instances to compare case studies on protection structures of this type, which are akin to the differentiated levels seen in the protection structures of the MERCOSUR and Andean Community customs unions.

Lastly, it needs to be borne in mind that trade policy does not aim primarily at solving the problems of poverty and inequality, but that it does contribute to this. It is in this spirit that the methodology and exercises proposed have been applied, on the understanding that these are complementary to other methodologies developed for the same purpose. Accordingly, it would be wrong to dismiss efforts by a country's authorities to open up new markets on the grounds that the poverty impacts of price pass-through have been very small, or indeed almost marginal. Fortunately, the method also shows that there is scope for public policy to build on this small margin, which can be expanded to benefit the most vulnerable groups in the population.

Bibliography

Balat, Jorge F. y Guido Porto (2005), "Globalization and Complementary Policies: Poverty Impacts in Rural Zambia," N° 11175, National Bureau of Economic Research, Inc, marzo.

Bernhofen, Daniel M. y John C. Brown (2004), "A Direct Test of the Theory of Comparative Advantage: The Case of Japan," Journal of Political Economy, vol. 112, N° 1, febrero.

Bourguignon, François, Maurizio Bussolo y John Cockburn (2010), "Macro-Micro Analytics: Background, Motivation, Advantages and Remaining Challenges," International Journal of Microsimulation, vol. 3, N° 1.

CEPAL (2010), "Pobreza, política comercial y políticas complementarias," [en línea] <http://www.cepal.org/comercio/comercio%5Fpobreza/> [fecha de consulta: 5 de diciembre de 2010].

Duran, José, Alfonso Finot y Marcelo LaFleur (2010), "Análisis de la apertura comercial sobre el bienestar de los hogares: Una aplicación para Chile 1999-2006", CEPAL, Naciones Unidas, diciembre.

Feenstra, Robert C (1989), "Symmetric pass-through of tariffs and exchange rates under imperfect competition: An empirical test," Journal of International Economics, vol. 27, N° 1-2, agosto.

Fischer, Ronald y Pablo Serra (1996), "The gains from trade in an specific factor growth model," Estudios de Economia, vol. 23, N° 2 Year 19, diciembre.

Foster, William y Alberto Valdés (2010), "Incentivos agrícolas, crecimiento y pobreza en América Latina y el Caribe: evidencia de corte transversal para el período 1960-2005 ¿La liberalización comercial incrementó los ingresos de los más pobres?" (LC/W.362), CEPAL, Naciones Unidas, diciembre.

Frankel, Jeffrey A., David C. Parsley y Shang-Jin Wei (2005), "Slow Passthrough Around the World: A New Import for Developing Countries?," NBER Working Paper Series, N° w11199, National Bureau of Economic Research, marzo.

Froot, Kenneth A y Paul D Klemperer (1989), "Exchange Rate Pass-Through When Market Share Matters," American Economic Review, vol. 79, N° 4, septiembre.

Giordano, Paolo (2009), Trade and Poverty in Latin America, Washington, D.C., Inter-American Development Bank, December.

Goh, Chor-ching y Beata S. Javorcik (2007), "Trade Protection and Industry Wage Structure in Poland," Globalization and Poverty, NBER Chapters, National Bureau of Economic Research, Inc, pág. 337-372.

Goldberg, Pinelopi Koujianou y Nina Pavcnik (2005), "Trade, wages, and the political economy of trade protection: evidence from the Colombian trade reforms," Journal of International Economics, vol. 66, N° 1, mayo.

Hanson, Gordon H. (2005), "Globalization, Labor Income, and Poverty in Mexico," N° 11027, National Bureau of Economic Research, Inc, enero.

Harrison, Glenn W., Thomas F. Rutherford y David G. Tarr (2003), "Chile's Regional Arrangements: The Importance of Market Access and Lowering the Tariff to Six Percent," Central Bank of Chile Working Papers, N° 238, Santiago de Chile, Banco Central de Chile, noviembre.

___ (1997), "Trade Policy Options for Chile: A Quantitative Evaluation," World Bank Policy Research Working Paper, N° 1783, Washington, D.C., World Bank, junio.

Helpman, Elhanan y Paul Krugman (1987), Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition, and the International Economy, MIT Press Books, vol. 1, N° 026258087x, The MIT Press, junio.

Levinsohn, James y Margaret McMillan (2005), "Does Food Aid Harm the Poor? Household Evidence from Ethiopia," N° 11048, National Bureau of Economic Research, Inc, enero.

López, Ramón (2010), "Pobreza y distribución del ingreso en América Latina: complementariedades entre política comercial y gasto público social" (LC/W.364), CEPAL, Naciones Unidas, diciembre.

Mallick, Sushanta y Helena Marques (2008), "Passthrough of Exchange Rate and Tariffs into Import Prices of India: Currency Depreciation versus Import Liberalization," Review of International Economics, vol. 16, N° 4, septiembre.

Masi, Fernando y otros (2010), "Comercio y pobreza en el Paraguay: el caso de una cadena de valor agroindustrial" (LC/W.361), CEPAL, Naciones Unidas, diciembre.

Menon, Jayant (1993), "Exchange Rate Pass-Through for Australian Manufactured Imports: Estimates from the Johansen Maximum-Likelihood Procedure," N° ip-60, Monash University, Centre of Policy Studies/IMPACT Centre, julio.

Nicita, Alessandro (2009), "The price effect of tariff liberalization: Measuring the impact on household welfare," Journal of Development Economics, vol. 89, N° 1, mayo.

Porto, Guido G (2006), "Using survey data to assess the distributional effects of trade policy," Journal of International Economics, vol. 70, N° 1, septiembre.

Reina, Mauricio y Sandra Zuluaga (2008), "Comercio y pobreza: análisis comparativo de la evidencia para América Latina," Serie de Comercio Internacional, N° 87 (LC/L.2903-P), Santiago de Chile, CEPAL - Naciones Unidas, mayo. Publicación de las Naciones Unidas, N° de venta: S.08.II.G.39.

Schuschny, Andrés, José Durán Lima y Carlos J. de Miguel (2008), "Política Comercial de Chile y los TLC con Asia: evaluación de los TLC con Japón y China" (LC/L.2951), CEPAL, Naciones Unidas, noviembre.

___ (2007), "El modelo GTAP y las preferencias arancelarias en América Latina y el Caribe: reconciliando su año base con la evolución reciente de la agenda de liberalización regional" (LC/L.2679-P), CEPAL, Naciones Unidas, febrero.

Tellería, Roberto, Carlos Ludeña y Soraya Fernández (2010), "Políticas alternativas y estrategias para el Estado Plurinacional de Bolivia tras el fin de las preferencias arancelarias ATPDEA: evaluación de un acuerdo comercial con la Unión Europea" (LC/W.360), CEPAL, Naciones Unidas, diciembre.

Terra, María Inés y Rossana Patrón (2010), "Formación de capacidades en el Uruguay: ¿cuáles son las cualificaciones del trabajo requeridas para el desarrollo?" (LC/W.359), CEPAL, Naciones Unidas, diciembre.

Thomas, Duncan y otros (2002), "Wages, employment and economic shocks: Evidence from Indonesia," Journal of Population Economics, vol. 15, N° 1.

Topalova, Petia (2005), "Trade Liberalization, Poverty, and Inequality: Evidence from Indian Districts," N° 11614, National Bureau of Economic Research, Inc, septiembre.

Winters, L. Alan, Neil McCulloch y Andrew McKay (2004), "Trade Liberalization and Poverty: The Evidence So Far," Journal of Economic Literature, Journal of Economic Literature, vol. 42, N° 1.

Wong, Sara y Veronika Kulmer (2010), "Integración comercial con la Unión Europea e impactos sobre la pobreza en el Ecuador" (LC/W.357), CEPAL, Naciones Unidas, diciembre.

Annex

Annex 1

TABLE A.1
DESCRIPTION AND SOURCES OF THE VARIABLES USED IN THE REGRESSIONS

Variable	Description	Source
Nominal exchange rate	Nominal exchange rate in dollars per Chilean peso, 1999-2008 (monthly)	Central Bank of Chile
Product price level	Prices of 483 products in Chilean pesos, Metropolitan Region of Santiago, 1999-2008 (monthly)	National Institute of Statistics (INE) of Chile
Tariffs	Weighted average import tariff at the product level, 1999-2008 (annual)	UNCTAD-Trade Analysis and Information System (TRAINS)
Imports	Imports in nominal prices at the product level, 1999-2008 (monthly)	UNCTAD-United Nations Commodity Trade Database (COMTRADE)
Expenditure per product	Family spending at the product level, Metropolitan Region of Santiago, 1997 and 2007	INE Chile family expenditure survey
Family income	Family income at the household level, Metropolitan Region of Santiago, 1997 and 2007	INE Chile family expenditure survey
Socio-economic characteristics	Personal and household characteristics, Metropolitan Region of Santiago, 1997 and 2007	INE Chile family expenditure survey

Source: Prepared by the authors.

TABLE A.2
PRODUCTS INCLUDED IN THE CONSUMPTION BASKET OF THE CPI FOR THE METROPOLITAN REGION OF SANTIAGO

Product group	Number of products in basket	Brief description
Food	162	Baked products, flours, meat, fish, prepared foods, soft drinks, fruit and vegetables, liqueurs and alcoholic drinks, carbonated drinks and natural juices.
Housing	29	Rent, mortgage payments, property taxes, spending on services such as water and gas, fuels, kitchen appliances and tools such as drills, hammers and paints.
Household equipment	84	Light bulbs, fluorescent tubes, detergents, bedclothes, cleaning utensils, cookers, washing machines, furniture, ovens, televisions, cameras, computers and printers, among others.
Clothing	75	Textile products, garments and footwear for all household members (children and adults).
Transport	26	Spending on cars, buses, flights, car washing, windscreens, shock absorbers, tyres and car parts.
Health care	44	Numerous medicines such as antacids, flu remedies, contraceptives, high blood pressure medications, vitamins, cough remedies and bronchodilators, among others, plus medical consultations and spending on medical utensils: syringes, towels, scissors, shampoo, colognes and other personal hygiene material.
Education and leisure	55	School textbooks, non-school texts, newspapers, magazines, small notebooks, large notebooks, pens, pencils, writing pads, tempera, cardboard, glue, recorder, etc., plus education costs.
Others	8	Professional services, lawyers' fees, notaries' fees, cigarettes, spending on guest and boarding houses, funeral services, association membership dues, spending on care homes, financial spending.

Source: Prepared by the authors, on the basis of figures provided by the National Institute of Statistics (INE) of Chile. Further details in Durán, Finot and LaFleur (2010).

TABLE A.3
DIFFERENT REGRESSION MODELS FOR TRADABLE VERSUS NON-TRADABLE PRODUCT PRICES

Food (non-tradables)	(1)	(2)	(3)	(4)
	OLS	OLS+dummy	OLS+dummy+ controls	Cochrane-Orcutt
Food (tradables)	0.360*	0.281*	0.259*	0.256*
	(0.034)	(0.027)	(0.024)	(0.034)
Housing (tradables)	0.186*	0.166*	0.082**	0.134*
	(0.040)	(0.029)	(0.038)	(0.049)
Equipment (tradables)	0.062	0.385+	-0.118	0.623*
	(0.235)	(0.198)	(0.178)	(0.194)
Clothing (tradables)	-0.103	0.127	0.146+	0.163
	(0.089)	(0.102)	(0.079)	(0.103)
Transport (tradables)	-0.047	-0.070+	-0.013	-0.061
	(0.043)	(0.039)	(0.036)	(0.057)
Health care (tradables)	0.070**	-0.015	-0.015	-0.060
	(0.035)	(0.048)	(0.038)	(0.041)
Education/leisure (tradables)	-0.124	0.302	0.103	0.233+
	(0.133)	(0.187)	(0.155)	(0.138)
Others (tradables)	0.158*	0.056*	-0.007	0.038**
	(0.024)	(0.016)	(0.018)	(0.019)
Observations	120	120	120	120
R-squared	0.996	0.999	0.999	0.995
Durbin-Watson statistic				1.76
Durbin-Watson 0 statistic				0.90

Source: Prepared by the authors on the basis of econometric estimates.

Note: Standard errors in parentheses.

+ Significant at 10%.

** Significant at 5%.

* Significant at 1%.

UNITED NATIONS

Serie
ECLAC comercio internacional

Issues published

A complete list as well as pdf files are available at

www.eclac.org/publicaciones

114. Effects of trade opening on household welfare: the Chilean case, José E. Durán Lima, Alfonso Finot, Marcelo LaFleur (LC/L.3433), 2011.
113. Latin America's experience in the WTO: Disputes involving Technical Standards, Sanitary and Phytosanitary Measures and Intellectual Property, Tania García-Millán, (LC/L.3421), 2011.
112. Dos estudios de la evolución del pensamiento de la CEPAL sobre la diversificación productiva y la inserción internacional (1949-2008), Ricardo Bielschowsky, Miguel Izam, Nanno Mulder, (LC/L.3415), 2011.
111. The liberalization of environmental goods and services: Overview and implications for Latin America and the Caribbean, Marcelo LaFleur, (LC/L.3413), 2011.
110. Productivity growth in Latin American manufacturing: what role for international trade intensities?, Sebastián Faúndez, Nanno Mulder, Nicole Carpentier, (LC/L.3412), 2011.
109. Efectos de las medidas de política comercial aplicadas en América Latina sobre el comercio regional y extrarregional, José Durán, María Inés Terra, Dayna Zaclicever, (LC/L.3406), 2011.
108. Los 20 años del MERCOSUR: una integración a dos velocidades, Mariano Alvarez (LC/L3404), 2011.
107. The new era of carbon accounting: issues and implications for Latin America and the Caribbean exports, Marcelo LaFleur, Nevin Rosaasen (LC/L.3373), 2011.
106. The Trans-Pacific strategic economic partnership agreement: a Latin American perspective, Sebastián Herreros (LC/L.3306-P), (US$10), 2011.
105. Caribbean trade and integration trends and future prospects, Marie Freckleton, Nanno Mulder, Andrea Pellandra, Esteban Pérez Caldentey (LC/L.3277-P), (US$10), 2010.
104. Brazil and India: two BRICs as a "building bloc" for South-South cooperation, Mikio Kuwayama (LC/L.3273-P), (US$10), 2010.

- Readers wishing to obtain the listed issues can do so by writing to: Distribution Unit, ECLAC, Casilla 179-D, Santiago, Chile, Fax (562) 210 2069, E-mail: publications@cepal.org.

Name: .....

Activity: .....

Address: .....

Postal code, city, country: .....

Tel.: ..... Fax: ..... E.mail: .....